ISSN 2148-7286 • EISSN 2149-1305

ADDICTA

The Turkish Journal on Addictions

Volume: 13 • Issue: 2 • June 2026

YEŞİLAY

addicta.com.tr

ADDICTA

Türkiye Yeşilay Cemiyeti adına sahibi / Owner on behalf of Turkish Green Crescent Society: Mehmet Dinç

Sorumlu Yazı İşleri Müdürü / Responsible Manager: Yasin Erol

ISSN (Print): 2148-7286 • **ISSN (Online):** 2149-1305

Yayının Türü / Publication Type: Uluslararası hakemli dergi / International peer-reviewed journal

Basım Yeri / Printed By: Matbaa A.Ş.
Adres • Tel: 0212 000 00 00 • www.abcd.com

Basım Tarihi / Print Date: Haziran 2026 / June 2026

Yayıncılık Hizmetleri / Publishing Services: Akdema Informatics, Publishing, and Consultancy Trade LLC
Kızılay Mah. Gazi Mustafa Kemal Bulvarı No: 23/8 06420 Çankaya/Ankara, Türkiye • Tel: +90 533 166 8080 • www.akdema.com

You can reach all publication policies and author guidelines from www.addicta.com.tr

ADDICTA

Editorial Board

ADDICTA

ADDICTA

Contents

ADDICTA

Contents

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Editorial
DOI: 10.15805/addicta.2026.493

Prediction markets: Forecasting in name, gambling in function regulatory considerations for Türkiye

Yasin Kavla[1], Hakan Coşkunol[2]

[1]Department of Psychiatry, Cerrahpaşa Medical Faculty, İstanbul University-Cerrahpaşa, İstanbul, Türkiye
[2]Turkish Green Crescent Society, İstanbul, Türkiye

Introduction

Promoted as tools of collective intelligence, commercial prediction markets (PMs) increasingly resemble gambling products in both structure and user experience. As these platforms become accessible to Turkish users, it is important to clarify how existing law applies and what a proportionate public-health response might look like.

For decades, PMs functioned as relatively small, capped, and largely academic forecasting tools whose aggregated predictions sometimes outperformed polls and expert judgments. When carefully designed, such markets can still provide valuable information for decision-making. More recently, however, the label has been adopted by commercial, crypto-enabled, mobile platforms optimized more for engagement than for forecasting accuracy. By late 2025, these platforms were reportedly processing more than $2 billion in weekly transactions (Packin & Rabinovitz, 2026).

This development may be particularly relevant for Türkiye. According to recent national data, approximately 6.8 million individuals aged 15 years and older reported gambling participation in 2025, while illegal online betting through smartphones has become increasingly common (Green Crescent, 2025; Kavla et al., 2026). Given the rapid growth of digital gambling-related activities, interest in PMs may likewise increase among Turkish users. This raises a practical question for clinicians and policymakers: where, along the spectrum from investment to gambling, do these products sit, and how should existing rules apply? This commentary argues that although PMs may retain legitimate forecasting functions, sports-related event contracts share important functional similarities with betting products and may therefore warrant scrutiny under Türkiye's existing betting legislation and public-health framework.

What They Are, and How They Work

PMs sell contracts tied to the outcome of future events. Typically, users purchase binary "yes/no" contracts whose price is interpreted as the implied probability of an event occurring. A contract trading at $0.60, for example, implies approximately a 60% probability and pays $1 if the event occurs and nothing otherwise (Beylin, 2026; Johnson & Chan, 2026).

On platforms such as Polymarket and Kalshi, almost any event can become a tradable contract, including elections, geopolitical developments, climate events, sporting competitions, and entertainment outcomes. Market prices are frequently presented as expressions of collective intelligence or the "wisdom of crowds." Yet these prices may not merely reflect expectations; they can also shape them, functioning as focal points for voters, donors, journalists, and investors (Kalshi, n.d.; Nechepurenko, 2026; Polymarket, n.d.).

The relevance of these platforms to Türkiye is no longer hypothetical. Following qualification for the 2026 FIFA World Cup, active contracts emerged on Türkiye's performance in the tournament, including predictions regarding group outcomes, elimination stages, and individual match results. Beyond football, additional markets involving Turkish sporting events and domestic competitions are readily available. In practice, Turkish residents can already stake real money on outcomes involving their national teams and sporting competitions through globally accessible platforms.

Why They Resemble Gambling

Direct evidence regarding the population-level harms of PMs remains limited. Accordingly, the comparison with gambling should be viewed as a precautionary and hypothesis-generating framework rather than a settled empirical conclusion. Nevertheless, similarities can be observed at three

Corresponding author: Hakan Coşkunol • **Email:** coskunolh@yahoo.com
Received: June 1, 2026 **Published online:** June 22, 2026

Cite as: Kavla, Y. & Coşkunol, H. (2026). Prediction markets: Forecasting in name, gambling in function regulatory considerations for Türkiye. *Addicta: The Turkish Journal on Addictions*, *13*(2), 147-149. https://doi.org/10.15805/addicta.2026.493

levels: structural characteristics, behavioral engagement patterns, and platform design features.

Structurally, many prediction-market contracts closely resemble wagers. Users stake money on uncertain future events and receive either a payout or a loss depending on the outcome. From the participant's perspective, the experience often resembles betting more than investing, particularly when contracts relate to sports, politics, or entertainment rather than economic risk management.

Behaviorally, many platforms facilitate continuous participation through round-the-clock access, rapid market resolution, and low barriers to entry. These characteristics may encourage repeated engagement and loss-chasing behaviors similar to those observed in online gambling environments (Johnson & Chan, 2026). Evidence from Türkiye reinforces this concern: *University students demonstrate a significant involvement in online gambling, with the majority engaging in these activities regularly, often daily or several times a week* (Gezgin et al., 2025).

At the design level, some platforms incorporate features commonly associated with high-intensity gambling products, including countdown timers, leaderboards, streak bonuses, push notifications, and gamified interfaces. The replacement of terms such as "betting" with "forecasting" or "event trading" may further reduce perceived risk and stigma, potentially delaying recognition of problematic involvement (Packin & Rabinovitz, 2026). Moreover, evidence suggests that returns on many contracts may be negative after fees, challenging claims that these products should primarily be viewed as investment vehicles (Packin et al., 2026).

Supporters of PMs offer important counterarguments. They emphasize that such markets can aggregate dispersed information, improve forecasting accuracy, and contribute to decision-making in areas ranging from business planning to public policy. Unlike conventional gambling products, PMs may attract participants motivated by information and analysis rather than entertainment alone. These potential benefits should not be dismissed. Indeed, PMs have demonstrated forecasting value in some academic and institutional settings. However, concerns arise when commercial platforms increasingly emphasize speculative participation, continuous engagement, and event categories that bear little relationship to economic risk management. Under these circumstances, the distinction between forecasting and wagering becomes less clear from a public-health perspective.

The International Picture: A Spectrum of Responses

Jurisdictions have responded to PMs in markedly different ways. The United States has generally adopted a more permissive approach. Event contracts have often been treated as derivatives subject to oversight by the Commodity Futures Trading Commission rather than as gambling products regulated under state betting laws. This approach has generated ongoing legal disputes and regulatory uncertainty regarding the appropriate boundaries of federal and state authority (Beylin, 2026; Johnson & Chan, 2026; Packin et al., 2026).

Brazil adopted a substantially different position. In 2026, authorities prohibited derivatives tied to non-economic events such as sports, politics, and entertainment. Regulators concluded that, regardless of terminology, these products functioned as forms of unauthorized fixed-odds betting. Consumer protection and the prevention of household over-indebtedness were cited as key justifications, while traditional financial derivatives remained unaffected (Conselho Monetário Nacional, 2026; Secretaria de Prêmios e Apostas, 2026).

These contrasting approaches illustrate a broader policy choice. Governments must decide whether PMs should primarily be understood as financial instruments requiring market regulation or as gambling-like products requiring consumer-protection and public-health safeguards.

Türkiye: Legal Considerations and Policy Implications

Although a definitive legal determination rests with competent authorities and ultimately the courts, sports-related PMs appear to satisfy several functional elements of fixed-odds betting under the current Turkish regulatory framework. Existing legislation broadly defines betting activities as predicting the outcomes of sporting competitions and awarding monetary returns to successful predictions (Spor Müsabakalarına Dayalı Sabit İhtimalli ve Müşterek Bahis Oyunlarının, 2008).

Sports betting activities in Türkiye are subject to the exclusive authorization and supervision of the Directorate of Spor Toto Organization. Consequently, platforms that accept financial stakes and provide monetary returns linked to sports outcomes may plausibly fall within the scope of unauthorized betting activities under existing legislation (Bakanlıklara Bağlı, İlgili, İlişkili Kurum ve Kuruluşlar ile Diğer Kurum ve Kuruluşların, 2018).

Although PMs differ conceptually from conventional gambling by emphasizing information aggregation and probability estimation, regulators may reasonably focus on their functional characteristics rather than their stated purpose. From this perspective, the existence of financial stakes and outcome-dependent rewards may be more relevant than whether the platform describes itself as a forecasting tool, financial product, or betting service.

The key policy question may therefore be less whether PMs should be permitted or prohibited and more how they should be classified and regulated within the existing legal framework. Clarification regarding the legal status of event-contract platforms could provide greater certainty for regulators, operators, and consumers alike. At the same time, policymakers may wish to distinguish contracts linked to sporting and other non-economic events from financial

instruments that serve legitimate hedging functions. Effective oversight may also require attention to cryptocurrency-based payment mechanisms, online promotion, and cross-border accessibility.

Conclusion

PMs sit at a genuine crossroads. When appropriately designed and bounded, they can aggregate information of real value. Yet their contemporary commercial form increasingly blurs the distinction between forecasting and betting. International experience now spans both permissive and restrictive regulatory models, demonstrating that policymakers are not faced with a binary choice between unrestricted access and outright prohibition.

For Türkiye, a proportionate response may begin with legal clarification regarding the status of event-contract platforms under existing betting legislation. Additional measures could include age-verification requirements, restrictions on marketing directed toward young people, monitoring of cryptocurrency-based payment channels, and surveillance systems capable of detecting emerging gambling-related harms. Such interventions would not necessarily preclude legitimate forecasting applications but could help mitigate foreseeable risks.

Much of the necessary legal foundation already exists. The principal challenge is not the creation of entirely new legislation but the consistent application of existing legal and public-health principles to an evolving digital environment. Such an approach would help protect a young and highly connected population while preserving space for genuine financial and technological innovation.

Data availability statement

Data sharing is not applicable to this article as no new datasets were generated or analyzed during this study.

Conflict of interest

The author declares that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Bakanlıklara Bağlı, İlgili, İlişkili Kurum ve Kuruluşlar ile Diğer Kurum ve Kuruluşların Teşkilatı Hakkında Cumhurbaşkanlığı Kararnamesi. (2018, 15 Temmuz). *Resmi Gazete* (Sayı: 4). https://www.resmigazete.gov.tr/eskiler/2018/07/20180715-1.pdf

Beylin, I. (2026). *Regulation of prediction markets in the U.S*. Elsevier BV. **[Crossref]**

Conselho Monetário Nacional. (2026, April 24). *Resolution CMN No. 5.298*.

Gezgin, D. M., Hamutoğlu, N. B., & Atabay, E. (2025). Examining university students' opinions on online gambling behaviors, motivations, and negative effects: A qualitative analysis study. *Addicta: The Turkish Journal on Addictions, 12*(2), 236-250. **[Crossref]**

Green Crescent. (2025). *Health behavior research project in the population aged 15 and over*.

Johnson, B., & Chan, G. (2026). Prediction markets: An emerging form of gambling? *Addiction, 121*(2), 458-459. **[Crossref]**

Kalshi. (n.d.). *Market data*. Retrieved June 15, 2026, from https://kalshi.com

Kavla, Y., Demirgül, S. A., Bozdemir, T., Demircan, D., Yamanel-Özsoy, B., Durmuş, H., Dinçer, E. M., Umut, G., Demetrovics, Z., Potenza, M. N., & Dinç, M. (2026). A comparative analysis of sociodemographic and clinical characteristics of gambling disorder by sex among treatment-seeking individuals: A national sample from Türkiye. *Journal of Behavioral Addictions*. **[Crossref]**

Nechepurenko, M. (2026). *Price as focal point: Prediction markets, conditional reflexivity, and the politics of common knowledge*. Elsevier BV. **[Crossref]**

Packin, N. G., & Rabinovitz, S. (2026). Prediction markets as a public health threat. *Science, 392*(6795), 257-260. **[Crossref]**

Packin, N. G., Shaton, M. O., Sulem, E., & Rabinovitz, S. (2026). Finance or gambling? Prediction markets after Loper Bright and the administrative record. *American Business Law Journal, 64*(1). https://ssrn.com/abstract=6900983

Polymarket. (n.d.). Market data. Retrieved June 15, 2026, from https://polymarket.com

Secretaria de Prêmios e Apostas. (2026). *Technical note 2958/2026*.

Spor Müsabakalarına Dayalı Sabit İhtimalli ve Müşterek Bahis Oyunlarının Özel Hukuk Tüzel Kişilerine Yaptırılması Hakkında Kanun. (2008, 27 Şubat). *Resmi Gazete* (Sayı: 26800). https://www.resmigazete.gov.tr/eskiler/2008/02/20080227-3.htm

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.494

Efficacy of liquorice root and sugarless chewing gum as an adjuvant to smoking cessation: A randomized controlled trial

Dikshita Mehta[1], Leena Selvamary[1], S. G. Ramesh Kumar[1], Sujatha Anandan[1]

[1]Department of Public Health Dentistry, Tamil Nadu Government Dental College and Hospital, Chennai, India

Abstract

The tobacco epidemic is a public health threat, killing more than 8 million people annually. Liquorice is an herbal medicine that acts as a modulator of GABA receptors and may induce sedative and anxiolytic effects; thereby, it can support smoking cessation. This study aimed to assess the efficacy of liquorice root and sugarless chewing gum in smoking cessation using a randomized controlled trial design.

Smokers aged 18 to 74 years attending a tobacco cessation centre were recruited. A total of 116 smokers were recruited, and written informed consent was obtained. The level of tobacco dependence was assessed using Fagerstrom addiction score at baseline. Fifty-eight participants were allocated to the liquorice group (LG) and 58 to the chewing gum group (CG). Both groups received tobacco cessation counselling. The LG received liquorice root and CG received sugarless chewing gum for four weeks. Follow-up was conducted at 1, 2 and 3 months to evaluate self-reported continuous tobacco abstinence, relapse rate, Fagerstrom addiction scores and CO breath levels in both groups.

The present study demonstrated a significant reduction in smoking measures (self-reported continuous abstinence and carbon monoxide breath levels and Fagerstrom addiction scores) in the liquorice group compared with the chewing gum group. Self-reported continuous abstinence at 3 months was 72.4% and 60.3% in LG and CG, respectively. There was a statistically significant difference in the levels of exhaled CO reduction between LG and CG at 2 months (P=0.046) and 3 months (P=0.013)

In the current trial, liquorice root demonstrated superior efficacy over sugarless chewing gum as a substitute for a smoking form of tobacco.

Keywords: liquorice, chewing gum, smoking cessation, tobacco cessation

Main points

- The study evaluates the effectiveness of liquorice root and sugarless chewing gum as adjuvant aids for smoking cessation in a randomized controlled trial among adult smokers.
- Liquorice root demonstrated a greater reduction in Fagerstrom nicotine dependence scores and exhaled carbon monoxide levels compared to sugarless chewing gum over a 3-month follow-up period.
- The self-reported continuous abstinence rate was higher in the liquorice group, indicating better smoking cessation outcomes, although not statistically significant.
- Liquorice root's natural anxiolytic and oral gratification properties may contribute to its superior efficacy as a tobacco substitute.
- The findings support the use of liquorice root as a low-cost, culturally acceptable, and non-pharmacological intervention for tobacco cessation in resource-limited settings.

Corresponding author: Dikshita Mehta • **Email:** dikshitamehta93@gmail.com
Received: June 1, 2025 **Accepted:** November 17, 2025 **Published online:** June 22, 2026

Cite as: Mehta, D., Selvamary, L., Kumar S. G. R., & Anandan, S. (2026). Efficacy of liquorice root and sugarless chewing gum as an adjuvant to smoking cessation: A randomized controlled trial. *Addicta: The Turkish Journal on Addictions*, *13*(2), 150-157. https://doi.org/10.15805/addicta.2026.494

Introduction

Tobacco use remains one of the most pressing global public health concerns, contributing significantly to morbidity and mortality worldwide. According to the World Health Organization (2024), tobacco kills more than 8 million people annually, making it one of the leading preventable causes of death. In India, the burden of tobacco-related diseases is particularly high, necessitating effective cessation strategies. Recognizing this, the Dental Council of India in 2018 mandated the establishment of Tobacco Cessation Centres (TCCs) in all dental institutions, underscoring the role of oral healthcare professionals in tobacco control initiatives.

Apart from self-help strategies for quitting tobacco, various approaches have been suggested by the National Guidelines for Tobacco Cessation (Ministry of Health and Family Welfare, 2018), including pharmacological agents such as nicotine replacement therapies (NRTs) and non-nicotine-based medications such as bupropion SR and varenicline (U.S. Public Health Service, 2008). Non-pharmacological agents such as chewing gums have also been used as substitutes for cigarette smoking in dependent smokers to reduce cravings and help cope with withdrawal symptoms (Cohen et al., 1997). Various alternative therapies—including hypnosis, acupuncture, yoga therapy, dietary aids, and low-level laser therapy—have also been explored for smoking cessation (Naresh et al., 2016).

Despite the availability of numerous agents for tobacco cessation, quitting requires a high level of cooperation, motivation, and compliance among tobacco users. Moreover, some agents themselves are addictive, expensive, or associated with adverse effects. This underscores the importance of exploring traditional products as potential cessation aids, since they may be more effective in terms of having fewer side effects, lower addictive potential, and greater cost-effectiveness (Mitra et al., 2023).

One such traditional herbal medicine is liquorice (*Glycyrrhiza glabra* Linn.), which has long been valued in ethnopharmacology. Liquorice has been reported to exhibit anti-inflammatory, antibacterial, antifungal, antidiabetic, antiviral, anti-ulcer, anticarcinogenic, antimutagenic, antitussive, antioxidant, anxiolytic, skin-lightening, and antidiuretic properties (Damle, 2014). It has also been traditionally used as a natural sweetener due to its distinctive taste. The high phenolic content in ethanolic extracts of liquorice (*Glycyrrhiza glabra* L.) is largely responsible for its antioxidant and free radical scavenging activities. Liquorice extract (block, powder, or liquid) has even been incorporated into cigarettes, at levels of 1–4%, to harmonize smoke flavor, enhance moisture retention, and act as a surface-active agent for ingredient application (Carmines et al., 2005). Its antitussive and expectorant effects are beneficial in treating sore throat and cough among smokers. Moreover, liquorice is known to act as a modulator of GABAA receptors, thereby exerting sedative and anxiolytic effects, since gamma-aminobutyric acid (GABA) is the major inhibitory neurotransmitter in the central nervous system (Pastorino et al., 2018).

A review of the scientific literature reveals a paucity of studies on liquorice root as an adjuvant aid for tobacco cessation in humans. Thus, the present study was designed to assess the efficacy of liquorice root and sugarless chewing gum as adjuncts to smoking cessation counselling among patients visiting a Tobacco Cessation Counselling Centre, using a randomized controlled trial design. The research hypothesis was that there is a significant difference in smoking cessation rates between the liquorice group and the sugarless chewing gum group. The primary outcome of the trial was the self-reported quit rate at the 3-month follow-up in both groups, with a comparison of efficacy between the liquorice group (LG) and the chewing gum group (CG).

Methods

Study Setting

A 3–month, concurrent, parallel, randomized controlled trial was conducted at a tobacco cessation clinic. Ethical approval was taken from the institutional ethical review board before the initiation of the trial (IRB Reference number:1/IRB/2022). The study was registered in the Clinical Trial Registry.

Recruitment of the Participants

The general public was informed about the tobacco cessation intervention program through newspaper pamphlets and smoking cessation camps. Participants were also recruited from the outpatient department of the dental institution. The participants who fulfilled the following inclusion and exclusion criteria were included in the trial.

Inclusion criteria:

1. Current smokers aged 18 years to 74 years
2. Smokers motivated to quit smoking
3. Smokers with a Fagerstrom nicotine dependence score of 5 or more (moderate-to-high dependence)
4. Smokers who gave written informed consent.

Exclusion criteria:

1. Physically and mentally challenged individuals
2. Subjects under medications for all chronic non-communicable diseases
3. Subjects currently undergoing tobacco cessation using NRT or antidepressants
4. Subjects currently using any other substance of abuse
5. Subjects diagnosed with oral cancer

Sample Size

The sample size was calculated using a pilot study. The sample size at a 95% confidence interval, 90% power, and 0.641 effect size was calculated to be 53 participants in each group. However, the sample size was increased to 58 per group after

adjusting for 10% dropouts. Hence, the final sample size was 116 participants in total.

Randomization

Out of the total 168 interested participants screened over a period of 6 months (March 2023 to August 2023), 116 participants who met the inclusion and exclusion criteria were included in the study. Participants were randomly assigned to one of two intervention groups with a 1:1 allocation ratio. Randomization was done using a computer-generated random numbers list. Each participant was assigned a number using a random number sequence and received the corresponding intervention. It was an open labelled RCT and no blinding procedure was followed.

Intervention Groups

The intervention was given to the study participants for a period of 1 month, with follow-up of smoking status for 3 months.

Intervention for the Study Group [Liquorice Group- LG]

In the LG, participants received Tobacco Cessation Counselling. The study participants were provided with pre-cut liquorice root packaged in 1-week packets, in an air sealed bag, for 4 weeks. Participants were instructed to chew liquorice root (1 gram) for 10 – 20 minutes, 3 to 5 times per day depending on craving of smoking. Participants were instructed to chew the root fully, swallow the juices, and spit out the remaining liquorice root after 20 minutes. Participants were advised to report any adverse reaction immediately.

Intervention for the Control Group [Sugarless Chewing Gum Group - CG]

In the CG, participants received tobacco cessation counselling and sugarless chewing gum (Orbit) packaged in 1-week packets, in an air sealed bag, for 4 weeks. Participants were advised to chew the chewing gum for 10 – 20 minutes, 2 to 3 times per day depending on craving of smoking. Participants were instructed to chew and spit out the gum after 20 mins.

All participants were given standardized instructions on how to use the assigned product. To minimize potential bias, participants in both groups were informed only that the intervention they received may help reduce cravings and support smoking cessation. They were not specifically told whether the product was a conventional cessation aid or a natural product, thereby reducing the risk of expectancy or placebo effects influencing outcomes.

Outcome Assessment

Operational Definition

Current smokers - Current smokers are defined as adults who have smoked 100 cigarettes in their lifetime and who currently smoke cigarettes.

Continuous abstinence - Continuous abstinence is defined as the stoppage of use of any form of tobacco (not even a puff) for 30 days from the initial quit day.

Quit attempt – Attempt to quit tobacco usage for one complete day (24 hours) after a grace period of 7 days from the initial assessment.

Relapse –Relapse is defined as reverting back to smoking any time after the initial quit day.

Assessment Variables

At baseline the variables assessed for both groups:

1. Sociodemographic data.
2. Type of smoked tobacco, age of onset, average use per day, duration of usage.
3. Assessment of Fagerstrom score for nicotine dependence.
4. Self-reported quit – continuous abstinence, relapse
5. Objective assessment - Breath analysis using a CO breath analyzer.

At 1-, 2- and 3- month follow-up, the following outcomes were assessed in both groups:

1. Fagerstrom score for nicotine dependence.
2. Self-reported quit - continuous abstinence, relapse.
3. Objective assessment using a CO breath analyser, comparing LG and CG

Statistical Analysis

For maintaining the database, statistical analyses were conducted using IBM Statistical Package for the Social Sciences (SPSS) Version 21. Normality of the data was checked using the Kolmogorov-Smirnov test, and the data were found to be nonparametric. Descriptive analyses were performed for sociodemographic data. Intragroup comparison of CO breath levels and Fagerstrom addiction scores were conducted using the Friedman test. Intergroup comparisons of CO breath levels and Fagerstrom addiction scores were conducted using the Mann-Whitney test. Intergroup and intragroup comparisons of self-reported abstinence and relapse rates were conducted using the chi-square test.

Results

Study Participants

Of the 168 participants screened, 116 were included in the trial (58 in each group), and the sample size was maintained at 116 at the end of trial, with no loss to follow-up (Figure 1).

The age of study participants ranged from 24 to 59 years with a mean age of 46.02±12.88 years in the LG and 40.93±12.98 years in the CG. No females reported smoking status during the recruitment period, resulting in an all-male study participant cohort. Moreover, no major difference was observed in socioeconomic status between the LG and CG (Table 1).

Baseline Analysis

At baseline, the average number of cigarettes/bidis smoked by study participants was 14.15±4.57, with 14.86±7.66 in LG and 14.42±8.52 in the CG. There was no statistically significant difference (p-value=0.824) between the mean number of cigarettes smoked in the LG and CG. Similarly, there was no statistically significant difference (p-value=0.250) between the mean number of years smoked (LG is 24.81±14.73 and CG is 22.26±12.75) between the groups (Table 2).

However, a statistically significant difference (p-value=0.035) was observed in the mean Fagerstrom addiction score at baseline (LG -5.90±2.13 and CG -5.12±1.98), with the LG having higher mean addiction scores. Likewise, a statistically significant difference (p-value=0.049) was observed in the CO levels between the LG and CG (LG- 21.72± 4.69 and CG- 20.17±7.35) with higher CO levels in the LG (Table 2).

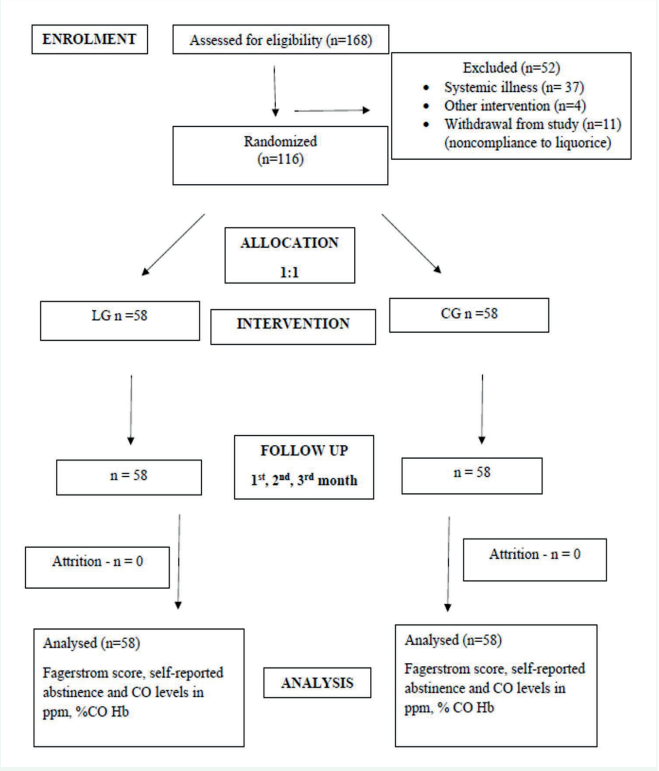

Figure 1. Consort flow chart

Table 1. Sociodemographic characteristics

Variables		LG	CG
Age in years (Mean ± S.D.)		46.02±12.88	40.93±12.98
Gender n (%)	Male	58 (100.0)	58 (100.0)
	Female	0	0
Socioeconomic status n (%)	Upper	0	0
	Upper-Middle	4 (6.9)	3 (5.2)
	Lower-Middle	5 (8.6)	19 (32.8)
	Upper-Lower	29 (50.0)	22 (37.9)
	Lower	20 (34.5)	14 (24.1)

S.D. = standard deviation; LG = Liquorice Group; CG = Chewing gum Group.

Table 2. Baseline characteristics

Variables	LG	CG	p-value
Number of cigarettes/Bidi per day (Mean ± S.D.)	14.86±7.65	14.42±8.52	0.824[b]
Number of years smoked (Mean ± S.D.)	24.81±14.73	22.26±12.75	0.250[a]
Fagerstrom Addiction score (Mean ± S.D.)	5.90±2.13	5.12±1.98	0.035*[b]
CO level (ppm) (Mean ± S.D.)	21.72± 4.69	20.17±7.35	0.049*[b]

[a]Independent t test; [b]Mann Whitney test; *Significant p-value <0.05.

Post – Intervention Outcome Analysis

Subjective Assessment at Baseline vs Post-Intervention

There was a significant reduction in smoking addiction scores during the 3-month follow-up in both the LG and CG (Table 3). However, the mean addiction scores were consistently lower in the LG compared to the CG (Figure 2).

Objective Assessment at Baseline vs Post-Intervention

There was a significant reduction in scores of CO breath levels during the 3-month follow-up in both the LG and CG (Table 4). However, the mean CO breath levels were lower in the LG compared to the CG group, with a statistically significant difference between the LG and CG at the 2nd month and 3rd month of follow-up (Figure 3, Table 4).

Table 3. Comparison of Fagerstrom Addiction score and CO level in ppm and % CO Hb within LG and CG

Smoking status	Intervention	Baseline	1st month	2nd month	3rd month	p-value[a]
CO level (ppm)	LG	21.72±4.69	4.34±2.33	4.64±2.59	4.90±3.00	0.015*
	CG	20.17±7.35	5.43±3.25	6.10±3.79	6.91±4.51	0.047*
CO level (%CO Hb)	LG	4.15±0.78	1.32±0.39	1.37±0.41	1.41±0.48	0.012*
	CG	3.85±1.17	1.49±0.52	1.60±0.61	1.73±0.72	0.043*
Fagerstrom Addiction score	LG	5.90±2.13	0.31±0.98	0.67±1.43	0.83±1.40	0.012*
	CG	5.12±1.98	0.97±2.03	1.55±2.37	1.98±2.52	0.045*

[a]Freidman test; *Significant P <0.05; ppm = parts per million.

Table 4. Comparison of Fagerstrom Addiction score and CO in ppm and %CO Hb between LG and CG

Smoking status	Timeline	LG (Mean ± SD)	CG (Mean ± SD)	p-value[a]
Carbon monoxide level (ppm)	Baseline	21.72±4.69	20.17±7.35	0.049*
	1st month	4.34±2.33	5.43±3.25	0.056
	2nd month	4.64±2.59	6.10±3.79	0.046*
	3rd month	4.90±3.00	6.91±4.51	0.013*
Carbon monoxide level (%CO Hb)	Baseline	4.15±0.78	3.85±1.17	0.049*
	1st month	1.32±0.39	1.49±0.52	0.070
	2nd month	1.37±0.41	1.60±0.61	0.046*
	3rd month	1.41±0.48	1.73±0.72	0.013*
Fagerstrom Addiction score	Baseline	5.90±2.13	5.12±1.98	0.035*
	1st month	0.31±0.98	0.97±2.03	0.120
	2nd month	0.67±1.43	1.55±2.37	0.040*
	3rd month	0.83±1.40	1.98±2.52	0.015*

[a]Mann whitney test; *Significant p-value <0.05; **Highly significant p-value <0.01.

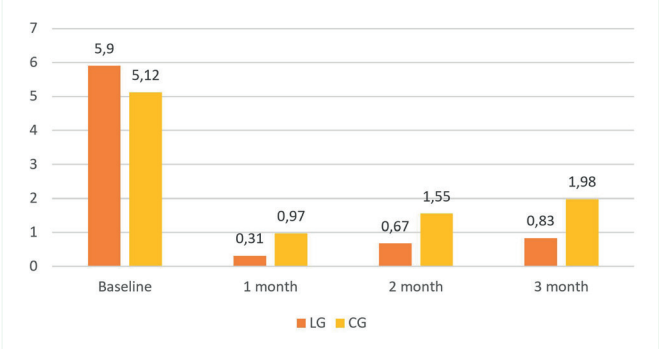

Figure 2. Fagerstrom Addiction scores of LG and CG at baseline, 1st month, 2nd month and 3rd month

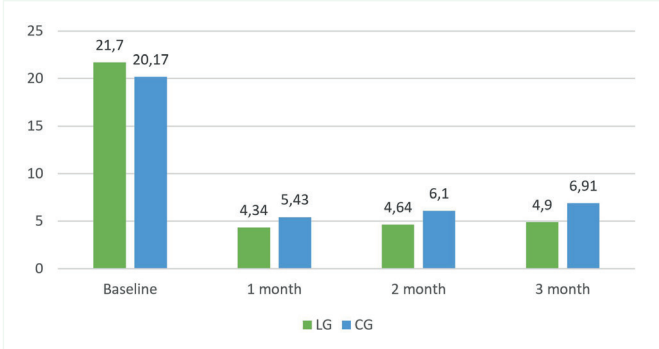

Figure 3. CO breath levels (ppm) of LG and CG at baseline, 1st month, 2nd month and 3rd month

Table 5. Comparison of self–reported smoking status and relapse rate between LG and CG

Smoking status	Timeline	LG n (%)	CG n (%)	p-value[a]
Self-reported abstinence rate	1st month	51 (87.9)	47 (81.0)	0.443
	2nd month	47 (81.0)	40 (69.0)	0.198
	3rd month	42 (72.4)	35 (60.3)	0.238
Relapse rate	1st month	6 (10.3)	11 (19.0)	0.147
	2nd month	11 (19.0)	17 (29.3)	0.139
	3rd month	16 (27.6)	23 (39.7)	0.119

[a]Chi square test; *Significant p-value <0.05.

Table 6. Comparison of self-reported smoking status and relapse rate within LG and CG

Smoking status	Intervention	1st and 2nd month (p-value[a])	1st and 3rd month (p-value[a])	2nd and 3rd month (p-value[a])
Self-reported abstinence rate	Within LG	0.014*	0.01*	0.017*
	Within CG	0.015*	0.043*	0.011*
Relapse rate	Within LG	0.016*	0.011*	0.015*
	Within CG	0.013*	0.05*	0.019*

[a]Chi square test; *Significant p-value <0.05.

Subjective Assessment at 1st vs 2nd vs 3rd-Month Follow-Up

Intergroup comparison

Clinically, self-reported continuous abstinence was higher in the LG compared to the CG, although it lacked statistical significance. Relapse was lower in the LG compared to the CG; however, no statistically significant difference was seen between the two groups (Table 5).

Intragroup comparison

There was a statistically significant difference in self-reported continuous abstinence and relapse during the follow-up (i.e., 1st vs 2nd vs 3rd month) on analysis within the LG and CG, indicating that the intervention was effective in both the groups (Table 6).

Discussion

According to the Global Adult Tobacco Survey conducted in 2016–2017, tobacco is consumed by 28.6% of the total population of India, of which smoking tobacco is consumed by 10.7% of the population (Ministry of Health and Family Welfare, 2017). Hence, there is a pressing demand for efficient tobacco cessation techniques to combat tobacco-related morbidity and mortality.

This study is the first of its kind to assess the use of liquorice root as an intervention agent to assist smoking cessation. There is also a paucity of research studying the efficacy of sugarless chewing gum as a substitute for a smoking form of tobacco. Therefore, the current study aimed to determine the efficacy of liquorice root and sugarless chewing gum as an adjunct to smoking cessation. The difference in recommended frequency between liquorice root (3–5 times/day) and chewing gum (2–3 times/day) was determined by the nature of the products. Liquorice root, being a natural product without standardized dosing guidelines, was advised more frequently to better replicate the hand-to-mouth action and oral gratification associated with smoking. In contrast, chewing gum is an established cessation aid with standard usage recommendations of 2–3 times daily. This rationale guided the frequency difference between the two interventions.

The information provided to participants at baseline can influence cessation outcomes through expectancy effects. In this study, efforts were made to provide neutral instructions, informing both groups that their assigned product may help in managing cravings, without highlighting liquorice as a natural aid or gum as a standard cessation product. This approach was intended to minimize placebo-related bias; however, the possibility of some expectancy effects cannot be completely excluded.

In the present study, we found that there was no significant difference in the continuous abstinence achieved at 3 months between the two intervention groups (p = .238). The effectiveness of interventions was, as expected, most evident during the intervention period and declined during the follow-up. Almost 35% of smokers were able to quit smoking at the end of three months.

The Fagerstrom Test for Nicotine Dependence (FTND) is a self-reported questionnaire that is easy to use and gives immediate feedback with good sensitivity and specificity to assess the nicotine dependence of smokers for clinical treatment and research (Heatherton et al., 1991). There was a statistically significant reduction in Fagerstrom addiction scores from baseline to 3rd month within both cohorts (p = .01*). There was also a statistically significant difference in addiction scores between the groups at 2nd (p = .040*) and

3rd month (p = .015*), which is in line with a study conducted by Kumar et al. (2024).

The proportion of self-reported continuous abstinence was higher in the LG than in CG, although lacking statistical significance (p = .238). Over the three-month follow-up period, relapse was noted among participants in both groups, though at a lower rate in the liquorice group. In self-help tobacco cessation interventions, such as behaviour counselling, self-reported continuous abstinence typically ranges between 10% and 25% (Lancaster et al., 2017). The inclusion of a tobacco substitute, such as sugarless chewing gum and liquorice, resulted in an increase in self-reported continuous abstinence rates ranging from 35% to 51%. However, it is important to acknowledge that reliance on self-reported smoking cessation may introduce a bias towards overestimation due to social desirability tendencies. Consequently, the utilization of objective measures is imperative to verify smoking abstinence accurately.

Scientific evidence shows that cotinine, the metabolite of nicotine, persists longer in the body with a half-life in plasma of approximately 16 hours and a half-life in urine of 15–40 hours (Thrul et al., 2018). However, cotinine tests through blood sample collection are invasive, and urine collection is uncomfortable; both necessitate transportation and storage until analysis. Thus, a simple, non-invasive, and scientifically valid exhaled CO measurement with a CO breath analyzer was preferred in the current study. Cunnington and Hormbrey (2002), Deveci et al. (2004), and Shie et al. (2017) found a significant positive correlation between CO levels and daily cigarette consumption. Hence, the usage of a breath analyser for the assessment of exhaled CO is justified.

Nevertheless, the possibility of detection bias remains inherent when employing a CO breath analyzer due to the relatively short half-life of CO in breath, spanning 2 to 6 hours (Nikkholgh et al., 2021). This temporal constraint limits the capability to definitively ascertain the cessation status of participants who abstained from smoking within the 2 to 6 hours preceding the assessment. At the third-month follow-up, the mean CO levels in the LG and the CG were 4.90 ± 2.995 ppm and 6.91 ± 4.512 ppm, respectively. Notably, a statistically significant difference in exhaled CO levels between the LG and the CG was observed at both the second month (p = .046*), and the third month (p = .013*), with the LG exhibiting comparatively lower CO levels. Additionally, a statistically significant reduction in exhaled CO levels from baseline to the third month was evident within both groups (p = .01*). Carbon monoxide (CO) levels showed the greatest reduction at the end of month 1, followed by a slight increase at months 2 and 3. This pattern is most plausibly explained by the study design: the active intervention (liquorice root or chewing gum) was provided only during the first month. After the intervention period ended, participants no longer received the oral-substitution aid, and some likely resumed smoking during follow-up, producing a modest rebound in CO.

In the current trial, even though both sugarless chewing gum and liquorice exhibited notable clinical efficacy in aiding tobacco cessation, liquorice demonstrated superior efficacy over sugarless chewing gum as a substitute for a smoking form of tobacco. Specifically, liquorice exhibited notable efficacy in decreasing tobacco dependence, thereby decreasing the CO levels.

The strength of this study lies in its unique approach, being the first to incorporate liquorice root and sugarless chewing gum as adjuvants in tobacco cessation strategies, specifically in the Indian context. Additionally, the study used natural, readily available liquorice root rather than extracts, powders, or liquids, which require laboratory preparation involving technical resources. This study demonstrates that the interventions can be implemented in real-life situations by the lay public. Randomization was done using a computer-generated random sequence, thereby minimizing allocation bias. Participants were regularly monitored to ensure adherence to the recommended use of the interventions. In addition to in-person follow-up visits, frequent reminder phone calls were made during the study period to reinforce compliance and verify that participants were using liquorice root (3–5 times/day as per craving) and chewing gum (2–3 times/day as per craving) as instructed.

The study has a few limitations. Participants were mainly recruited from a tertiary care hospital's tobacco cessation centre, as well as through brochures, cessation camps, and outpatient clinics. This recruitment strategy may limit the generalizability of the findings and could have introduced variability in baseline motivation to quit smoking, which was not directly measured. Since motivation strongly influences cessation outcomes, the absence of such an assessment is a noteworthy methodological limitation. Another limitation is the relatively short follow-up period of three months. As relapse rates tend to rise after six months, the long-term effectiveness of the intervention cannot be fully determined.

In addition, although liquorice roots were administered in standardized 1-gram doses, the active ingredient composition of natural products may vary considerably. As the liquorice samples were not chemically analyzed for content, variability in their pharmacological activity cannot be excluded. Finally, the control group received tobacco cessation counselling, which in itself can positively influence smoking cessation outcomes. Including this level of intervention in the control group may have introduced bias, making intergroup comparisons less precise and potentially underestimating the true effect of the liquorice intervention.

Conclusion

In the current trial, even though both sugarless chewing gum and liquorice exhibited notable clinical efficacy in aiding tobacco cessation, liquorice demonstrated superior efficacy over sugarless chewing gum as a substitute for a smoking form of tobacco. Specifically, liquorice exhibited notable efficacy in decreasing tobacco dependence, thereby decreasing the CO levels.

Therefore, when individuals attempt to quit their tobacco habit, it is suggested that pre-cut liquorice could be chewed for 10 to 20 minutes as an adjuvant to counselling. Liquorice can serve as effective substitute for smoking forms of tobacco, aiding in the cessation efforts.

Recommendations

Further long-term follow-up studies should be done to evaluate the effectiveness of liquorice root as an adjuvant to tobacco cessation counselling.

Since liquorice root is found to be effective in smokers, it could also be used as an intervention for the cessation of tobacco among smokeless tobacco users.

Further research may be warranted to explore the mechanisms by which liquorice root exerts its beneficial effects and to provide insights into ways to enhance smoking cessation interventions.

Author contributions

Conception and design: D.M., L.S., S.G.R.K., S.A.; Data acquisition: D.M.; Data interpretation: D.M.; Drafting of the manuscript: D.M.; Critical revision of the manuscript: D.M., L.S., S.G.R.K., S.A. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Institutional Ethical Review Board (Date: APRIL 26, 2022, Decision/Protocol No: IRB Reference number: 1/IRB/2022). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Carmines, E. L., Lemus, R., & Gaworski, C. L. (2005). Toxicologic evaluation of licorice extract as a cigarette ingredient. *Food and Chemical Toxicology, 43*(7), 1303-1322. **[Crossref]**

Cohen, L. M., Collins, F. L., & Britt, D. M. (1997). The effect of chewing gum on tobacco withdrawal. *Addictive Behaviors, 22*(6), 769-773. **[Crossref]**

Cunnington, A. J., & Hormbrey, P. (2002). Breath analysis to detect recent exposure to carbon monoxide. *Postgraduate Medical Journal, 78*(918), 233-237. **[Crossref]**

Damle, J. M. (2014). Glycyrrhiza glabra (Liquorice) - A potent medicinal herb. *International Journal of Herbal Medicine, 2*(4), 132-136.

Deveci, S. E., Deveci, F., Açik, Y., & Ozan, A. T. (2004). The measurement of exhaled carbon monoxide in healthy smokers and non-smokers. *Respiratory Medicine, 98*(6), 551-556. **[Crossref]**

Heatherton, T. F., Kozlowski, L. T., Frecker, R. C., & Fagerström, K. O. (1991). The fagerström test for nicotine dependence: A revision of the fagerström tolerance questionnaire. *British Journal of Addiction, 86*(9), 1119-1127. **[Crossref]**

Kumar, R., Goel, M. K., & Talukdar, T. (2024). Effect of cognitive behavioral therapy on tobacco usage and dependency among adult male tobacco users in Palam area of Delhi. *Indian Journal of Community Health, 36*(1), 26-32. **[Crossref]**

Lancaster, T., & Stead, L. F. (2017). Individual behavioural counselling for smoking cessation. *Cochrane Database of Systematic Reviews, 3*(3), CD001292. **[Crossref]**

Ministry of Health and Family Welfare. (2017). *Global Adult Tobacco Survey - India - 2016-17 (GATS 2).* https://ntcp.mohfw.gov.in/assets/document/surveys-reports-publications/Global-Adult-Tobacco-Survey-Second-Round-India-2016-2017.pdf

Ministry of Health and Family Welfare. (2018). *Establishment of tobacco cessation centers in dental institutes: Operational guidelines.* https://dciindia.gov.in/Rule_Regulation/FinaloperationalguidelinesTCCindentalcolleges.pdf

Mitra, R., Rai, A., Kumar, A., & Mitra, J. K. (2023). Role of herbal medication in tobacco cessation treatment: A systematic review and meta-analysis. *Addiction & Health, 15*(1), 63-70. **[Crossref]**

Naresh, V., Babu, R. R., Prasad, S., & Singh, N. (2016). Pharmacological and non-pharmacological interventions for smoking cessation. *International Journal of Preventive and Clinical Dental Research, 3*(2), 116-119.

Nikkholgh, A., Soleimani, M., Torkaman-Boutorabi, A., & Valizadeh, B. (2021). Evaluation of smoking status: Comparison of self-reports with exhaled carbon monoxide analysis in university students in the Islamic Republic of Iran. *Eastern Mediterranean Health Journal, 27*(4), 321-326. **[Crossref]**

Pastorino, G., Cornara, L., Soares, S., Rodrigues, F., & Oliveira, M. B. P. P. (2018). Liquorice (Glycyrrhiza glabra): A phytochemical and pharmacological review. *Phytotherapy Research, 32*(12), 2323-2339. **[Crossref]**

Shie, H. G., Pan, S. W., Yu, W. K., Chen, W. C., Ho, L. I., & Ko, H. K. (2017). Levels of exhaled carbon monoxide measured during an intervention program predict 1-year smoking cessation: A retrospective observational cohort study. *NPJ Primary Care Respiratory Medicine, 27*(1), 59. **[Crossref]**

Thrul, J., Meacham, M. C., & Ramo, D. E. (2018). A novel and remote biochemical verification method of smoking abstinence: Predictors of participant compliance. *Tobacco Prevention & Cessation, 4*, 20. **[Crossref]**

U.S. Public Health Service. (2008). *Treating tobacco use and dependence: 2008 update.* Clinical Practice Guideline. https://www.ncbi.nlm.nih.gov/books/NBK63952/

World Health Organization. (2024). *Tobacco.* https://www.who.int/news-room/fact-sheets/detail/tobacco

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.495

The prevalence of cigarette, alcohol, and substance use among Kütahya Health Sciences University students and its influencing factors

Muammer Yılmaz[1], Muhammet Ali Bölükbaş[1], Ömer Faruk Tekin[1], Muhammed Furkan Demir[1], Özgün Soy[1], Çağdaş Sertkaya[1], İnci Arıkan[1]

[1]Department of Public Health, Faculty of Medicine, Kütahya Health Sciences University, Kütahya, Türkiye

Abstract

University students may begin using substances like tobacco, alcohol, and drugs due to individual and environmental factors, such as stress, academic pressures, and increased responsibilities. Given the public health relevance of this issue and the fact that this is the first study of its kind in Kütahya, this study investigates the prevalence of tobacco, alcohol, and substance use among university students and associated factors. The sample size was calculated as 1,008 based on a 95% confidence level, a prevalence rate of 7.8%, and a margin of error of 1.5%. The study was completed with 1,043 participants. Results showed that 23.5% of participants smoked, while 20.9% consumed alcohol. The primary reason for starting smoking was alcohol consumption, and peer influence was the second most common reason for initiating alcohol use. A statistically significant difference was found between genders regarding smoking (p=0.030), with smoking being more common among males. A significant association was also observed between family alcohol consumption and alcohol use (p<0.001), with participants whose families consumed alcohol showing higher alcohol use rates. Although smoking was more prevalent among men (28.3%), it is noteworthy that a substantial proportion of women also smoked (21.8%). The family plays a critical role as a model, influencing individual behavior. Campus activities addressing addiction could strengthen social relationships and contribute to addiction prevention.

Keywords: alcohol consumption, cigarette smoking, drug use, university, students

Main points

- It was found that one in four students smokes cigarettes.
- It was found that one in five students consumes alcohol.
- Peer influence and curiosity are significant factors contributing to the initiation of substances such as tobacco, alcohol, and drugs.
- It was observed that the smoking and alcohol use behaviors of family members influence individuals' use of these products.
- The current study provides information and perspectives on university students' use of cigarettes, alcohol, and other substances, as well as the factors influencing these behaviors.

Introduction

Addiction is defined as a condition in which an individual loses control over engaging in certain behaviors or using specific substances, to the extent that it may cause harm. While addiction is commonly associated with gambling, drugs, alcohol, and cigarettes, it is possible to develop an addiction to almost anything (National Health Service [NHS], 2024).

Cigarettes, alcohol, and substances have significant biological, psychological, and social effects on various parts of the human body (Coşkun et al., 2019). Though these products are often used to alleviate stress and anxiety in daily life, providing a temporary sense of well-being, they may also have detrimental effects on the functioning of organs and systems in the body over time. These effects may include disruptions in academic progress, problems in social relationships, and

Corresponding author: Muammer Yılmaz • **Email:** muammer.yilmaz@ksbu.edu.tr
Received: March 23, 2025 **Accepted:** August 31, 2025 **Published online:** June 22, 2026

Cite as: Yılmaz, M., Bölükbaş, M. A., Tekin, Ö. F., Demir, M. F., Soy, Ö., Sertkaya, Ç., & Arıkan, İ. (2026). The prevalence of cigarette, alcohol, and substance use among Kütahya Health Sciences University students and its influencing factors. *Addicta: The Turkish Journal on Addictions*, *13*(2), 158-166. https://doi.org/10.15805/addicta.2026.495

negative impacts on mental health. In later stages of life, the use of tobacco and tobacco products can lead to serious health issues such as lung cancer, emphysema, chronic bronchitis, and cardiovascular diseases (Serrano Gotarredona et al., 2022). Substance use may also result in memory issues, behavioral issues, and central nervous system disorders, including psychosis (Testai et al., 2022).

University years are a complex period of social and cognitive transformation, marking the transition into early adulthood. During this time, individuals not only pursue an academic career and prepare for professional life but also begin to establish new social relationships. It is a period in which individuals assume greater responsibility, become more independent of their families, gain numerous experiences, and interact with others in society (Özlük & Karaaslan, 2017). This period is also influenced by various factors such as anxiety, stress, social environment, cultural norms, lifestyle, family relationships, and economic capacity, all of which can contribute to the initiation of tobacco, alcohol, and substance use (Buakate et al., 2022; Şahan, 2022).

In Turkey, the rate of daily tobacco and tobacco product use among individuals aged 15-24 in 2022 was reported as 19.3%, whereas in the European Union (EU), the corresponding rate for the same age group was 15%. This indicates that tobacco and tobacco product use among the 15-24 age group is higher in Turkey than in EU countries (T.C. Sağlık Bakanlığı, 2023). When evaluating per capita alcohol consumption among individuals over the age of 15, the EU reports a value of 10.1 liters, whereas Turkey's consumption is 1.6 liters. Despite this lower consumption rate, alcohol use is increasing among the young university-age population. According to the World Health Organization's (WHO) 2024 Global Status Report on Alcohol and Health and the Treatment of Substance Use Disorders, younger individuals have been disproportionately affected by alcohol consumption. Furthermore, alcohol-related deaths represented the highest proportion (13.0%) of all deaths among individuals aged 20-39 in 2019 (T.C. Sağlık Bakanlığı, 2023; World Health Organization, 2024a).

Local studies on tobacco and alcohol use among university students in Turkey indicate high levels of smoking and alcohol consumption (Canbulat Şahiner et al., 2020; Kılıç et al., 2020). The prevalence of smoking among students at a health sciences faculty at a university in Turkey was reported as 27.3% (Canbulat Şahiner et al., 2020), while a study examining alcohol use among university students in Turkey reported that 47.4% of students consume alcohol (Kılıç et al., 2020).

The use of products such as cigarettes, alcohol, and substances represents a significant public health issue due to their high prevalence and the serious health problems they cause. University students, who form a significant portion of society, are also affected by these products. Thus, examining the factors related to the frequency of cigarette, alcohol, and substance use among university students can provide valuable insights in the fight against addiction. This study will be the first of its kind in Kütahya, as there is no prior research investigating the use of cigarettes, alcohol, and substances among university students in the city. The aim of this study is to explore the frequency of smoking, alcohol use, and substance use, as well as the related factors, among students at Kütahya Health Sciences University.

Methods

This descriptive cross-sectional study was conducted between April 1 and April 30, 2024. The study population consisted of a total of 5,650 students from Kütahya Health Sciences University, including 893 students from the Faculty of Medicine, 461 students from the Faculty of Dentistry, 2,121 students from the Faculty of Health Sciences, 316 students from the Faculty of Natural Sciences, 173 students from Kütahya Vocational School, 669 students from Gediz Vocational School of Health Services, 631 students from Simav Vocational School of Health Services, and 385 students from Tavşanlı Vocational School of Health Services.

The sample size was determined to be 1,008 based on a calculation with a confidence level of 95%, a prevalence rate of 7.8%, and a margin of error of 1.5%. The prevalence rate was selected as 7.8% because it represents the lowest prevalence for substance addiction (Demirci & Eker, 2017). Considering a non-response rate of 15%, the sample size was adjusted to 1,188. Stratified sampling was applied by faculty and vocational school, with the number of participants determined based on the weight of each stratum. The allocation was as follows: 15.8% of students from the Faculty of Medicine were selected, resulting in 200 participants; 8% of the Faculty of Dentistry students were selected, resulting in 101 participants; 37.5% of the Faculty of Health Sciences students were selected, resulting in 473 participants; 5.6% of the Faculty of Natural Sciences students were selected, resulting in 71 participants; 3% of Kütahya Vocational School students were selected, resulting in 40 participants; 22.6% of Gediz Vocational School of Health Services students were selected, resulting in 151 participants; 11.2% of Simav Vocational School of Health Services students were selected, resulting in 141 participants, and 6.8% of Tavşanlı Vocational School of Health Services students were selected, resulting in 86 participants. Participants were selected through systematic random sampling using class lists. The inclusion criteria for the study were being an associate or bachelor's degree student at Kütahya Health Sciences University and volunteering to participate.

Data Collection Tool

Data were collected using a questionnaire developed by the researchers based on existing literature, which included questions regarding sociodemographic characteristics, smoking, alcohol use, and substance use, including amount, duration, and frequency (Bilecen et al., 2021; Canbulat Şahiner et al., 2020; Kılıç et al., 2020). The survey form consisted of 26 questions grouped into four sections. The first section included seven questions assessing the demographic characteristics of the participants. The second section included six questions related to smoking status.

The third section contained six questions regarding alcohol use, and the fourth section included six questions related to substance use. Additionally, the questionnaire included 16 questions assessing participants' knowledge about alcohol consumption and its effects on health, as well as a control question to evaluate the reliability of responses. Use of cigarettes, alcohol, or substances—regardless of frequency, amount, or duration— was classified as use of the respective substance. Students' relationships with their families were classified as "good," "medium," or "bad" based on participants' subjective assessments. Academic success was classified as "good," "medium," or "bad" based on participants' subjective assessments (Bilecen et al., 2021).

Consent was obtained from all participants before administering the survey. Data collection was conducted both online and in person. The study was carried out with 1,066 participants who agreed to participate. Twenty-three individuals who provided incorrect responses to the control question were excluded from the study, resulting in a final sample of 1,043 participants.

The study's purpose was explained to the participants prior to data collection. They were informed that their participation was entirely voluntary and that they could withdraw from the study at any time. Both written and verbal consent were obtained. Face-to-face data collection took place in classrooms during 45-minute sessions on days permitted by school administrations, and during students' free hours. Any unclear questions were explained by the researcher.

Data Analysis

Data were analyzed using the IBM SPSS version 25.0 (IBM Corp., Armonk, NY, USA) package program. Descriptive statistics were used, with continuous data expressed as means, medians, standard deviations, and minimum and maximum values, while categorical variables were presented as frequencies and percentages. The Mann-Whitney U test and the Kruskal-Wallis test were used to compare continuous variables, while the chi-square test was employed to compare categorical variables. The Monte Carlo correction was applied to adjust for multiple categorical variables. A p-value of <0.05 was considered statistically significant.

Ethics Committee

The study was conducted in accordance with the principles of the Declaration of Helsinki. Prior to the initiation of the research, approval was obtained from the Kütahya Health Sciences University Non-Interventional Clinical Research Ethics Committee (2024/04-33), institutional permission was obtained from the Kütahya Health Sciences University Rectorate, and informed consent was obtained from the participants.

Table 1. Sociodemographic characteristics of participants

	Number (n)	Percent (%)
Faculty/Vocational School (n=1043)		
Faculty of Medicine	187	17.9
Faculty of Dentistry	116	11.1
Faculty of Health Sciences	231	22.1
Faculty of Natural Sciences	45	4.3
Kütahya Vocational School	28	2.7
Gediz Vocational School of Health Services	151	14.5
Simav Vocational School of Health Services	138	13.2
Tavşanlı Vocational School of Health Services	82	7.9
Unspecified	65	6.2
Gender (n=1041)		
Male	265	25.5
Female	776	74.5
Mother's education status (n=1043)		
Illiterate and Primary Education	649	62.2
High School	227	21.8
University and above	167	16.0
Father's education status (n=1043)		
Illiterate and Primary Education	440	42.2
High School	322	30.9
University and above	281	26.9
Family İncome Level (n=1041)		
Income is Less Than Expenses	127	12.2
Income Equals Expense	680	65.3
Income is More Than Expense	234	22.5
Family Relationship (n=1043)		
Good	763	73.2
Medium	268	25.7
Bad	12	1.2
Educational Success (n=1043)		
Good	361	34.6
Medium	630	60.4
Bad	52	5.0
	Mean ± SD	Median (Min-Max)
Age (n=1024)	20.94 ± 2.17	21 (18-43)

SD: Standard Deviation, Min: Minimum, Max: Maximum.

Results

In this study, 1,043 students participated. The distribution of participating students according to some characteristics is shown in Table 1.

Among participants, 23.5% (n = 245) reported smoking. Participants' smoking status and smoking characteristics are shown in Table 2.

Among participants, 20.9% (n = 218) reported consuming alcohol. In Table 3, the participants' alcohol use status and alcohol use characteristics are shown.

Table 2. Smoking status and smoking characteristics of participants

	Number (n)	Percent (%)
Smoking status (n=1043)		
Yes	245	23.5
No	798	76.5
Number of cigarettes per day (n=244)		
1-5 cigarettes	75	30.7
6-10 cigarettes	69	28.3
11-20 cigarettes	75	30.7
More than 20 cigarettes	25	10.2
Reasons for starting to smoke (n=244)		
Influence from friends	100	41.0
Curiosity	49	20.1
Influence from family	7	2.8
Other	88	36.1
Attempts to quit smoking (n = 244)		
Yes	148	60.7
No	96	39.3
Smoking in the family (n=983)		
Yes	600	61.0
No	383	39.0
	Mean ± SD	Median (Min-Max)
Duration of smoking (n=233)	3.88 ± 2.50	3 (1-13)

SD: Standard Deviation, Min: Minimum, Max: Maximum.

Table 3. Alcohol use status and alcohol use characteristics of participants

	Number (n)	Percent (%)
Alcohol use (n=1043)		
Yes	218	20.9
No	825	79.1
Frequency of alcohol use (n=218)		
Every day	2	0.9
1-2 times a week	15	6.9
1-2 times a month	107	49.1
1-2 times a year	68	31.2
Rarely	26	11.9
Reasons for starting to drink alcohol (n=217)		
Influence from friends	41	18.9
Curiosity	98	45.2
Influence from family	13	5.9
Other	65	30.0
Trying to quit drinking alcohol (n=214)		
Yes	28	13.1
No	186	86.9
Alcohol use among family members (n=1024)		
Yes	181	17.7
No	843	82.3
	Mean ± SD	Median (Min- Max)
Duration of alcohol use (n=197)	3.76 ± 2.14	4 (1-10)

SD: Standard Deviation, Min: Minimum, Max: Maximum.

In this study, 0.6% of participants (n = 6) reported substance use. One substance user reported using substances 1-2 times per month, one reported using substances 1-2 times per year, and four reported using substances less frequently. They attributed their initiation of substance use to curiosity (n = 3), peer influence, and other reasons (n = 1). Furthermore, one student among the substance users reported a previous attempt to quit substance use. The mean duration of substance use among the substance users was calculated as 2.00 ± 0.00 years.

According to our study results, the highest alcohol consumption was found in the Faculty of Medicine, and the highest smoking rate was found in Tavşanlı Vocational School of Health Services. Among the participants, smoking and alcohol consumption were found to be higher among men than among women. Table 4 shows a comparison of participants' cigarette and alcohol use status across various sociodemographic characteristics.

Statistically significant differences were found between department, gender, mother's education level, and number of cigarettes smoked per day. No significant differences were found between number of cigarettes smoked per day and father's education level, household income level, family relationships, academic success, family smoking, or age. A significant association was found between alcohol use among family members and the frequency of alcohol use (p=0.015), with individuals having a family history of alcohol use reporting a higher frequency of alcohol consumption (once a month or more). No significant differences were found between the frequency of alcohol use and department, gender, mother's education level, father's education level, household income level, family relationship, academic success, or age (Table 5).

Discussion

Tobacco, alcohol, and substance use constitute a significant public health concern, with numerous biological, social, and psychological implications. These effects are particularly pronounced when use begins during university years or earlier, influencing subsequent stages of life. This study investigates the prevalence of cigarette, alcohol, and substance use among students at Kütahya Health Sciences University, as well as the factors associated with their use.

The findings indicate that the prevalence of smoking among students at Kütahya Health Sciences University is 23.5%. A study conducted among medical students in a region of India reported a smoking prevalence of 27.1% (Patel et al., 2016). Similarly, research conducted across six faculties of a university in Turkey found that 30.7% of students were smokers (Bilecen et al., 2021). These findings are comparable to the smoking prevalence observed in our study, suggesting that approximately one in four university students engages in smoking.

Table 4. Comparison of participants' smoking and alcohol use status with various sociodemographic characteristics

	Smoking		X^2 (p)	Alcohol use		X^2 (p)
	Yes	No		Yes	No	
	Number (%)	Number (%)		Number (%)	Number (%)	
Faculty/Vocational School (n=978)						
Faculty of Medicine	42 (22.5)	145 (77.5)	15.587 (0.049)	60 (32.1)	127 (67.9)	44.601 (<0.001)
Faculty of Dentistry	20 (17.2)	96 (82.8)		27 (23.3)	89 (76.7)	
Faculty of Health Sciences	53 (22.9)	178 (77.1)		45 (19.5)	186 (80.5)	
Faculty of Natural Sciences	10 (22.2)	35 (77.8)		12 (26.7)	33 (73.3)	
Kütahya Vocational School	7 (25.0)	21 (75.0)		4 (14.3)	24 (85.7)	
Gediz Vocational School of Health Services	36 (23.8)	115 (76.2)		12 (7.9)	139 (92.1)	
Simav Vocational School of Health Services	27 (19.6)	111 (80.4)		16 (11.6)	122 (88.4)	
Tavşanlı Vocational School of Health Services	32 (39.0)	50 (61.0)		22 (26.8)	60 (73.2)	
Unspecified	18 (27.7)	47 (%72.3)		20 (30.8)	45 (69.2)	
Gender (n=1041)						
Male	75 (28.3)	190 (71.7)	4.685 (0.030)	71 (26.8)	194 (73.2)	7.351 (0.007)
Female	169 (21.8)	607 (78.2)		147 (18.9)	629 (81.1)	
Mother's education status (n=1043)						
Illiterate and primary education	146 (22.5)	503 (77.5)	1.167 (0.558)	96 (14.8)	553 (85.2)	39.942 (<0.001)
High school	59 (26.0)	168 (74.0)		66 (29.1)	161 (70.9)	
University and above	40 (24.0)	127 (76.0)		56 (33.5)	111 (66.5)	
Father's education status (n=1043)						
Illiterate and primary education	93 (21.1)	347 (78.9)	2.371 (0.306)	65 (14.8)	375 (85.2)	20.342 (<0.001)
High school	82 (25.5)	240 (74.5)		73 (22.7)	249 (77.3)	
University and above	70 (24.9)	211 (75.1)		80 (28.5)	201 (71.5)	
Household income level (n=1041)						
Income is less than expenses	44 (34.6)	83 (65.4)	10.854 (0.004)	22 (17.3)	105 (82.7)	2.831 (0.243)
Income equals expense	144 (21.2)	536 (78.8)		138 (20.3)	542 (79.7)	
Income is more than expense	55 (23.5)	179 (76.5)		57 (24.4)	177 (75.6)	
Family relationship (n=1043)						
Good	155 (20.3)	608 (79.7)	16.578 (<0.001)	141 (18.5)	622 (81.5)	10.339 (0.006)
Medium	85 (31.7)	183 (68.3)		73 (27.2)	195 (72.8)	
Bad	5 (41.7)	7 (58.3)		4 (33.3)	8 (66.7)	
Educational success (n=1043)						
Good	61 (16.9)	300 (83.1)	18.979 (<0.001)	56 (15.5)	305 (84.5)	15.263 (<0.001)
Medium	163 (25.9)	467 (74.1)		143 (22.7)	487 (77.3)	
Bad	21 (40.4)	31 (59.6)		19 (36.5)	33 (63.5)	
Smoking in the family (n=983)						
Yes	180 (30.0)	420 (70.0)	22.126 (<0.001)	133 (22.2)	467 (77.8)	0.936 (0.333)
No	64 (16.7)	319 (83.3)		75 (19.6)	308 (80.4)	
Alcohol use (n=1043)						
Yes	120 (55.0)	98 (45.0)	152.703 (<0.001)			
No	125 (15.2)	700 (84.8)				
Alcohol use among family members (n=1024)						
Yes				104 (57.5)	77 (42.5)	171.650
No				114 (13.5)	729 (86.5)	(<0.001)
Substance Use (n=1038)						
Yes	6 (100.0)	0 (0.0)		6 (100.0)	0 (0.0)	
No	236 (22.9)	796 (77.1)	(<0.001)	212 (20.5)	820 (79.5)	(<0.001)
	Mean ± SD / Median (Min-Max)	Mean ± SD / Median (Min-Max)	Z (p)	Mean ± SD / Median (Min-Max)	Mean ± SD / Median (Min-Max)	Z (p)
Age (n=1024)	21.20 ± 2.04 / 21 (18-32)	20.86 ± 2.20 / 21 (18-43)	-2.962 (0.003)	21.26 ± 1.91 / 21 (18-29)	20.85 ± 2.22 / 21 (18-43)	-3.719 (<0.001)

SD: Standard Deviation, Min: Minimum, Max: Maximum, X^2: Chi-Squared Test, Z: Mann Whitney U Test.

Table 5. Comparison of the number of cigarettes smoked by smokers and the frequency of alcohol consumption by alcohol users with sociodemographic characteristics

	Number of Cigarettes Smoked Daily				X^2 (P)	Frequency of Alcohol Use				X^2 (p)
	Numbers 10 and below		Numbers 11 and above			1 or More Per Month		Once a Year or Less		
	Number (%)		Number (%)			Number (%)		Number (%)		
Faculty/Vocational School (n=226)										
Faculty of Medicine	18 (42.9)		24 (57.1)		16.274 (0.039)	37 (61.7)		23 (38.3)		(0.469)
Faculty of Dentistry	12 (63.2)		7 (36.8)			12 (44.4)		15 (55.6)		
Faculty of Health Sciences	38 (71.7)		15 (28.3)			26 (57.8)		19 (42.2)		
Faculty of Natural Sciences	4 (40.0)		6 (60.0)			10 (83.3)		2 (16.7)		
Kütahya Vocational School	7 (100.0)		0 (0.0)			2 (50.0)		2 (50.0)		
Gediz Vocational School of Health Services	19 (52.8)		17 (47.2)			5 (41.7)		7 (58.3)		
Simav Vocational School of Health Services	18 (66.7)		9 (33.3)			10 (62.5)		6 (37.5)		
Tavşanlı Vocational School of Health Services	17 (53.1)		15 (46.9)			12 (54.5)		10 (45.5)		
Unspecified	11(61.1)		7 (38.9)			10 (50.0)		10 (50.0)		
Gender (n=243)										
Male	32 (43.2)		42 (56.8)		10.699 (<0.001)	44 (62.0)		27 (38.0)		1.113 (0.291)
Female	111 (65.7)		58 (34.3)			80 (54.4)		67 (45.6)		
Mother's education status (n=244)										
Illiterate and primary education	97 (66.4)		49 (33.6)		10.695 (0.005)	49 (51.0)		47 (49.0)		2.658 (0.265)
High School	32 (54.2)		27 (45.8)			42 (63.6)		24 (36.4)		
University and above	15 (38.5)		24 (61.5)			33 (58.9)		23 (41.1)		
Father's education status (n=244)										
Illiterate and primary education	59 (63.4)		34 (36.6)		2.844 (0.241)	36 (55.4)		29 (44.6)		0.085 (0.959)
High School	50 (61.0)		32 (39.0)			42 (57.5)		31 (42.5)		
University and above	35 (50.7)		34 (49.3)			46 (57.5)		34 (42.5)		
Household income level (n=242)										
Income is less than expenses	32 (72.7)		12 (27.3)		4.973 (0.083)	13 (59.1)		9 (40.9)		0.282 (0.868)
Income equals expense	83 (58.0)		60 (42.0)			77 (55.8)		61 (44.2)		
Income is more than ex-pense	28 (50.9)		27 (49.1)			34 (59.6)		23 (40.4)		
Family Relationship (n=244)										
Good	91 (59.1)		63 (40.9)		0.862 (0.720)	82 (52.2)		59 (41.8)		(0.879)
Medium	51 (60.0)		34 (40.0)			40 (54.8)		33 (45.2)		
Bad	2 (40.0)		3 (60.0)			2 (50.0)		2 (50.0)		
Educational Success (n=244)										
Good	42 (68.9)		19 (31.1)		3.900 (0.142)	28 (50.0)		28 (50.0)		1.577 (0.456)
Medium	92 (56.8)		70 (43.2)			84 (58.7)		59 (41.3)		
Bad	10 (47.6)		11 (52.4)			12 (63.2)		7 (36.8)		
Smoking in the family (n=243)										
Yes	105 (58.3)		75 (41.7)		0.247 (0.620)					
No	39 (61.9)		24 (38.1)							
Alcohol use among family members (n=218)										
Yes						68 (65.4)		36 (34.6)		5.864 (0.015)
No						56 (49.1)		58 (50.9)		
	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)	Z (p)	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)	Z (p)
Age (n=1024)	21.06 ± 1.82	21 (18-30)	21.37 ± 2.29	21 (18-32)	- 0.896 (0.370)	21.31± 1.95	21 (18-26)	21.18 ± 1.86	21 (18-29)	- 0.286 (0.775)

SD: Standard Deviation, Min: Minimum, Max: Maximum, X^2: Chi-Squared Test, Z: Mann Whitney U Test.

In our study, smoking prevalence was found to be significantly higher among male participants. Similarly, a study conducted in Istanbul on the smoking status of university students reported a significantly higher prevalence of smoking among men, which aligns with our findings (Oğuz et al., 2018). According to data from the World Health Organization (WHO), the global prevalence of smoking among males aged 15 and older in 2020 was 35.5%, whereas it was 7.9% among females (World Health Organization, 2024b). These findings indicate that smoking is more prevalent among men than women, supporting the results of our study. However, despite the higher smoking prevalence among men, smoking remains common among women, likely due to the widespread accessibility and availability of tobacco products.

Additionally, our study found that smoking was more prevalent among participants with a family history of smoking. This finding is consistent with previous research, including a study on smoking behavior among students at a foundation university (Doğan et al., 2022), a study examining the factors influencing smoking status and the impact of the tobacco control action plan in a university hospital (Yakar et al., 2020), and a study on tobacco use among medical students in Nepal (Adhikari et al., 2024). The influence of family members on an individual's smoking behavior may stem from parents or other relatives who serve as role models for smoking initiation and maintenance.

In our study, peer influence was identified as the most common reason for initiating smoking, with 41.0% of participants citing it as a determining factor. Similarly, a study conducted among medical students on attitudes and behaviors related to tobacco use reported that 47.9% of participants started smoking due to peer influence (Turan et al., 2022), which is consistent with our findings. The social circle plays a crucial role in smoking initiation, as individuals who spend time with friends who smoke may be more likely to adopt this behavior. Additionally, shared activities and prolonged exposure to smoking environments may contribute to both the initiation and an increase in cigarette consumption (Kuzu & Asqarova, 2024).

Furthermore, our study found that cigarette use was significantly higher among participants who also consumed alcohol and other substances. This finding aligns with the study conducted by Delgado-Lobete et al., which examined individual and environmental factors related to cigarette, alcohol, and illicit substance use among university students, concluding that smoking prevalence was significantly higher among alcohol and substance users (Delgado-Lobete et al., 2020). The concurrent use of cigarettes, alcohol, and drugs, rather than their isolated consumption, may not only lead to an increase in overall substance use but also amplify their effects on individuals (Arpacıoğlu & Ünübol, 2020). In our study, the prevalence of alcohol consumption among participants was found to be 20.9%.

A meta-analysis investigating alcohol use and related factors among high school and university students in Ethiopia reported an alcohol consumption rate of 26.19% among students (Amare & Getinet, 2020). Similarly, a study examining alcohol consumption among university students in Australia found a significantly higher prevalence, with 82.0% of students consuming alcohol (Tanudjaja et al., 2021). Compared to university students in the United States, Australia, and European countries, the rate of alcohol consumption in our study is relatively lower. This difference may be attributed to sociocultural variations among societies, as well as differences in policies and regulations regarding alcohol sales and consumption.

In our study, alcohol consumption was found to be significantly higher among male participants. Similarly, a study conducted among university students in a particular province reported that the likelihood of alcohol use among male students was 1.704 times higher than that of female students (Coşkun et al., 2019). However, a study examining alcohol consumption and healthcare utilization patterns among university students in Spain found no significant association between high alcohol consumption and gender. In the same study, a significant difference was observed between alcohol consumption and age, with higher alcohol consumption reported among students aged 17–20 compared to those aged 21–24 and 25 years or older (Romero-Rodríguez et al., 2022). This finding suggests that younger university students may be more susceptible to uninformed or risky alcohol consumption, particularly in the early years of university life.

In our study, while alcohol consumption was not significantly influenced by gender, it was found to be affected by age. This may indicate that although the likelihood of initiating alcohol use differs between male and female students, consumption patterns become similar after initiation, with alcohol use increasing over time in both genders. Additionally, our study found that alcohol consumption was significantly higher among individuals with a family history of alcohol use. This finding is consistent with a study examining the prevalence and risk factors of alcohol consumption among university students in Myanmar, which reported an increased likelihood of alcohol use among those with a family history of alcohol consumption (Htet et al., 2020). These results align with our study, highlighting the influence of familial factors on alcohol use behaviors among university students.

In our study, alcohol consumption was found to be significantly higher among individuals whose mothers and fathers had attained a university degree or higher level of education. Similarly, a study conducted by Güner (2019) on substance use among university students in a particular province reported a significant association between alcohol consumption and parental educational status (Güner, 2019). The study found that alcohol use was more prevalent among individuals whose mothers were high school graduates and fathers were university graduates. This suggests that an increase in parental education levels may influence the family's traditional mindset, potentially leading to a more permissive attitude toward alcohol consumption. Consequently, young individuals may perceive alcohol use as a socially acceptable behavior within their family environment and may develop drinking habits accordingly. Furthermore, in our study, 49.1%

of participants reported consuming alcohol 1–2 times per month. In contrast, a study examining alcohol and cigarette use among women at two universities in the United States found that 50.7% of participants consumed alcohol 2–3 times per week (Angelini et al., 2017). These findings highlight differences in alcohol consumption patterns across different cultural and educational contexts.

Limitations and Directions/Suggestions for Future Research

This study was conducted at Kütahya Health Sciences University and does not represent the entire Kütahya province or the faculties and vocational schools of other universities in the region. Furthermore, the targeted number of participants was not reached due to insufficient volunteers in some faculties and colleges. This is a significant limitation of the study. As the study relied on a survey, the data are subjective and may have been influenced by recall bias.

In our study, it was determined that one-fifth of the students consumed alcohol, while one-fourth were smokers. The proportion of participants who reported substance use was found to be lower than that of smoking and alcohol consumption. When interpreting these findings, it is important to consider the possibility that participants may have underreported their smoking, alcohol, or substance use due to fear of stigmatization.

The most common reason for initiating smoking was peer influence, highlighting the significance of peer and friendship relationships in the social environment. Regarding alcohol use, curiosity was the primary motivating factor, followed by peer influence. Given that peer influence plays a crucial role in university students' initiation of smoking, alcohol, and substance use, it may be beneficial to incorporate addiction-related activities into all student club events aimed at strengthening social relationships. Additionally, conducting research on factors that influence students, particularly in their efforts to cope with alcohol use, both on campus and in their social lives, may be advisable.

Author contributions

Conception: M.Y., Ö.F.T., İ.A.; Design: M.Y., M.A.B., Ö.F.T., M.F.D., Ö.S., Ç.S., İ.A.; Data acquisition: M.Y., M.A.B., M.F.D., Ö.S., Ç.S.; Data analysis: M.Y., M.A.B., M.F.D., Ö.S., Ç.S.; Data interpretation: M.Y., Ö.F.T., İ.A.; Drafting of the manuscript: M.Y., M.A.B., M.F.D., Ö.S., Ç.S.; Critical revision of the manuscript: M.Y., Ö.F.T., İ.A. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Kütahya Health Sciences University Non-Interventional Clinical Research Ethics Committee (Date: March 19, 2024, Decision/Protocol No: 2024/04-33). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study. AI-assisted tools (ChatGPT, OpenAI) were used for minor language editing only.

References

Adhikari, P., Yadav, P. S., Khadka, R., Kafle, S., Rayamajhi, A., Bhurtel, M. R., Adhikari, S., Shrestha, M., Chettri, V., Upreti, M., Gautam, P., Dhungana, S., Dawadi, S., Adhikari, P., & Koirala, A. (2024). Tobacco use and its associated factors among students of medical college at tertiary care center of Eastern Nepal. *PloS One, 19*(7), e0296592. **[Crossref]**

Amare, T., & Getinet, W. (2020). Alcohol use and associated factors among high school, college and university students in Ethiopia, systematic review, and meta-analysis, 2018. *Journal of Mental Health*, *29*(4), 455-463. **[Crossref]**

Angelini, K., Sutherland, M. A., & Fantasia, H. C. (2017). Reported alcohol and tobacco use and screening among college women. *Journal of Obstetric, Gynecologic & Neonatal Nursing, 46*(3), e75-e82. **[Crossref]**

Arpacıoğlu, S., & Ünübol, B. (2020). Koronavirüs salgınında alkol-sigara kullanımındaki değişiklikler ve ilişkili durumların araştırılması. *Kıbrıs Türk Psikiyatri ve Psikoloji Dergisi*, *2*(3), 128-138. https://izlik.org/JA76GM68FL

Bilecen, A. P., Safarov, K., & Duyan, E. (2021). Üniversite öğrencilerinin sigara-alkol kullanim düzeyleri ve aile aidiyeti. *International Journal of Social and Humanities Sciences Research*, *8*(72), 1739-1748. **[Crossref]**

Buakate, P., Thirarattanasunthon, P., & Wongrith, P. (2022). Factors influencing alcohol consumption among university students in Southern Thailand. *Roczniki Państwowego Zakładu Higieny*, *73*(4), 435-443. **[Crossref]**

Canbulat Şahiner, N., Şahin, A., & Aypar Akbağ, N. N. (2020). Üniversite öğrencilerinin sigara içme durumları ve sigara bağımlılığına yönelik tutumları. *Bandırma Onyedi Eylül Üniversitesi Sağlık Bilimleri ve Araştırmaları Dergisi, 2*(2), 64-79. **[Crossref]**

Coşkun, F., Özçırpıcı, B., & Özgür, S. (2019). Gaziantep Üniversitesi Merkez Kampüsü'ndeki lisans öğrencilerinde alkol ve madde kullanma durumu. *Ortadoğu Tıp Dergisi*, *11*(2), 143-147. **[Crossref]**

Delgado-Lobete, L., Montes-Montes, R., Vila-Paz, A., Cruz-Valiño, J. M., Gándara-Gafo, B., Talavera-Valverde, M. Á., & Santos-Del-riego, S. (2020). Individual and environmental factors associated with tobacco smoking, alcohol abuse and illegal drug consumption in university students: A mediating analysis. *International Journal of Environmental Research and Public Health, 17*(9), 3019. **[Crossref]**

Demirci, M., & Eker, E. (2017). Üniversite öğrencilerinin madde bağımlılığı sıklığı ve madde kullanım özellikleri. *Anadolu Bil Meslek Yüksekokulu Dergisi*, *12*(48), 63-84. https://izlik.org/JA69HU35AD

Doğan, M. B., Kotan, H., & Akbulut, S. (2022). Bir vakıf üniversitesindeki öğrencilerin sigara kullanımı, nikotin bağımlılık düzeyi ve ilişkili faktörlerin incelenmesi. *Fenerbahçe University Journal of Health Sciences*, *2*(2), 455-469. **[Crossref]**

Güner, B. (2019). Üniversite öğrencilerinde uyuşturucu madde kullanım alışkanlıkları ve yaygınlığı: Aydın Adnan Menderes Üniversitesi örneği. *Adnan Menderes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 6*(2), 81-95. https://izlik.org/JA99FK42JN

Htet, H., Saw, Y. M., Saw, T. N., Htun, N. M. M., Mon, K. L., Cho, S. M., Thike, T., Khine, A. T., Kariya, T., Yamamoto, E., & Hamajima, N. (2020). Prevalence of alcohol consumption and its risk factors among university students: A cross-sectional study across six universities in Myanmar. *PLOS ONE*, *15*(2), e0229329. **[Crossref]**

Kılıç, O., Akbay, C., & Başer, U. (2020). Alcohol consumption among university students: The case of Ondokuz Mayıs University. *Anadolu Tarım Bilimleri Dergisi, 35*(2), 232-237. **[Crossref]**

Kuzu, S. Y., & Asqarova, S. (2024). Sigara içen gençlerin psikososyal faktörleri ve ergoterapi perspektifinden bakış. *Pearson Journal of Social Sciences & Humanities, 8*(28), 1477-1489. **[Crossref]**

National Health Service. (2024). *Addiction: What is it?*. https://www.nhs.uk/live-well/addiction-support/addiction-what-is-it/

Oğuz, S., Çamcı, G., & Kazan, M. (2018). Üniversite öğrencilerinin sigara kullanım sıklığı ve sigaranın neden olduğu hastalıkları bilme durumu. *Van Medical Journal*, *25*(3), 332-337. **[Crossref]**

Özlük, B., & Karaaslan, A. (2017). Sağlik bilimleri fakültesi birinci sinif öğrencilerinin üniversite yaşamina uyumunda akran desteğinin etkisi. *International Journal of Education Sciences*, (10), 209-222. **[Crossref]**

Patel, J., Angolkar, M., Murthy, S., & Mallapur, M. D. (2016). Prevalence of tobacco consumption and its contributing factors among students of a private medical college in Belgaum: A cross sectional study. *Ethiopian Journal of Health Sciences*, *26*(3), 209-216. **[Crossref]**

Romero-Rodríguez, E., Amezcua-Prieto, C., Suárez-Varela, M. M., Ayán-Pérez, C., Mateos-Campos, R., Martín-Sánchez, V., Ortíz-Moncada, R., Redondo-Martín, S., Ojeda, J. A., Delgado-Rodríguez, M., Abellán, G. B., Alonso-Molero, J., Cancela-Carral, J. M., Juan, L. F. V., & Fernández-Villa, T. (2022). Patterns of alcohol consumption and use of health services in Spanish University students: UniHcos Project. *International Journal of Environmental Research and Public Health, 19*(10), 6158. **[Crossref]**

Serrano Gotarredona, M. P., Navarro Herrero, S., Gómez Izquierdo, L., & Rodríguez Portal, J. A. (2022). Smoking-related interstitial lung disease. *Radiología (English Edition), 64*, 277-289. **[Crossref]**

Şahan, B. (2022). Genç yetişkinlik dönemi bireylerin kriz yaşantıları ve destek kaynakları. *Turkish Studies-Educational Sciences*, *17*(6), 1553-1577. **[Crossref]**

T.C. Sağlık Bakanlığı. (2023). *Sağlık istatistikleri yıllığı 2022*. https://www.saglik.gov.tr/TR-103184/saglik-istatistikleri-yilligi-2022-yayinlanmistir.html

Tanudjaja, S. A., Chih, H. J., Burns, S., Crawford, G., Hallett, J., & Jancey, J. (2021). Alcohol consumption and associated harms among university students in Australia: Findings from a cross-sectional study. *Health Promotion Journal of Australia: Official Journal of Australian Association of Health Promotion Professionals*, *32*(2), 258-263. **[Crossref]**

Testai, F. D., Gorelick, P. B., Aparicio, H. J., Filbey, F. M., Gonzalez, R., Gottesman, R. F., Melis, M., Piano, M. R., Rubino, Tiziana., & Song, S. Y. (2022). Use of marijuana: Effect on brain health: A scientific statement from the American Heart Association. *Stroke*, *53*(4), 176-187. **[Crossref]**

Turan, R., Çolak, R. Z., Oruç, M. E., Batak, B. S., Dalkılıç, S., Cangür, Ş., & Gülhan, P. Y. (2022). Düzce Tıp Fakültesi öğrencilerinin tütün kullanımına yönelik tutum ve davranışları. *Sağlık Bilimlerinde Değer*, *12*(2), 239-245. **[Crossref]**

World Health Organization. (2024a). *Global status report on alcohol and health and treatment of substance use disorders*. https://www.who.int/publications/i/item/9789240096745

World Health Organization. (2024b). *WHO global report on trends in prevalence of tobacco use: 2000-2030*. https://www.who.int/publications/i/item/9789240088283

Yakar, B., Pirincci, E., & Kurt Canpolat, E. (2020). Sigara içme durumuna etki eden faktörler ve tütün kontrol eylem planının sigara kullanım üzerine etkisinin araştırılması. *Fırat Üniversitesi Sağlık Bilimleri Tıp Dergisi*, *34*(2), 147-153. https://tip.fusabil.org/pdf/pdf_FUSABIL_1450.pdf

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.496

Attitudes of healthcare professionals toward individuals with alcohol and substance use disorders: A comparative study

Samet Can Demirci[1,3], Burak Erman Menkü[2,3], Utkan Boran Aşık[2,3], Naz Aksoy[3], Zeynep Sıla Öztürk[3], Zehra Arıkan[2,3]

[1]Department of Child and Adolescent Psychiatry, Faculty of Medicine, Lokman Hekim University, Ankara, Türkiye
[2]Department of Psychiatry, Faculty of Medicine, Lokman Hekim University, Ankara, Türkiye
[3]Özgür Köy Treatment and Rehabilitation Center, Faculty of Medicine, Lokman Hekim University, Ankara, Türkiye

Abstract

Stigmatizing attitudes held by healthcare professionals toward individuals with alcohol and substance use disorders (ASUD) can hinder access to care and negatively affect treatment outcomes. Clinical experience may play a key role in shaping these attitudes.

This cross-sectional study included 230 healthcare professionals, 96 of whom had experience in addiction treatment centers and 134 who worked in general medical settings. Participants completed three validated instruments: the Alcohol Use Disorder Stigma Scale, the Substance Use Disorder Stigma Scale, and the Attitudes Toward Individuals Using Addictive Substances Scale. Independent samples t-tests were conducted to assess group differences.

Professionals with addiction treatment experience exhibited significantly lower levels of stigma and negative attitudes. Alcohol-related stigma scores were 52.40 (SD = 17.71) for experienced professionals and 74.21 (SD = 19.06) for those without experience ($t(228) = -8.81$, $p < .001$). For substance-related stigma, the scores were 74.33 (SD = 24.25) vs. 97.05 (SD = 18.76) ($t(228) = -8.01$, $p < .001$). Negative attitude scores toward addictive substance users were also lower in the experienced group: 77.38 (SD = 20.42) vs. 97.05 (SD = 21.06) ($t(228) = -7.07$, $p < .001$).

Direct clinical experience with individuals affected by ASUD is associated with reduced stigma among healthcare professionals. Integrating supervised clinical exposure into healthcare education may be an effective strategy to reduce stigma and improve the quality of addiction care.

Keywords: stigma, substance use disorder, alcohol use disorder, healthcare professionals

Main points

- Healthcare professionals employed in addiction treatment centers demonstrate significantly lower levels of stigma toward individuals with ASUD compared to their counterparts in general healthcare settings.
- Direct clinical exposure to individuals with addiction appears to be a key factor in reducing stigmatizing attitudes and may contribute to the development of more compassionate and informed perspectives among healthcare professionals.
- Integrating mandatory clinical rotations in addiction treatment centers into medical and nursing education programs may serve as a practical and effective strategy to reduce stigma and improve the quality of care for individuals with ASUD.
- Educational interventions, particularly those involving structured interactions with individuals experiencing addiction, hold promise in fostering empathy and reshaping negative attitudes among healthcare providers.

Corresponding author: Samet Can Demirci • **Email:** sametcandemirci@gmail.com
Received: May 26, 2025 **Accepted:** March 10, 2026 **Published online:** June 22, 2026

Cite as: Demirci, S. C., Menkü, B. E., Aşık, U. B., Aksoy, N., Öztürk, Z. S., & Arıkan, Z. (2026). Attitudes of healthcare professionals toward individuals with alcohol and substance use disorders: A comparative study. *Addicta: The Turkish Journal on Addictions*, *13*(2), 167-174. https://doi.org/10.15805/addicta.2026.496

Introduction

The attitudes of healthcare professionals toward individuals with substance use disorders (SUD) play a pivotal role in shaping treatment outcomes and determining access to healthcare services. Nonetheless, the treatment of individuals with SUD is frequently perceived by healthcare providers as complex, burdensome, and emotionally taxing (Ball et al., 2006; Eaton, 2004; Neale et al., 2008). Stigmatization—manifested through labeling, discrimination, status loss, and social exclusion—significantly impedes individuals' access to healthcare, social support, and stable living conditions (Link & Phelan, 2001). Empirical studies have demonstrated that stigmatization associated with SUD is more widespread and intense than stigmatization associated with other mental health conditions (Barry et al., 2014). Such stigmatization fosters feelings of shame and inadequacy, which may intensify substance use among affected individuals (Luoma et al., 2014; Rahim & Patton, 2015; Rivera et al., 2014).

Negative perceptions held by healthcare professionals may hinder comprehensive understanding of patients' needs and diminish their engagement in treatment. Moreover, such attitudes often promote a reductionist perspective—one that narrowly defines individuals by their addiction while overlooking co-occurring physical and mental health conditions. This absence of a holistic, patient-centered approach complicates the treatment process for both patients and providers (Palmer et al., 2009; Thornicroft et al., 2007).

Among individuals with addiction syndromes, those with alcohol use disorder (AUD) are particularly burdened by intense stigma. Research indicates that individuals with AUD experience greater levels of social exclusion and discrimination than those with other psychiatric conditions (Kilian et al., 2021; Schomerus et al., 2011). A key driver of this stigma is the striking perception of alcohol dependence as a personal or moral failing (Volkow et al., 2021). The frequent use of stigmatizing labels such as "alcoholic" perpetuates this notion by reducing individuals to their disorder, thereby obscuring their broader identity and complexity. In contrast, adopting people-first language—such as "individuals with AUD"—has been recommended as a strategy to counteract stigma and promote dignity in clinical discourse (Shi et al., 2022).

Several key factors shape the attitudes of healthcare professionals toward individuals with SUD, most notably their level of knowledge about addiction and the extent of their hands-on clinical experience. Increased experience with addiction—through both theoretical understanding and sustained interaction with affected individuals—has been consistently linked to lower levels of stigmatizing attitudes (Corrigan et al., 2003). Healthcare professionals working in addiction treatment centers are more likely to demonstrate compassionate and informed perspectives (Gilchrist et al., 2011; Van Boekel et al., 2013). Conversely, those lacking such experience, particularly professionals in non-specialized treatment facilities, tend to harbor more negative and judgmental perceptions.

This study aims to compare the attitudes of healthcare professionals working in addiction treatment centers with those working in general healthcare settings toward individuals with alcohol and substance use disorders (ASUD). Specifically, it examines how clinical experience influences stigmatizing attitudes. It also investigates whether stigma against individuals with AUD differs from stigma against individuals with SUD.

In Turkey, recent research has increasingly examined the stigmatizing attitudes of healthcare professionals toward individuals with SUD. Kaylı, Özyurt et al., reported that a substantial proportion of healthcare professionals have prejudice that may impede patient engagement in treatment (Kaylı, Özyurt et al., 2020). Similarly, Aksoy and Mercan (2022) reported that healthcare professionals demonstrated more negative attitudes toward individuals with SUD than toward the general public (Aksoy & Mercan, 2022). Işık and Şimşek (2019) emphasized the need for specific training to address these biases among mental health workers, while Atlam and Coşkunol (2019) demonstrated the effectiveness of targeted intervention programs for overcoming stigma (Atlam & Coşkunol, 2019). These findings underline the importance of incorporating national evidence into stigma-reduction strategies in medical education and healthcare practice.

This comparison is expected to yield deeper insight into how distinct clinical environments shape healthcare professionals' attitudes toward different forms of addiction. To date, no study has comprehensively compared the attitudes of professionals working in addiction treatment centers with those in general healthcare settings toward both AUD and SUD. Addressing this gap, our study offers a novel contribution by examining how first-hand clinical exposure to individuals with ASUD affects stigmatizing attitudes. It is expected that the results will help guide initiatives to lessen stigma and encourage the creation of an evidence-based, compassionate, and inclusive approach to addiction treatment.

Methods

Study Design

Our study had a cross-sectional, comparative design to assess the attitudes of healthcare professionals toward individuals with alcohol and substance use disorders (ASUD). The sample comprised two groups: 1) professionals working in addiction treatment centers and 2) professionals employed in general medical settings.

Study Population and Sampling

The study population comprised healthcare professionals employed in addiction treatment centers and general medical settings. Participants were recruited through purposive sampling to ensure representation of both groups. Inclusion criteria were:

Being a practicing healthcare professional.

Having at least one year of work experience in their respective settings.

Providing informed consent to participate.

Exclusion criteria included:

Lack of fluency in the study language.

Personal history of substance use disorder (SUD).

All participants provided informed consent prior to participation, and the study was conducted in compliance with the Institutional Review Board (IRB) guidelines. The final sample consisted of 230 participants, with 96 professionals having addiction treatment experience and 134 without such experience.

Data Collection Tools

Sociodemographic Data Form

This form collected basic demographic and professional information, including participants' age, gender, education level, professional title, workplace, years of experience, and prior experience in addiction treatment settings. These data were used to characterize the sample and conduct group comparisons. To ensure anonymity, no personal identifiers were collected, and the form was used exclusively for research purposes.

Alcohol Use Disorder Stigma Scale

The Alcohol Use Disorder Stigma Scale, developed by Atlam et al. (2023), assesses cognitive, emotional, and behavioral dimensions of stigma toward individuals with alcohol use disorder. It comprises 20 items rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), with total scores ranging from 20 to 100; higher scores indicate greater levels of stigma. The scale encompasses four subdimensions: incompatibility, social distance, perceived inadequacy, and distrust (Atlam et al., 2023).

Substance Use Disorder Stigma Scale

The Substance Use Disorder Stigma Scale, also developed by Atlam et al. (2023), evaluates stigmatizing attitudes toward individuals with substance use disorders. It consists of 23 items rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), yielding total scores between 23 and 115, with higher scores reflecting greater stigma. The scale comprises three subdimensions: social distance, perceived negative characteristics, and incompatibility (Atlam et al., 2023).

Attitudes Toward Individuals Using Addictive Substances Scale

The Attitudes Toward Individuals Using Addictive Substances Scale, developed by Kaylı, Yılmaz et al., assesses healthcare professionals' perceptions of individuals who use addictive substances. The scale is composed of Likert-type items rated from 1 (strongly agree) to 5 (strongly disagree), with higher scores indicating more negative attitudes. It comprises five subdimensions: interpersonal interactions, perceived personality traits, social functioning, societal views, and the perceived role of family and social environment (Kaylı, Yılmaz et al., 2020).

Data Collection Procedure

Data were collected via self-administered surveys distributed electronically and in person. Participation was voluntary, and confidentiality was assured. Surveys were collected between October 2024 and January 2025.

Data Analysis

Quantitative data were analyzed using SPSS software version 26. Descriptive statistics (means, standard deviations, frequencies) were calculated for demographic data. Independent sample t-tests were used to compare stigma levels between groups. A p-value of <0.05 was considered statistically significant.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request. To ensure participant confidentiality, raw data will not be publicly shared.

Ethical Approval

This study was approved by the Lokman Hekim University Scientific Research Ethics Committee on November 29, 2024, with the decision number 2024/268 and code number 2024251.

Results

The demographic characteristics of the healthcare professionals are presented in Table 1. The study included 230 participants, of whom 159 were female (69.1%) and 71 were male (30.9%). Regarding age distribution, 66 participants (28.7%) were aged 30 years or younger, 68 (29.6%) were aged 31–40 years, 42 (18.3%) were aged 41–50 years, and 54 (23.5%) were aged 51 years or older. Most participants had a university degree or higher, and the most common professional titles were doctor and nurse. Of the total sample, 96 participants (41.7%) had experience in addiction treatment, whereas 134 participants (58.3%) had no such experience.

Table 1. Demographics of healthcare professionals

		N	%
Age	<= 30	66	28,7%
	31 - 40	68	29,6%
	41 - 50	42	18,3%
	51+	54	23,5%
	Total	230	100,0%
Sex	Female	159	69,1%
	Male	71	30,9%
	Total	230	100,0%
Education	Middle School	1	0,4%
	High School	18	7,8%
	University	124	53,9%
	Master's degree and above	87	37,8%
	Total	230	100,0%
Professional title	Doctor	76	33,0%
	Nurse	71	30,9%
	Psychologist	29	12,6%
	Social Worker	10	4,3%
	Health Officer	44	19,1%
	Total	230	100,0%
Addiction treatment experience	Yes	96	41,7%
	No	134	58,3%
	Total	230	100,0%

The gender distribution of participants based on their addiction treatment experience is presented in Table 2. Among those with addiction treatment experience, 68.8% (n = 66) were female, while 31.3% (n = 30) were male. Similarly, among participants without addiction treatment experience, 69.4% (n = 93) were female, and 30.6% (n = 41) were male.

According to the correlation analysis (Table 3), which was conducted with the scores of stigmatization and negative attitudes toward individuals who use alcohol, drugs, and addictive substances, a strong positive relationship was found between stigmatization toward individuals who use alcohol and stigmatization toward individuals who use drugs (r= .74, p<.01). A strong positive relationship was also found between stigmatization toward individuals who use alcohol and negative attitudes toward individuals who use addictive substances (r= .59, p<.01). In addition, there was a strong positive correlation between stigmatization toward individuals who use substances and negative attitudes toward individuals who use addictive substances (r= .70, p<.01). These findings show that attitudes toward addiction types are interrelated and that individuals with high stigmatization scores exhibit similar attitudes toward other addiction types.

Table 2. Gender distribution in the field of addiction

			N	%
Addiction treatment experience	Yes	Female	66	68,8%
		Male	30	31,3%
	No	Female	93	69,4%
		Male	41	30,6%

In Table 4, the independent samples t-test was applied to examine the differences between the stigmatization toward individuals with ASUD and negative attitudes toward individuals with ASUD. A significant difference was found between individuals with experience in addiction treatment ($\bar{x}$= 52.40, SD=17.71) and individuals without experience in addiction treatment ($\bar{x}$= 74.21, SD= 19.06) in terms of stigmatization toward individuals who use alcohol, t(288)= -8.81, p<.001.

In terms of stigmatization toward individuals who use substances, the stigmatization scores of health professionals with experience in addiction treatment ($\bar{x}$= 74.33, SD= 24.25) were found to be significantly lower than those of inexperienced health professionals ($\bar{x}$= 97.05, SD= 18.76) t(288)= -8.01, p<.001.

Considering the negative attitudes toward individuals who use addictive substances, a significant difference was found between health professionals with ($\bar{x}$= 77.38, SD= 20.42) and without ($\bar{x}$= 97.05, SD= 21.06) experience in addiction treatment, t(288)= -7.07, p<.001. As a result, it can be inferred that health professionals who do not have experience in the field of addiction exhibit more negative attitudes toward individuals with ASUD than health professionals with experience do.

Table 3. Descriptive statistics and correlations of variables

	N	$\bar{x}$	SD	1	2	3
1. Alcohol Stigmatization	230	65,11	21,38	-		
2. Substance Stigmatization	230	87,56	23,97	0,74*	-	
3. Addictive Substance Negative Attitude	230	88,84	22,92	0,59*	0,70*	-

*p<0,01

Table 4. Independent groups t-test results of stigmatization according to experience in addiction treatment

Variables	Experienced			Inexperienced			t(228)	p	Cohen's d
	N	$\bar{x}$	SD	N	$\bar{x}$	SD			
Alcohol Stigmatization	96	52,40	17,71	134	74,21	19,06	-8,81	<0,001	-1,18
Substance Stigmatization	96	74,33	24,25	134	97,05	18,76	-8,01	<0,001	-1,07
Addictive Substance Negative Attitude	96	77,38	20,42	134	97,05	21,06	-7,07	<0,001	-0,95

Discussion

Principal Findings and Previous Studies

The findings of this study indicate that healthcare professionals working in addiction treatment centers exhibit significantly lower levels of stigmatizing attitudes toward individuals with alcohol and substance use disorders (ASUD) compared to those working in general medical settings ($p < 0.01$). These results are consistent with previous research suggesting that clinical exposure and frequent interactions with individuals affected by addiction are associated with more positive attitudes among healthcare providers (Gilchrist et al., 2011; Van Boekel et al., 2013). The study also supports existing evidence that individuals with alcohol use disorder (AUD) are subject to higher levels of social exclusion and discrimination than those with other psychiatric conditions (Kilian et al., 2021; Schomerus et al., 2011).

Furthermore, stigmatizing attitudes among professionals not engaged in addiction services appear to be similarly directed toward both AUD and substance use disorder (SUD). This trend may be influenced by cultural and religious factors specific to Turkey, where alcohol consumption is religiously prohibited in Islam, potentially contributing to elevated levels of stigma toward individuals with AUD (Gürsu & Selçuk, 2021; Yılmaz & Cüceler, 2019). However, it is also important to acknowledge that religious and spiritual frameworks may provide protective mechanisms against stigma. For example, Akça and Kızılgeçit (2024) found that spiritually oriented treatment programs helped individuals with SUD cope more effectively by reducing their sense of social exclusion and internalized stigma. These findings suggest that while religious norms may influence societal attitudes toward alcohol use, they can also serve as a supportive resource in reducing the psychological burden of addiction-related stigma when applied through compassionate frameworks (Akça & Kızılgeçit, 2024).

Healthcare professionals working in addiction treatment centers engage in more frequent and sustained interactions with individuals affected by addiction, which enables them to develop a deeper understanding of the biopsychosocial nature of SUD. Such exposure helps transform stigmatizing beliefs—such as viewing addiction as a moral failing or a lack of willpower—into a recognition of addiction as a complex medical condition (Volkow et al., 2021). The attribution model proposed by Corrigan et al. (2003) suggests that increased knowledge and direct contact with individuals affected by addiction can significantly reduce stigmatizing attitudes by challenging assumptions of personal blame and moral weakness. This conceptual framework supports the idea that familiarity with addiction, particularly in clinical contexts, fosters more compassionate and evidence-based perspectives—findings that are further echoed in the present study (Corrigan et al., 2003).

In contrast, healthcare professionals who do not work in addiction treatment settings often lack sufficient training and clinical exposure related to addiction, which may reinforce stigmatizing perceptions and attitudes. The literature indicates that addiction is still commonly misconstrued as a reflection of moral weakness or personal failure—beliefs that significantly contribute to the persistence of stigma (Barry et al., 2014; Volkow, 2020; Volkow et al., 2021). This limited conceptualization not only impedes the delivery of empathetic and effective care but also perpetuates societal prejudices, further marginalizing individuals with SUD. Moreover, individuals affected by addiction may, particularly during withdrawal or intoxication, engage in behaviors that contravene social norms—such as dishonesty, theft, or aggression—which can complicate efforts to elicit understanding and compassion even from close relations. These behavioral manifestations may help explain why strangers or healthcare professionals sometimes adopt more dismissive or judgmental attitudes toward this population (Volkow, 2020; Volkow et al., 2021).

The widespread societal belief that "willpower alone is sufficient to overcome substance use" continues to shape perceptions toward individuals with SUD. Healthcare professionals are not immune to these assumptions, which may unconsciously influence their clinical attitudes and decisions (Volkow, 2020). Kennedy-Hendricks et al. (2016) reported that stigmatizing views held by healthcare providers can lead to the denial or delay of care for patients with SUD. In emergency department settings, for example, individuals presenting with substance-related issues may not be perceived as legitimate medical cases, and their needs may be viewed as outside the bounds of professional duty. This is particularly evident in the treatment of individuals who inject drugs, who are frequently misjudged as drug-seeking rather than seeking medical assistance—creating substantial barriers to healthcare access (Kennedy-Hendricks et al., 2016).

In a study conducted by Venniro et al. (2018), rats dependent on methamphetamine or heroin were found to prefer social interaction over drug intake. However, when access to social interaction was penalized—for instance, through mild electric shocks—their behavior shifted, and they reverted to drug-seeking (Venniro et al., 2018). This finding suggests that treatment processes which include stigma toward individuals with SUD function as a form of social punishment, thereby reinforcing the cycle of addiction. Beyond broader societal stigma, similarly negative attitudes held by healthcare professionals can further undermine the effectiveness of treatment policies. Kennedy-Hendricks et al. (2017) found that stigma directed at individuals with prescription opioid use disorder significantly reduces public support for policies designed to improve treatment access and outcomes (Kennedy-Hendricks et al., 2017).

While stigma is not the only barrier to accessing effective treatment for individuals with SUD, it is critically important to prevent these individuals from being penalized within the healthcare system due to their condition. Providing effective care and promoting engagement in treatment require healthcare professionals to adopt a compassionate and nonjudgmental approach, particularly when addressing the complex behaviors often linked to addiction and withdrawal.

In this regard, routine training programs that raise awareness and challenge biases among healthcare providers serve as a valuable strategy for reducing stigma. It is essential for clinicians to recognize that stigma not only impairs clinical care but also exacerbates the broader social determinants that sustain addiction.

Strengths and Limitations

The primary strength of this study lies in its comparative design, which evaluates the attitudes of healthcare professionals working in addiction treatment centers alongside those in general healthcare settings. By including participants from diverse clinical backgrounds, the study offers valuable insights into variations in stigmatizing attitudes. The use of validated and reliable assessment tools further strengthens the study's methodological rigor and supports the credibility of its findings. Moreover, the practical implications are substantial, as the results can inform the development of targeted training interventions and policy strategies aimed at reducing stigma in addiction treatment.

Despite its strengths, this study has several limitations that warrant consideration. First, the cross-sectional design precludes the ability to infer causal relationships between clinical experience and stigmatizing attitudes. Second, the use of purposive sampling may limit the generalizability of the results to the broader population of healthcare professionals. Third, the reliance on self-reported measures introduces the risk of social desirability bias, whereby participants may underreport stigmatizing attitudes. Lastly, the study's focus on a single geographic region may constrain the applicability of the findings to other cultural or healthcare contexts.

Future Studies

The findings of this study highlight the critical role of direct interaction with individuals affected by addiction in mitigating stigma among healthcare professionals. Building on these results, we have initiated a follow-up research project, which we aim to complete and submit for publication in the near future. This forthcoming study will involve medical students from two different universities. While students at both institutions will receive the same theoretical coursework on addiction, those at our university will additionally participate in a one-month clinical rotation at an addiction treatment center. Stigma-related attitudes will be assessed using validated scales at both the beginning and end of the program. This design will allow us to evaluate the differential impact of theoretical education alone versus a combined theoretical and experiential learning approach. The ultimate goal is to inform the development of more effective educational interventions to reduce stigma and improve future healthcare professionals' attitudes toward individuals with SUD.

Conclusion

This study underscores the pivotal role of clinical experience and direct patient interaction in mitigating stigma among healthcare professionals toward individuals with alcohol and substance use disorders (ASUD). Professionals working in addiction treatment settings demonstrated significantly lower levels of stigmatizing attitudes compared to their counterparts in general healthcare environments. These findings highlight the importance of experiential learning and targeted training in fostering greater empathy, awareness, and a more compassionate approach to addiction care.

Reducing stigma within the healthcare system is essential for enhancing access to treatment and disrupting the cycle of addiction. Implementing comprehensive training programs that emphasize people-first language and holistic, patient-centered care can equip healthcare professionals to deliver more compassionate and effective services. These findings reinforce the imperative for targeted, evidence-based interventions that address stigma as a central component of public health strategies in addiction treatment.

Positionality Statement

Acknowledging that personal and professional identities can shape scientific inquiry, the authors offer the following disclosure regarding their backgrounds. Three authors identify as male and three as female. All members of the research team are employed in addiction treatment centers and have direct clinical experience working with individuals affected by ASUD. The team comprises professionals from the fields of psychiatry, psychology, and social work. While we recognize that our close engagement with ASUD populations may influence our interpretations of stigma-related phenomena, we have implemented rigorous measures to maintain objectivity and ensure a systematic approach throughout the data collection and analysis process.

Acknowledgements

The authors wish to express their sincere gratitude to all the healthcare professionals who participated in this study. Special thanks are extended to the administrative staff of Lokman Hekim University and collaborating healthcare institutions for facilitating access to participants. The authors also acknowledge the valuable contributions of the research assistants involved in data collection and preliminary analysis. Finally, we thank Lokman Hekim University for providing the infrastructure and academic support necessary for conducting this research.

Author contributions

Conception and design: S.C.D., Z.A.; Data acquisition: S.C.D., B.E.M., U.B.A., N.A., Z.S.Ö.; Data interpretation: S.C.D., U.B.A., N.A., Z.S.Ö.; Drafting of the manuscript: S.C.D., B.E.M., U.B.A., N.A., Z.A.; Critical revision of the manuscript: S.C.D., Z.A. All

authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Lokman Hekim University Scientific Research Ethics Committee (Date: November 29, 2024, Decision/Protocol No: Decision No: 2024/268, Protocol Number : 2024251). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Akça, E., & Kızılgeçit, M. (2024). Madde bağımlılarında dini/manevi programın psikolojik iyi oluşa etkisinin karma yöntemle incelenmesi (denetimli serbestlik örneği). *Antakiyat*, *7*(2), 192-222.

Aksoy, H., & Mercan, N. (2022). Comparing attitudes toward people with substance use disorders between healthcare professionals and general public. *Turkish Journal of Public Health*, *20*(3), 358-374. **[Crossref]**

Atlam, D., Kaylı, D. Ş., & Durusoy, R. (2023). Development of public stigma scales on alcohol use disorder and substance use disorder. *Journal of Ethnicity in Substance Abuse, 24*(2), 556-573. **[Crossref]**

Atlam, D. H., & Coşkunol, H. (2019). Madde kullanım bozukluğu olanlara yapılan toplumsal damgalamayı azaltmada bir müdahale programının sonuçları. *Kıbrıs Türk Psikiyatri ve Psikoloji Dergisi*, *1*(Özel Sayı 1), 43-46.

Ball, S. A., Carroll, K. M., Canning-Ball, M., & Rounsaville, B. J. (2006). Reasons for dropout from drug abuse treatment: Symptoms, personality, and motivation. *Addictive Behaviors*, *31*(2), 320-330. **[Crossref]**

Barry, C. L., McGinty, E. E., Pescosolido, B. A., & Goldman, H. H. (2014). Stigma, discrimination, treatment effectiveness, and policy: Public views about drug addiction and mental illness. *Psychiatric Services*, *65*(10), 1269-1272. **[Crossref]**

Corrigan, P., Markowitz, F. E., Watson, A., Rowan, D., & Kubiak, M. A. (2003). An attribution model of public discrimination toward persons with mental illness. *Journal of Health and Social Behavior, 44*(2), 162-179. **[Crossref]**

Eaton, L. (2004). Numbers starting treatment for drug misuse increase by 20% over two years. *BMJ: British Medical Journal*, *329*(7474), 1066. **[Crossref]**

Gilchrist, G., Moskalewicz, J., Slezakova, S., Okruhlica, L., Torrens, M., Vajd, R., & Baldacchino, A. (2011). Staff regard toward working with substance users: A European multi-centre study. *Addiction*, *106*(6), 1114-1125. **[Crossref]**

Gürsu, O., & Selçuk, B. S. (2021). Türkiye'de yapılan dindarlık-bağımlılık çalışmalarının yöntemsel analizi. *Turkish Academic Research Review*, *6*(3), 1133-1150. **[Crossref]**

Işık, A., & Şimşek, G. M. (2019). *Ruh sağlığı çalışanlarının madde kullanım bozukluğu tedavisine yönelik tutumlarının ölçülmesi*. 13. Uluslararası Katılımlı Alkol ve Madde Bağımlılığı Kongresi, Girne.

Kaylı, D. Ş., Özyurt, B. C., Deveci, A., & Çavuşoğlu, T. (2020). Sağlık personelinin madde bağımlılığına yönelik düşünceleri. *Celal Bayar Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi*, *7*(4), 495-503. **[Crossref]**

Kaylı, D. Ş, Yılmaz, G., & İyilikçi, O. (2020). A scale development study on the attitudes and behaviors of the society toward individuals using addictive substances. *Journal of Addiction*, *21*(2), 115-128.

Kennedy-Hendricks, A., Barry, C. L., Gollust, S. E., Ensminger, M. E., Chisolm, M. S., & McGinty, E. E. (2017). Social stigma toward persons with prescription opioid use disorder: Associations with public support for punitive and public health-oriented policies. *Psychiatric Services*, *68*(5), 462-469. **[Crossref]**

Kennedy-Hendricks, A., Busch, S. H., McGinty, E. E., Bachhuber, M. A., Niederdeppe, J., Gollust, S. E., Webster, D. W., Fiellin, D. A., & Barry, C. L. (2016). Primary care physicians' perspectives on the prescription opioid epidemic. *Drug and Alcohol Dependence*, *165*, 61-70. **[Crossref]**

Kilian, C., Manthey, J., Carr, S., Hanschmidt, F., Rehm, J., Speerforck, S., & Schomerus, G. (2021). Stigmatization of people with alcohol use disorders: An updated systematic review of population studies. *Alcoholism: Clinical and Experimental Research*, *45*(5), 899-911. **[Crossref]**

Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual review of Sociology*, *27*(1), 363-385. **[Crossref]**

Luoma, J. B., Kulesza, M., Hayes, S. C., Kohlenberg, B., & Larimer, M. (2014). Stigma predicts residential treatment length for substance use disorder. *The American Journal of Drug and Alcohol Abuse*, *40*(3), 206-212. **[Crossref]**

Neale, J., Tompkins, C., & Sheard, L. (2008). Barriers to accessing generic health and social care services: A qualitative study of injecting drug users. *Health & Social Care in the Community*, *16*(2), 147-154. **[Crossref]**

Palmer, R. S., Murphy, M. K., Piselli, A., & Ball, S. A. (2009). Substance user treatment dropout from client and clinician perspectives: A pilot study. *Substance Use & Misuse*, *44*(7), 1021-1038. **[Crossref]**

Rahim, M., & Patton, R. (2015). The association between shame and substance use in young people: A systematic review. *PeerJ*, *3*, e737. **[Crossref]**

Rivera, A. V., DeCuir, J., Crawford, N. D., Amesty, S., & Lewis, C. F. (2014). Internalized stigma and sterile syringe use among people who inject drugs in New York City, 2010–2012. *Drug and Alcohol Dependence*, *144*, 259-264. **[Crossref]**

Schomerus, G., Lucht, M., Holzinger, A., Matschinger, H., Carta, M. G., & Angermeyer, M. C. (2011). The stigma of alcohol dependence compared with other mental disorders: A review of population studies. *Alcohol and Alcoholism*, *46*(2), 105-112. **[Crossref]**

Shi, H. D., McKee, S. A., & Cosgrove, K. P. (2022). Why language matters in alcohol research: Reducing stigma. *Alcoholism: Clinical and Experimental Research*, *46*(6), 1103-1109. **[Crossref]**

Thornicroft, G., Rose, D., & Kassam, A. (2007). Discrimination in health care against people with mental illness. *International Review of Psychiatry*, *19*(2), 113-122. **[Crossref]**

Van Boekel, L. C., Brouwers, E. P., Van Weeghel, J., & Garretsen, H. F. (2013). Stigma among health professionals toward patients with substance use disorders and its consequences for healthcare delivery: Systematic review. *Drug and Alcohol Dependence*, *131*(1-2), 23-35. **[Crossref]**

Venniro, M., Zhang, M., Caprioli, D., Hoots, J. K., Golden, S. A., Heins, C., Morales, M., Epstein, D. H., & Shaham, Y. (2018). Volitional social interaction prevents drug addiction in rat models. *Nature Neuroscience*, *21*(11), 1520-1529. **[Crossref]**

Volkow, N. D. (2020). Stigma and the toll of addiction. *New England Journal of Medicine*, *382*(14), 1289-1290. **[Crossref]**

Volkow, N. D., Gordon, J. A., & Koob, G. F. (2021). Choosing appropriate language to reduce the stigma around mental illness and substance use disorders. *Neuropsychopharmacology*, *46*(13), 2230-2232. **[Crossref]**

Yılmaz, M., & Cüceler, S. (2019). Alkol bağımlığı ve damgalanma. *Bağımlılık Dergisi*, *20*(3), 167-174.

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.497

An examination of stigmatization and family belonging of individuals with substance use disorders

Rasim Babahanoğlu[1], Serap Daşbaş[2]

[1]Department of Social Work, Faculty of Health Sciences, Hitit University, Çorum, Türkiye
[2]Department of Social Work, Faculty of Health Sciences, Selçuk University, Konya, Türkiye

Abstract

This study aims to examine the relationship between stigmatization and the sense of family belonging among individuals with substance addiction or illicit substance use. The research was conducted on a sample of 351 male participants under probation. The Substance Use Stigma Mechanisms Scale (SU-SMS) and the Family Belonging Scale (FBS) were employed to measure the relevant variables, and a correlation analysis was performed to assess their relationship. The findings indicate a significant negative correlation between participants' sense of family belonging and their experiences of stigmatization. Accordingly, it is crucial that all professionals who serve individuals with substance use disorders and their families should be provided with regular psychosocial support, and they should prioritize socialization processes. By ensuring the continuity of this approach, we are hopeful that prioritizing solution-focused interventions that meet the needs of clients will increase their sense of family belonging and reduce stigma.

Keywords: addiction, family belonging, stigmatization, substance use disorders

Main points

- Stigma negatively impacts the recovery process of individuals with substance use disorders.
- Stigma prevents the individual from socializing.
- Individuals with substance use disorders need to have strong family belonging.
- Minimizing stigma positively affects the improvement of family belonging among individuals with substance use disorders.

Introduction

Addiction is a significant social issue that adversely impacts individuals' social functioning and carries broader societal repercussions. While the medical aspect of addiction should not be overlooked, its social and economic dimensions are equally critical. Without a holistic approach to addressing alcohol and substance use disorders, challenges such as relapses, persistent substance-seeking behaviors, and the failure to implement long-term solutions may arise. Society often perceives individuals struggling with alcohol and substance addiction as the other, reinforcing exclusionary tendencies that categorize and isolate them. One of the primary drivers of this marginalization is stigmatization.

Stigmatization and social alienation of individuals with alcohol and substance use disorders prevent them from fully engaging in social life, leading to adverse psychosocial consequences such as low self-esteem, depression, feelings of inadequacy, loss of self-confidence, helplessness, social isolation, and loneliness (Sevin & Erbay, 2008). Stigma is commonly categorized into self-stigma, social stigma, and structural stigma (Afyonoğlu et al., 2025). Self-stigma refers to the internalization of negative stereotypes and attitudes, often leading to shame and guilt (Newman & Crowell, 2023). According to Goffman's (2019) conceptualization, individuals involved in the criminal justice system bear a "spoiled identity," reinforcing their exclusion.

Corresponding author: Rasim Babahanoğlu • **Email:** rasimbabahanoglu@hitit.edu.tr
Received: May 20, 2025 **Accepted:** March 17, 2026 **Published online:** June 22, 2026

This study was derived from the PhD thesis of Rasim Babahanoğlu, titled "An Investigation of the Relationship Between Stigmatization and Family Belonging in Adult Males Subjected to Probation Measures Due to Substance Use", conducted under the supervision of Assoc. Prof. Serap Daşbaş at Selçuk University, Institute of Health Sciences, in 2020.

Cite as: Babahanoğlu, R., & Daşbaş, S. (2026). An examination of stigmatization and family belonging of individuals with substance use disorders. *Addicta: The Turkish Journal on Addictions*, *13(2)*, 175-183. https://doi.org/10.15805/addicta.2026.497

Stigmatization erodes an individual's connection to their family and may increase vulnerability to suicidal tendencies (Şamar et al., 2023; Ünal, 2024). Individuals recovering from alcohol use disorders face challenges across familial, economic, psychological, and social dimensions (Collins et al., 1990; Cukor et al., 2007). Among adults, those unable to contribute economically to their families lose their role as family role models, imposing financial hardships, especially in economically disadvantaged families (Erbay et al., 2016). Coping mechanisms such as spirituality and participation in support groups have been identified as beneficial (Botvin, 2000; DiClemente, 2006).

Protecting individuals with addiction from stigmatization and facilitating their reintegration into society, including strengthening their sense of family belonging, are crucial for recovery (Addiction Research Department, 2020; Ögel, 2020).

Methods

Purpose of the Study

The primary objective of this study is to examine the relationship between stigmatization and family belonging among male drug users and individuals with substance use disorders aged 18 and older who are under probation in accordance with Articles 188, 189, 190, 191, and 192 of the Turkish Penal Code. These articles govern the legal proceedings related to the production, possession, use, import/export, and trade of illicit substances in Türkiye. In line with this primary objective, the study seeks to address the following sub-questions:

1. Is there a relationship between stigma associated with substance use and *family belonging*?
2. Do the mean scores of the *SU-SMS* and its sub-dimensions among substance users vary based on participants' age, whether they receive emotional support from their families, and whether they receive emotional support from institution staff?
3. Do the mean scores of the *FBS* and its sub-dimensions among substance users differ according to participants' age, whether they receive emotional support from their families, and whether they receive emotional support from institution staff?

Data Collection Tools

In this study, the data were collected using a socio-demographic information form, which was designed to capture the independent variables of the participants; the *Substance Use Stigma Mechanisms Scale (SU-SMS)*, which was developed by Smith et al. (2016) and adapted into Turkish by Babahanoğlu and Daşbaş (2021); and the *Family Belonging Scale* (FBS), developed by Mavili et al. (2014). The SU-SMS consists of 18 items, three sub-dimensions (*enacted stigma, anticipated stigma,* and *internalized stigma*), and is structured as a 5-point Likert-type scale. A higher score on the stigma scale implies an increased level of stigma. The FBS comprises 17 items across two subscales (*self-belonging* and *family belonging*). A higher score on the scale indicates that the participants' level of family belonging increases.

Data Analysis

Data were analyzed using SPSS 20.0, and descriptive statistics were used in the analyses. The Kolmogorov-Smirnov normality test revealed that the kurtosis and skewness values were within ±1, and the data were considered normally distributed. To determine whether the sample differed significantly on the *SU-SMS* and *FBS* according to various variables, a t-test was used for paired groups, and one-way analysis of variance (ANOVA) was used for groups of more than two. In cases where there were differences, the direction of the differences was determined using post-hoc multiple comparison tests (Dunnett T and Scheffe) (Köklü et al., 2006). In data analysis consistent with the research objective, Pearson Product-Moment Correlation Analysis was used to determine whether a relationship existed between the SU-SMS and FBS, and if so, its strength and direction. The results obtained from the analyses, which were accepted as a significance level of 0.05, are presented in tables in the "Findings" section.

Population and Sample

The study population consists of adult males who "use addictive volatile or narcotic substances" as defined under Articles 188, 189, 190, 191, and 192 of the Turkish Penal Code and who were placed under probation measures at the Konya Probation Directorate between February 2018 and October 2018. During this period, the number of individuals attending the Konya Probation Directorate ranged between 2,500 and 2,600. Within this population of 2,600 individuals, the data were collected from 360 participants using *simple random sampling*, a subtype of probability sampling. However, 351 male participants were included in the final analysis after data cleaning. This sample size represents the study population. Based on the literature review, it is estimated that a sample size of 335 people would be sufficient for a population size of 2600. In this study, the sample group consisted of 351 people (Coşkun et al., 2012).

The limited participation of women in the data collection process, their absence during certain days and hours, and the necessity to protect their identities are attributed to the heightened stigmatization of women with substance use disorders. This phenomenon aligns with the broader sociocultural context of patriarchal societies, where gender roles exacerbate the stigmatization of women across various domains of life (Yeşilay, 2024).

Therefore, the roles assigned to women in society have been historically shaped by patriarchal norms, which often confine them to traditional expectations such as caregiving, motherhood, and moral propriety. These gendered expectations not only limit women's autonomy and participation in public life but also obscure the visibility of the problems they may face. Women with substance use

disorders (SUDs) are particularly subjected to a heightened degree of stigmatization—not solely due to their addiction, but also because their behavior is perceived as a deviation from socially constructed norms of femininity (Becker et al., 2017).

While men with SUDs are often viewed through a medicalized lens—as individuals in need of treatment—women are more likely to be labeled as morally inadequate, irresponsible, or unfit mothers. This layered stigma contributes to the marginalization of women, hindering their access to healthcare services, reducing the likelihood of seeking support, and ultimately undermining their recovery processes. Therefore, integrating a gender-sensitive approach into addiction treatment and policy-making is crucial in order to improve access to care and to challenge deeply embedded societal biases (Van Olphen et al., 2009).

Findings

As shown in Table 1, 25.6% of the participants were between the ages of 27 and 30, with an average age of 29.48 ± 7.63. Additionally, 51% of the participants had completed secondary school, 51.9% came from a nuclear family structure, 74.9% received emotional support from their families, and 65.8% received emotional support from the institutions they attended for treatment or therapy.

As shown in Table 2, a statistically significant but very weak negative correlation was found between the *FBS* and the *SU-SMS* (r = 0.-22). Additionally, a weak negative correlation was observed between FBS and the *enacted stigma* sub-dimension (r = 0.-41), while a very weak negative correlation was found with the *anticipated stigma* sub-dimension (r = 0.-23). However, no statistically significant relationship was identified between FBS and the *internalized stigma* sub-dimension (p > 0.05). These findings suggest that as participants' sense of family belonging increases, their overall levels of substance use stigma, enacted stigma, and anticipated stigma tend to decrease.

A very weak negative correlation was found between the *self-belonging* sub-dimension of the *FBS)* and the *SU-SMS* (r = 0.-20), while a weak negative correlation was observed with the *enacted stigma* sub-dimension (r = 0.-40) and a very weak negative correlation with the *anticipated stigma* sub-dimension (r = 0.-22). However, no statistically significant relationship was identified between the *self-belonging* sub-dimension and the *internalized stigma* sub-dimension (p > 0.05). These findings indicate that their enacted and anticipated stigma levels decrease as participants' self-identity strengthens.

Similarly, a very weak negative correlation was found between the *family belonging* sub-dimension of the *FBS* and the *SU-SMS* (r = 0.-22), the *enacted stigma* sub-dimension (r = 0.-31), and the *anticipated stigma* sub-dimension (r = 0.-20). However, no statistically significant relationship was observed between the *family belonging* sub-dimension and the *internalized stigma* sub-dimension (p > 0.05). These results suggest that as participants' sense of family belonging increases, their enacted and anticipated stigma levels tend to decline.

Table 1. Demographic and descriptive information of the participants

Socio-demographic Characteristics	Options	N	%
	18-23 years old	75	21.4
Age groups	24-26 years old	71	20.2
	27-30 years old	90	25.6
	31-38 years old	76	21.7
	39 years and older	39	11.1
	Yes	263	74.9
Receiving emotional support from family	No	88	25.1
Receiving emotional support from institutions	Yes	231	65.8
	No	120	34.2
Total		**351**	**100**

As presented in Table 3, the participants' mean score on the *Substance Use Stigma Mechanisms Scale (SU-SMS)* was 44.58, indicating that their overall level of stigmatization was moderate based on the total mean score of the scale. According to the sub-dimensional mean scores, participants experienced varying degrees of internalized, anticipated, and enacted stigma. Additionally, the normality analysis showed that the data were parametric, with Skewness and Kurtosis values ranging between +1 and -1, confirming that the data followed a normal distribution.

As shown in Table 4, the participants' mean score on the *FBS* was 65.68, indicating a high level of family belonging according to the total mean score of the scale. The sub-dimensional mean scores also demonstrated that participants' self-belonging and family belonging levels were above average. Furthermore, the normality analysis confirmed that the data were parametric, with Skewness and Kurtosis values between +1 and -1, which is considered an acceptable range for normal distribution.

As shown in Table 5, a statistically significant difference was found between participants' age groups and their total score on the *SU-SMS* (p < 0.05). When examining the differences between groups, it was observed that participants aged 24–26 experienced significantly higher levels of stigmatization compared to those aged 39 and above. Similarly, a significant difference was identified between participants' age groups and the scale's enacted stigma and anticipated stigma sub-dimensions (p < 0.05). Participants in the 24–26 age group exhibited higher levels of stigmatization than those in the 31–38 age group, consistent with the total scale score findings. However, no statistically significant difference was found between participants' age groups and the internalized stigmatization sub-dimension.

Table 2. Correlation analysis results of the relationship between SU-SMS and FBS (n=351)

Pearson Correlation (n=351)		**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. FBS	r	1						
	p	<0.001						
2. SB-Lower dimension	r	0.94**						
	p	<0.001						
3. FB-Lower dimension	r	0.79**	0.62**					
	p	<0.001	<0.001					
4. SU-SMS	r	**0-.22****	**0-.20****	**0-.22****				
	p	**<0.001**	**<0.001**	**<0.001**				
5. AS-Lower dimension	r	**0-.41****	**0-.40****	**0-.31****	0.66**			
	p	**<0.001**	**<0.001**	**<0.001**	<0.001			
6. ES-Lower dimension	r	**0-.23****	**0-.22****	**0-.20****	0.77**	0.48**		
	p	**<0.001**	**<0.001**	**<0.001**	<0.001	<0.001		
7. IS-Lower dimension	r	0.06	0.09	0-.02	0.70**	0.13**	0.22**	1
	p	0.21	0.07	<0.001	<0.001	<0.001	<0.001	<0.001

** Correlation is significant at the 0.001 level (2-tailed).

Table 3. Scores of the participants on the SU-SMS

			SU-SMS	
Statistical Values	**SU-SMS**	**Enacted Stigma**	**Anticipated Stigma**	**Internalized Stigma**
Mean	44.58	11.03	13.45	20.09
Standard Deviation	±13.70	±4.92	±6.62	±7.47
Minimum	18	6	6	6
Maximum	90	30	30	30
Skewness	.23	1.00	.62	-.33
Kurtosis	-.18	.55	-.62	-1.03

Table 4. Scores of the participants on the FBS

		FBS	
Article Number	**FBS**	**Self-Belonging**	**Family -Belonging**
Mean	65.68	48.21	17.46
Standard Deviation	±11.86	±9.35	±3.48
Minimum	32	19	6
Maximum	85	60	25
Skewness	-.781	-1.02	.07
Kurtosis	.12	.62	.13

The results of the independent samples t-test indicated a statistically significant difference between participants' receipt of emotional support from their families and their total score on the *SU-SMS* (p < 0.05). Specifically, individuals who received emotional support from their families experienced lower levels of stigmatization (Mean = 43.62) compared to those who did not receive family support (Mean = 47.44). Similarly, a significant difference was observed between participants' receipt of emotional support from their families and the enacted and anticipated stigma sub-dimensions of the scale (p < 0.05). As with the total SU-SMS score, the significance level favored participants who received emotional support from their families, indicating lower stigmatization levels in this group. However, no statistically significant relationship was found between receiving emotional support from families and the internalized stigmatization sub-dimension (p > 0.05). These findings suggest that individuals with substance use disorders who receive emotional support from their families experience lower levels of stigmatization compared to those who lack such support.

As presented in Table 5, no statistically significant difference was found between participants' receipt of emotional support from institution staff and their total score on the *SU-SMS* (p > 0.05). This indicates that receiving emotional support from institution staff does not have a significant impact on overall stigmatization levels among individuals with substance use disorders (t = 0.34, p = 0.12). However, a statistically significant difference was observed between participants' receipt of emotional support from institution staff and their scores on the enacted stigma and anticipated stigma sub-dimensions (p < 0.05). The significance level favored participants who received emotional support from institution staff, meaning that these individuals experienced lower levels of enacted and anticipated stigma than those who did not receive such support. No statistically significant relationship was found between receiving emotional support from institution staff and the internalized stigmatization sub-dimension (p > 0.05), which suggests that emotional support from institution staff does not influence internalized stigma levels.

As shown in Table 6, there was a significant difference between the age group of the participants and the total score of the FBS (p < 0.05). Accordingly, a statistically significant difference was found between participants' age groups and their total score on the *FBS* (p < 0.05). According to post-hoc tests, participants in the 18–23 and 39 and over age groups reported higher levels of family belonging than those in the 27–30 and 31–38 age groups. Similarly, a significant difference was observed between participants' age groups

Table 5. Statistical analysis results (ANOVA and t-test) of participants' SU-SMS and selected demographic characteristics

				SU-SMS	
Independent Variable	**n**	**SU-SMS (Mean±SD)**	**Enacted Stigma (Mean±SD)**	**Anticipated S. (Mean±SD)**	**Internalized Stigma (Mean±SD)**
Age Group					
18-23 years old1	75	43.33±12.31	10.72±4.32	13.04±5.98	19.57±7.65
24-26 years old2	71	49.14±13.96	11.70±5.22	15.54±7.32	21.88±6.67
27-30 years old3	90	44.54±14.70	10.81±4.83	14.08±6.83	19.64±5.52
31-38 years old4	76	43.07±14.09	11.38±5.38	11.90±6.08	19.84±7.54
39 years and older5	39	41.69±10.97	10.33±4.73	12.00±6.10	19.35±8.08
F		2.82	0.71	3.66	1.31
p		0.02	0.58	<0.001	0.26
Difference Groups		(2>5) *	-	(2>4) *	-
Receiving Emotional Support from Family					
Yes	263	43.62±13.17	10.44±4.56	13.00±6.66	20.17±7.42
No	88	47.44±17.86	12.77±5.53	14.80±6.35	19.86±7.64
t		0.349	-3.913	-2.221	.334
p		0.023	<0.001	0.027	0.739
Receiving Emotional Support from the Institution Staff					
Yes	231	43.74±12.93	10.46±4.59	12.74±6.33	20.53±7.39
No	120	46.20±14.98	12.12±5.34	14.82±6.99	19.25±7.57
t		0.34	-3.03	-2.81	1.52
p		0.12	<0.001	<0.001	0.12

*Dunnet T **Scheffe

Table 6. Statistical (ANOVA and t-test) analysis results for the FBS and demographic variables

				FBS
Independent Variable	**n**	**FBS (Mean±SD)**	**Self-Belonging (Mean±SD)**	**Family Belonging (Mean±SD)**
Age Group				
18-23 years old1	75	67.84±10.61	49.76±8.21	18.08±3.36
24-26 years old2	71	66.52±11.51	49.11±8.95	17.40±3.43
27-30 years old3	90	63.73±13.27	46.28±10.63	17.44±3.47
31-38 years old4	76	63.48±12.34	46.43±9.51	17.05±3.72
39 years and older5	39	68.79±8.93	51.56±7.10	17.23±3.36
F		2.69	3.67	0.89
p		0.03	<0.001	0.46
Difference Groups		(1.5>3.4) **	(1.5>3.4) **	-
Receiving Emotional Support from Family				
Yes	263	68.58±9.84	50.54±7.61	18.03±3.07
No	88	57.01±13.14	41.26±10.59	15.75±3.54
t		0.34	8.91	5.55
p		<0.001	<0.001	<0.001
Receiving Emotional Support from the Institution Staff				
Yes	231	67.14±11.05	49.45±8.68	17.69±3.51
No	120	62.87±12.87	45.85±10.15	17.02±3.40
t		.34	3.47	1.70
p		<0.001	<0.001	0.08

*Dunnet T **Scheffe

and their scores on the self-belonging sub-dimension ($p < 0.05$). Consistent with the total FBS score, participants in the 18–23 and 39 and over age groups exhibited higher self-belonging levels than those in the 27–30 and 31–38 age groups. However, no statistically significant relationship was found between participants' age groups and their scores on the family belonging sub-dimension ($p > 0.05$).

A statistically significant difference was found between participants' receipt of emotional support from their families

and their total score on the *FBS* (p < 0.05). Specifically, individuals who received emotional support from their families exhibited higher levels of family belonging (Mean = 68.58) than those who did not (Mean = 57.01). Similarly, a significant difference was observed between participants' status of receiving emotional support from their families and their scores on the scale's self-belonging and family belonging sub-dimensions (p < 0.05). As with the total FBS score, the significance level favored participants who received emotional support from their families, indicating stronger self-belonging and family belonging in this group.

A statistically significant difference was found between participants' receipt of emotional support from institution staff and their total score on the *FBS* (p < 0.05). The results indicate that receiving emotional support from institution staff had a positive effect on the family belonging of individuals with substance use disorders (t = 0.34, p < 0.001). Similarly, a significant difference was observed between participants' receipt of emotional support from institution staff and their scores on the self-belonging sub-dimension of the *FBS* (p < 0.05). The significance level favored participants who received emotional support from institution staff, suggesting that these individuals exhibited higher self-identity than those who did not. However, no statistically significant difference was found between participants' receipt of emotional support from institution staff and their scores on the family belonging sub-dimension of the scale (p > 0.05). This finding suggests that receiving support from institution staff does not influence family belonging.

Conclusion and Discussion

Correlation analysis revealed a significant negative correlation between family belonging and stigmatization, indicating that a supportive familial environment may mitigate social stigma. This aligns with prior research demonstrating that stigmatization weakens familial bonds and can precipitate social withdrawal (Beckwith et al., 2015; Dingle et al., 2015; Haslam et al., 2018).

However, the non-significant relationship between family belonging and internalized stigma is particularly noteworthy. Internalized stigma involves the acceptance and integration of negative societal beliefs into the self-concept, which is often resistant to change through external social support alone (Corrigan, 2004; Livingston & Boyd, 2010). While family support can buffer against enacted and anticipated stigma by providing social validation and emotional resources, it may not sufficiently address the deep psychological processes underlying self-stigma. This suggests that interventions targeting internalized stigma require specialized psychological approaches such as cognitive-behavioral therapy, self-compassion training, and psychoeducation (Luoma et al., 2007; Yanos et al., 2015).

Age differences in stigma levels, with younger participants experiencing higher stigma, may reflect developmental and social factors influencing identity and social perception (Yıldırım et al., 2012). Emotional support from family was associated with lower stigma and higher family belonging, reinforcing the protective role of familial support (Arılık, 2019).

Emotional support from institutional staff was linked to lower enacted and anticipated stigma but did not significantly affect internalized stigma or family belonging, highlighting the need for stigma-sensitive training among professionals (Barney et al., 2009; Livingston et al., 2011).

The present study reinforces the notion that perceived social support mitigates internalized stigma by promoting social connectedness and belonging. Frequent social interactions and positive relationships may serve as protective factors against stigmatization (Earnshaw et al., 2013). Empirical evidence further identifies family support as one of the most critical protective mechanisms against the social isolation often experienced by these individuals (Sargent et al., 2002). Accordingly, emotional support from family members appears to reduce stigma, enhance motivation to seek and sustain treatment, and increase the likelihood of long-term recovery.

Beyond the familial context, this study also identified a significant relationship between emotional support from institutional staff and levels of stigmatization. The findings align with research demonstrating that the attitudes and behaviors of healthcare and rehabilitation professionals play a pivotal role in shaping treatment experiences (Demir et al., 2022). As Barney et al. (2009) observed, stigmatization within healthcare settings constitutes one of the main barriers to treatment-seeking behavior. Therefore, efforts to reduce stigma must extend beyond individuals and families to include comprehensive education and sensitization programs for healthcare providers and social service professionals (Yılmaz & Cüceler, 2019).

Similarly, Livingston et al. (2011) and Earnshaw et al. (2013) underscore that positive and nonjudgmental professional attitudes can reduce stigma and promote psychosocial well-being. When institutional staff and family members refrain from moralizing and instead adopt a supportive and empathetic stance, individuals are more likely to engage in treatment and rehabilitation. However, as Room (2005) and Paquette et al. (2018) warn, stigma frequently originates from these very sources—family, friends, and healthcare professionals—thus perpetuating the cycle of social exclusion. Barnard (2007) adds that although labeling these individuals as "victims of society" can protect them from moral condemnation, it may also obscure the recognition of their suffering within their own families. This dynamic underscores the complex moral and relational dimensions of stigmatization in the context of substance use.

With respect to age, no statistically significant differences were found in Family Belonging Scale (FBS) scores. This finding suggests that weakened family communication and belonging are pervasive across age groups, supporting previous studies emphasizing that substance use often disrupts familial cohesion irrespective of life stage (Ögel, 2004; Polat, 2014).

Nonetheless, in certain cases, family awareness of the disorder may lead to increased empathy and stronger relational ties. It indicates that stigma and family belonging are not static but dynamic constructs that can evolve positively through engagement and understanding.

A strong sense of family belonging was also found to be crucial in sustaining treatment motivation and recovery outcomes. This is consistent with prior research demonstrating that individuals who feel valued and accepted within their families exhibit higher levels of psychological adjustment and commitment to rehabilitation (Shlomi, 2010; Yalman, 2019). Moreover, the literature suggests that early experiences of belonging and positive family role models may function as protective factors that reduce vulnerability to substance use later in life. Thus, fostering family cohesion and communication should be considered an essential component of both preventive and rehabilitative interventions.

In this study, *FBS* scores were also significantly associated with the level of emotional support received from families, reinforcing existing evidence that emotional warmth, trust, and open communication enhance both psychological well-being and family belonging (Sargent et al., 2002; Woolhouse et al., 2013). Similarly, participants who perceived emotional support and empathy from healthcare professionals and institutional staff reported higher family belonging and better adjustment. These findings are consistent with those of by Barnard (2007) and Woolhouse et al. (2013). These results collectively suggest that both familial and institutional support systems function as interrelated protective factors that strengthen the individual's sense of belonging, reduce stigmatization, and facilitate recovery.

Ultimately, this study contributes to the broader literature by demonstrating that the mechanisms of stigma and belonging among individuals with substance use disorders are not solely personal or psychological but profoundly relational. Family and institutional contexts act as mediating environments that can either reinforce or alleviate stigma. Interventions aimed at strengthening these relational bonds—through psychoeducation, family-based therapy, and professional empathy training—are therefore vital for promoting recovery, reducing stigma, and improving psychosocial outcomes in this population.

Recommendations

Building upon the study's findings and informed by stigma theory, several recommendations are proposed at the micro, mezzo, and macro levels to address the multifaceted nature of stigmatization toward these individuals. The results of this research underscore that stigma operates not merely as an individual attitude but as a socially embedded process shaped by family dynamics, institutional practices, and structural conditions. Accordingly, effective intervention requires simultaneous engagement across these levels.

Micro Recommendations

At the individual and familial level, the findings highlight the crucial role of accurate knowledge and empathetic understanding in mitigating stigma. Awareness-raising initiatives should be implemented to equip family members and close social networks with evidence-based information about substance use disorders. This emphasizes that addiction is a complex biopsychosocial phenomenon rather than a moral failing. Such interventions can disrupt the "labeling" and "stereotyping" stages of stigma (Link & Phelan, 2001), fostering more compassionate interpersonal interactions.

Furthermore, academic and applied research should continue to explore the mechanisms through which family belonging mediates or moderates stigma, as this study contributes novel evidence that perceived familial support significantly shapes stigmatization experiences. Continued empirical work on these relational dimensions would advance both the theoretical understanding and practical management of stigma within family systems.

Mezzo Recommendations

At the community and institutional level, the findings suggest that stigma reduction requires culturally and contextually tailored educational initiatives. As seen in successful disability and mental health awareness campaigns, similar models should be adopted to target misconceptions surrounding substance use. These initiatives must extend beyond prevention and treatment to emphasize rehabilitation, empowerment, and social reintegration, thereby addressing the "separation" and "status loss" dimensions of stigma.

Professionals working within probation, rehabilitation, and healthcare systems should receive specialized training in stigma-sensitive communication and care. Family-focused psychoeducation and motivational programs are also essential to strengthen positive communication patterns and diminish tendencies toward blame or moral judgment. By reframing addiction as a recoverable health condition and reinforcing families' belief in the possibility of recovery, these programs can transform the social microclimate that often perpetuates stigma.

Macro Recommendations

At the structural and policy level, it is imperative that national development plans and social policy frameworks explicitly incorporate stigma reduction as a public health and social cohesion priority. This aligns with the theoretical understanding that stigma is institutionalized through policies, discourse, and unequal resource allocation (Link & Phelan, 2001). Integrating anti-stigma objectives into probation and rehabilitation systems would ensure a more holistic approach to recovery—one that emphasizes not only abstinence but also social reintegration and identity restoration.

Public institutions should thus go beyond punitive or treatment-oriented frameworks and actively sponsor anti-stigmatization campaigns and evidence-based interventions. Activities that foster inclusion such as sports, cultural and artistic events, and community-based nature programs can function as "contact strategies," reducing social distance and rehumanizing those labeled as "addicts." These initiatives can disrupt the final stage of the stigma process, "discrimination," by normalizing interaction and mutual acceptance within the broader community.

Moreover, this study contributes uniquely to the literature by demonstrating that family belonging operates as both a protective factor and a site of potential stigmatization. Hence, macro-level strategies should integrate family-centered approaches into policy design and funding priorities. Supporting interdisciplinary research on stigma processes, family dynamics, and institutional practices will enable the development of multi-level stigma interventions that address not only individual attitudes but also the structural roots of exclusion.

The intensification of inter-institutional cooperation, particularly involving the Ministry of Health, the Ministry of National Education, the Ministry of Interior, the Ministry of Family and Social Services, and prominent civil society organizations such as the Green Crescent and its affiliated Counseling Centers (YEDAM), is critically important for mitigating the stigma associated with addiction, which remains a central barrier in effective intervention strategies, as well as for ensuring the long-term protection of public health.

The Framework of the Research

Before conducting the study, ethical approval was obtained from the Selçuk University Faculty of Health Sciences Dean's Office Non-Interventional Clinical Research Ethics Committee, with the decision dated 31.10.2018, numbered 1997, and decision number 2018/172. Additionally, to facilitate the research at the Konya Probation Directorate, the necessary permissions were secured based on an official letter from the Ministry of Justice, General Directorate of Prisons and Detention Houses, dated 11.01.2019, and numbered 46985942-773-E.34/5974. All participants provided informed consent and voluntarily agreed to participate in the study. Data collection was conducted following ethical principles and guidelines for voluntary participation.

Author contributions

Conception: R.B.; Design: S.D.; Data acquisition: R.B.; Data analysis: R.B., S.D.; Data interpretation: R.B.; Drafting of the manuscript: R.B., S.D.; Critical revision of the manuscript: R.B., S.D. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Selçuk University Faculty of Health Sciences Dean's Office Non-Interventional Clinical Research Ethics Committee (Date: January 31, 2018, Decision/Protocol No: 2018/172). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

This study was supported by the Selçuk University Faculty Member Training Program Coordinatorship under Grant Number ÖYP-2016-094.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Addiction Research Department. (2020). *The effects of drug addiction on family members.* https://www.bhpalmbeach.com/recovery-articles/impact-substance-abuse-and-addiction-families/

Afyonoğlu, M. F., Pak Güre, M. D., Erükçü Akbaş, G., & Uğurlu, Z. (2025). Social workers' perceptions of the stigmatization process for individuals with mental health needs within the criminal justice system in Türkiye: An intersectional analysis. *International Journal of Forensic Mental Health 24*(4), 336-348. **[Crossref]**

Arılık, M. (2019). *Madde bağımlılarının damgalanma sonrası bağımlılık döngüsü* (Thesis No. 541085) [Master's thesis, Hacettepe University]. Council of Higher Education National Thesis Center.

Babahanoğlu, R., & Daşbaş, S. (2021). Madde kullanımı damgalama mekanizması ölçeği: Geçerlilik ve güvenirlik çalışması. *Toplum ve Sosyal Hizmet*, *32*(1), 141-172. **[Crossref]**

Barnard, M. (2007). *Drug addiction and families.* Jessica Kingsley Publishers.

Barney, L. J., Griffiths, K. M., Christensen, H., & Jorm, A. F. (2009). Exploring the nature of stigmatizing beliefs about depression and help-seeking: Implications for reducing stigma. *BMC Public Health, 9*, 61. **[Crossref]**

Becker, J. B., McClellan, M., & Reed, B. G. (2017). Sex differences, gender and addiction. *Journal of Neuroscience Research, 95*(1-2), 136-147. **[Crossref]**

Beckwith, M., Best, D., Dingle, G., Perryman, C., & Lubman, D. (2015). Predictors of flexibility in social identity among people entering a therapeutic community for substance abuse. *Alcoholism Treatment Quarterly*, *33*(1), 93-104. **[Crossref]**

Botvin, G. J. (2000). Preventing drug abuse in schools: social and competence enhancement approaches targeting individual-level etiologic factors. *Addictive Behaviors, 25*(6), 887-897. **[Crossref]**

Collins, S., Ottley, G., & Wilson, M. (1990). Historical perspectives and the development of community services. In S. Collins (Ed.), *Alcohol, social work and helping* (pp. 9-42), Routledge. **[Crossref]**

Corrigan, P. W. (2004). How stigma interferes with mental health care. *American Psychologist*, *59*(7), 614-625. **[Crossref]**

Coşkun, R., Altunışık, R., & Yıldırım, E. (2012). *Sosyal bilimlerde araştırma yöntemleri SPSS uygulamalı*. Sakarya Yayıncılık.

Cukor, D., Cohen, S. D., Peterson, R. A., & Kimmel, P. L. (2007). Psychosocial aspects of chronic disease: ESRD as a paradigmatic illness. *Journal of the American Society of Nephrology, 18*(12), 3042-3055. **[Crossref]**

Demir, B., Kocamer Şahin, Ş., Sancaktar, M., Sargin, E. N., Köse, Z., & Altindağ, A. (2022). Madde kullanım bozukluğunda içselleştirilmiş damgalanmanın klinik özellikler ve tedavi motivasyonu ile ilişkisi. *Bağımlılık Dergisi, 23*(1), 30-36. **[Crossref]**

DiClemente, C. C. (2006). *Addiction and change: How addictions develop, and addicted people recover*. Guilford Press.

Dingle, G. A., Cruwys, T., & Frings, D. (2015). Social identities as pathways into and out of addiction. *Frontiers of Psychology, 6*, 1795. **[Crossref]**

Earnshaw, V. Smith, L., & Copenhaver, M. (2013). Drug addiction stigma in the context of methadone maintenance therapy: An investigation into understudied sources of stigma. *International Journal of Mental Health and Addiction, 11*(1), 110-122. **[Crossref]**

Erbay, E., Oğuz, N., Yıldırım, B., & Fırat, E. (2016). Alkol ve madde bağımlılığı olan bireylerin başa çıkma tutumları. *Türkiye Sosyal Araştırmalar Dergisi, 20*(3), 597-609.

Goffman, E. (2019). *Damga: Örselenmiş kimliğin idare edilişi üzerine notlar* (Ş. Geniş, L. Ünsaldı, & N. Ağırsanlı, Trans.). Heretik Yayınları.

Haslam, C., Jetten, J., Cruwys, T., Dingle, G., & Haslam, S. A. (2018). *The new psychology of health: Unlocking the social cure*. Routledge. **[Crossref]**

Köklü, N., Büyüköztürk, Ş., & Çokluk Bökeoğlu, Ö. (2006). *Sosyal bilimler için istatistik* (2nd ed.). Pegem A Yayıncılık.

Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology, 27*(1), 363-385. **[Crossref]**

Livingston, J. D., & Boyd, J. E. (2010). Correlates and consequences of internalized stigma for people living with mental illness: A systematic review and meta-analysis. *Social Science & Medicine*, *71*(12), 2150-2161. **[Crossref]**

Livingston, J. D., Milne, T., Fang, M. L. F., & Amari, E. (2011). The effectiveness of interventions for reducing stigma related to substance use disorders: A systematic review. *Addiction, 107*(1), 39-50. **[Crossref]**

Luoma, J. B., Nobles, R. H., Drake, C. E., Hayes, S. C., O'Hair, A, Fletcher, L., & Kohlenberg, B. S. (2007). Self-stigma in substance abuse: Development of a new measure. *Journal of Psychopathology and Behavioral Assessment*, *29*(2), 131-141.

Mavili, A., Kesen, N. F., & Daşbaş, S. (2014). Aile aidiyeti ölçeği: Bir ölçek geliştirme çalışması. *Sosyal Politika Çalışmaları Dergisi, 14*(33), 24-45.

Newman, B. N., & Crowell, K. A. (2023). The intersectionality of criminality and substance use self-stigmas. *Stigma and Health, 8*(2), 212. **[Crossref]**

Ögel, K. (2004). Alkol ve madde kullanım bozukluklarında damgalama. *3P Dergisi*, *12*(3).

Ögel, K. (2020). *Aile: 1. aile ve bağımlılık, 2. aileye yaklaşım*. http://www.ogelk.net/Dosyadepo/aile.pdf

Paquette, C. E., Syvertsen, J. L., & Pollini, R. A. (2018). Stigma at every turn: Health services experiences among people who inject drugs. *International Journal of Drug Policy, 57*, 104-110. **[Crossref]**

Polat, G. (2014). Madde bağımlılığı tedavisinde sosyal hizmet mesleği. *Okmeydanı Tıp Dergisi, 30*(ek sayı 2), 143-148.

Room, R. (2005). Stigma, social inequality, and alcohol and drug use. *Drug and Alcohol Review, 24*(2), 143-155. **[Crossref]**

Sargent, J., Williams, A. R., Hagerty, B. M., Lynch-Sauer, J., & Hoyle, K. (2002). Sense of belonging as a buffer against depressive symptoms. *Journal of the American Psychiatric Nurses Association, 8*(4), 120-128. **[Crossref]**

Sevin, Ç., & Erbay, E. (2008). Madde bağımlılarının tedavi sonrası sosyal yaşama uyumları ve sosyal hizmet uygulamaları. *Bağımlılık Dergisi, 9*(1), 1-11.

Shlomi, H. (2010). *The relationship between childhood family instability, secure attachment, and the sense of belonging of young adults*. University of British Columbia.

Smith, L. R., Earnshaw, V. A., Copenhaver, M. M., & Cunningham, C. O. (2016). Substance use stigma: Reliability and validity of a theory-based scale for substance-using populations. *Drug and Alcohol Dependence, 162*, 34-43. **[Crossref]**

Şamar, B., Taş, M., Kayın, M., & Ünübol, B. (2023). Comprehensive analysis of social stigma of individuals with substance use disorder in Turkey in the context of Erving Goffman's stigma theory. *Journal of Ethnicity in Substance Abuse*, *23*(4), 679-698. **[Crossref]**

Ünal, E. (2024). *Klinik görüşme ve uygulama*. https://avys.omu.edu.tr/storage/app/public/elif.unal/127544/Klinik%20G%C3%B6r%C3%BC%C5%9Fme%20ve%20Uygulama%20-1.pdf

Van Olphen, J., Eliason, M. J., Freudenberg, N., & Barnes, M. (2009). Nowhere to go: How stigma limits the options of female drug users after release from jail. *Substance Abuse Treatment, Prevention, and Policy, 4*(10). **[Crossref]**

Woolhouse, S., Cooper, E., & Pickard, A. (2013). "It gives me a sense of belonging": Providing integrated health care and treatment to people with HCV engaged in a psycho-educational support group. *International Journal of Drug Policy, 24*(6), 550-557. **[Crossref]**

Yalman, E. (2019). Ebeveyn ve akran ilişkilerinin genç kızlarda madde kullanımına etkisi. *İBAD, 4*(2), 372-391. **[Crossref]**

Yanos, P. T., Lucksted, A., Amy, L., Drapalski, A. L., Roe, D., & Lysaker, P. (2015). Interventions targeting internalized stigma among people with serious mental illness: A review. *Psychiatric Rehabilitation Journal*, *38*(2), 97-104. **[Crossref]**

Yeşilay. (2024). *Kadınlar bağımlılık sürecinde yalnız kalıyor.* https://www.yesilay.org.tr/tr/makaleler/kadinlar-bagimlilik-surecinde-yalniz-kaliyor

Yıldırım, E., Akyıl Sokullu, D., & Köknel, Ö. (2012). Alkol bağımlılığında içselşetirilmiş damgalama: Depresif belirtilerle ilişki. *Psikoloji Çalışmalrı*, *32*(1), 1-12.

Yılmaz, M., & Cüceler, S. (2019). Alkol bağımlığı ve damgalanma. *Bağımlılık Dergisi, 20*(3), 167-174. https://izlik.org/JA96WT53EF

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.498

Prevalence of non-medical drug use and dependence among school-going adolescents in Malaysia

Nurul Shafini Shafurdin[1], Rozmi İsmail[1], Md Shafiin Shukor[1], Azmawati Mohammed Nawi[2], Norhayati Ibrahim[3], Roziah Mohd Rasdi[4], Novel Anak Lyndon[5], Noh Amit[3], Siti Aishah Hassan[4], Norshafizah Hanafi[6], Fauziah Ibrahim[1], Fathimath Nahla[1], Mohd Rizal Abdul Manaf[2]

[1]Centre for Research in Psychology and Human Well-being, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia, Bangi, Malaysia
[2]Department of Community Health, Universiti Kebangsaan Malaysia, Cheras, Malaysia
[3]Clinical Psychology and Behavioral Health Program, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia
[4]Department of Counselor Education and Counseling Psychology, Faculty of Educational Studies, Universiti Putra Malaysia, Serdang, Malaysia
[5]School of Development, Social and Environmental, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia, Bangi, Malaysia
[6]College of Business, Universiti Utara Malaysia, Sintok, Malaysia

Abstract

Drug abuse can be defined as the use of drugs in a manner that deviates from medical prescription. The negative effects of drug addiction are well known globally, and millions are estimated to suffer from drug use disorders and require treatment services. In Malaysia, recent studies have shown that the great majority of drug users are young adolescents. This trend has now spread to schools and has caused a significant rise in cases of drug abuse annually. Unfortunately, to date, there are no recent data regarding the prevalence of drug and substance abuse amongst school-going adolescents in Malaysia. This study aims to assess the rising prevalence of drug abuse among school-going adolescents in Malaysia through a nationwide representative survey. A total of 3,382 secondary school students participated in this study. They were selected from hotspot areas in Malaysia using a multistage stratified cluster sampling technique. The data were collected through face-to-face interviews, assisted by school counsellors. The Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) was utilized to measure the frequency of drug use according to type, and the adolescents' involvement in drug abuse and drug-related behavior. Descriptive analysis was conducted using the Statistical Package for Social Sciences to determine the prevalence of drug abuse among the students. The prevalence of current drug abuse among the adolescent students was found to be 3.9 % for those who had used drugs in the past 30 days. Meanwhile, lifetime use was found to be 9.6%. The most popular drugs used were kratom (Mitragyna speciosa), followed by hallucinogens and cannabis. Most drug users were male students, and the average onset age of drug use was 16. Special attention and urgent action from relevant agencies are thus needed to address this critical issue in the country.

Keywords: prevalence, substance and drug abuse, school going adolescent, drug hotspot

Main points

- Implement school-based programs on the risks of substances like kratom and hallucinogens, focusing on areas with high adolescent abuse. Tailor campaigns to the local socio-cultural context for greater impact.
- Involve local communities in hotspot areas to tackle environmental factors influencing drug access. Collaborate with leaders, parents, and youth groups to create drug-free zones and awareness initiatives.
- Enforce stricter regulations on kratom cultivation, distribution, and sales. Increase penalties for illegal activities and enhance surveillance in hotspot areas to reduce availability.
- Address socioeconomic disparities by supporting adolescents from low-income families. Implement policies to improve education access, employment for parents, and community resources to reduce the risk of drug abuse.

Corresponding author: Rozmi Ismail • **Email:** rozmi@ukm.edu.my
Received: March 4, 2025 **Accepted:** July 12, 2025 **Published online:** June 22, 2026

Cite as: Shafurdin, N. S., Ismail, R., Shukor, M. S., Mohammed Nawi, A., Ibrahim, N., Mohd Rasdi, R., Lyndon, N. A., Amit, N., Hassan, S. A., Hanafi, N., Ibrahim, F., Nahla, F., & Abdul Manaf, M. R. (2026). Prevalence of non-medical drug use and dependence among school-going adolescents in Malaysia. *Addicta: The Turkish Journal on Addictions*, *13*(2), 184-196. https://doi.org/10.15805/addicta.2026.498

Introduction

Drug abuse refers to sporadic and excessive use of drugs in violation of medical advice. It involves the use of psychoactive drugs to the extent that they interfere with an individual's physical health, social relationships, or vocational functioning (Ismail et al., 2022). Drug abuse has now become a menace to world health and a major health problem, especially among adolescents (Nawi et al., 2021), due mainly to peer influence and thrill seeking in pursuit of deceptive pleasure and happiness. The curiosity factor on the first trial produces irresistible pleasure and excitement that motivates the individual to perpetuate the abuse (Ismail et al., 2023).

The study of the epidemiology of substance use is critical to establish a baseline for sound policy measures. Several national and regional research studies have contributed to a better understanding of drug use patterns among adolescents (European Monitoring Centre for Drugs and Drug Addiction, 2021; Kanato et al., 2021; Miech et al., 2021). Past research has established that drug-abusing adolescents are typically at the age of onset (Ander et al., 2020; Sharapova et al., 2020), and that earlier onset is associated with an elevated risk of developing dependence (Jordan & Andersen, 2017). The ages of 12-14 and 15-17 were found to be critical for the initiation of drug abuse, especially psychoactive drugs. The tendency became more significant among adolescents aged 18-26 years (UNODC, 2018).

Youth is the most transitional phase in an individual's life, characterized by abrupt physiological and behavioral changes, which may involve various risky behaviors and lifestyles (Ajzen & Manstead, 2007). This risky behavior leads to both long-term and short-term implications, such as chronic health and psychosocial issues (Schauer et al., 2020). Smaller yet a non-negligible percentage of adolescents, with single or dominant use of one substance, may similarly transition to co-use or multiple substances when entering young adulthood (Choi et al., 2018).

A recent nationwide survey in Malaysia, involving 11,129,316 youths aged 15-40 years, revealed that the prevalence of drug substance use among lifetime users was 5.5%, while for those who had taken drugs in the past 30 days or who currently use them, the rate was 3.5%. This is significantly lower than that previously reported in 2019, when a total of 142,199 individuals were engaged in drug abuse, indicating an 8.7% rise from the previous year (Agensi Antidadah Kebangsaan Kementerian Dalam Negeri, 2019). Indeed, the high percentage of drug users among adolescents is disconcerting since they are considered our future leaders and hope for the country (Ismail et al., 2023).

There are various risk factors that can contribute to adolescents' involvement in drug abuse. Rebellious traits (Guttmannova et al., 2018), lack of religiosity (Afifi et al., 2019), parental negligence (El Kazdouh et al., 2018), peer pressure (Osborne et al., 2020), and lack of knowledge on the dangers of drugs (Shafini et al., 2022) are all known risk factors associated with drug abuse. Nonetheless, research on the prevalence rate of drug abuse among adolescents is rather limited, both in Malaysia and abroad, since studies mainly focus on aspects such as the self and environment.

In Malaysia, comprehensive research on adolescents' drug abuse is insufficient and the existing studies have primarily focused on epidemiological aspects rather than delving into drug addiction (Ismail et al., 2022). Consequently, the findings may not fully represent the current situation of drug abuse among adolescents, and we expect that adolescents living in hotspot areas will be at a higher risk of involvement in drug abuse. Past studies have established that residing in hotspot areas is an important risk factor for adolescents who engage in drug-related activities (Ismail, 2017; Nawi et al., 2021). In recent times, the significance of spatial analysis has gained considerable importance, particularly in the examination of violence and criminal activities (Santana-Airis et al., 2021). Studying drug-related hotspot areas enables researchers to pinpoint the social, economic, and environmental elements that lead to drug abuse activities. This insight should assist policymakers and public health experts in addressing the fundamental triggers of drug abuse.

Drug abuse statistics often show higher occurrence rates in drug-related hotspot areas due to the interplay of various factors that foster an environment conducive to the misuse of drugs. In hotspot areas, proximity to distribution networks often leads to increased accessibility to drugs, making it more convenient for individuals to acquire illicit drugs. The influence of peer pressure and social networks holds substantial sway over drug abuse. In hotspot areas, where drug use could be more acceptable among specific peer circles, individuals might be more inclined to engage in drug trials and experimentation. This situation is of deep concern since drug problems among adolescents are frequently linked with specific problems such as truancy (Jedynak & Motyka, 2020), early dropout (Breslau et al., 2011), and other delinquent issues (Anderberg et al., 2022).

Hence, to gain deeper insight into drug use issues, it is crucial to closely monitor the increasing statistics of drug abuse among school-going adolescents. In-depth research is therefore needed to determine the prevalence of drug involvement, especially among youths, in terms of the onset stage (Ismail, 2017), since data accuracy and availability are two vital factors that are essential for policy-related developments that aim for curbing drug abuse. This study hypothesized that the rate of prevalence of drug use in hotspot areas would be higher compared to other areas due to the risk factors explained above. Gaining insights into the local context and the underlying factors driving drug abuse paves the way for formulating prevention strategies that precisely cater to the distinctive needs of the community.

Method

Study Setting

A cross-sectional survey was conducted on randomly selected participants from gazetted hotspot areas in Malaysia, as identified by the National Anti-Drugs Agency (NADA, 2021) as shown in Figure 1. Data were collected through face-to-face interviews using structured questionnaires. The study, which took place from December 2021 to December 2022, involved school-going adolescents aged 13 to 19 from 85 randomly selected schools under the Ministry of Education. These schools were chosen based on a list provided by the ministry, and the survey encompassed eight states, with district-level drug hotspots identified by NADA. A total of 3,382 adolescents participated (Malaysia, aged 13-19, attending school, having parental consent for those under 18, no major physical or mental illnesses, and proficiency in reading and writing in the national language), with parental or guardian consent.

Ethical Approval and Informed Consent

The study was approved by the Ethics Committee of the Secretariat of Research Ethics, Universiti Kebangsaan Malaysia, PPI/111/8/JEP-2020-174(2). Written consent was provided by each eligible participant, and parental consent was obtained for those aged below 18 years.

Data Collection

Researchers and enumerators underwent training at a university in Malaysia. COVID-19 fieldwork safety protocols and the government's standard operating procedures (SOP) for data collection in educational settings were followed. Data were collected through face-to-face interviews using a set of questionnaires in designated school rooms. To ensure sample representativeness, multistage stratified cluster sampling was employed. The sample size was determined using a single proportion method, adjusting for target population size, design effect, and a 30% non-response rate, resulting in a minimum sample size of 1,096 respondents for a 4.7% prevalence. A total of 3,382 adolescents from 85 schools across eight Malaysia states, including drug hotspot areas, voluntarily participated, with parental or guardian consent.

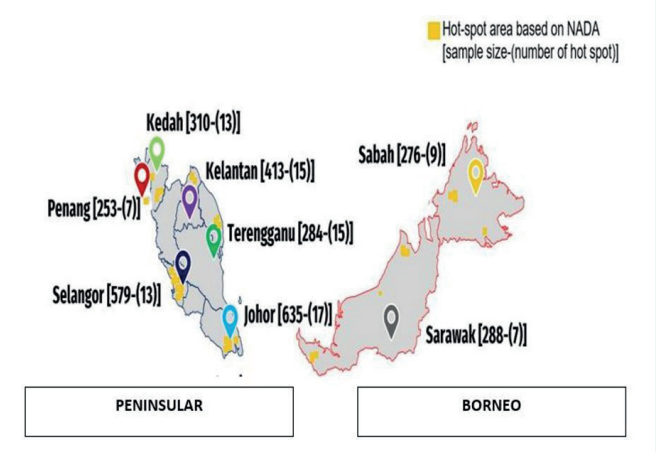

Figure 1. Number of samples taken by selected states in Malaysia. (n=3382)

Measure

Substance use - The present study used the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) which was developed to measure drug and substance use. The screening tool was developed to track and control the symptoms of use (Ali et al., 2021). Items included types of drug use, frequency, prevalence related to drug use patterns (both lifetime and current use), and level of risk of drug use or dependency. To simplify the description of the prevalence of drugs and substances in Malaysia, respondents were classified as "current users" if they responded "yes" to the question on whether they ever use drugs and substances and reported this use within the last 30 days. Meanwhile, those who responded "no" to recent 30-day use (last use being a month ago, a year ago, or only having used once or twice in their lifetime) were classified as "lifetime users." Poly-substance and poly-drug users were respondents who admitted to or screened positive for multiple substances, whereas mono-substance and mono-drug users were those who were tested for only a single substance. Tobacco products, alcohol, marijuana, cocaine, stimulants, inhalants, sedatives, hallucinogens, opiate drugs, and other substances (to be stated by participants) were included in the screening tool.

Other variables - Demographic information was obtained from standard items used in past research in Malaysia. The information included age, gender, ethnicity, religion, age of onset, sources of substance providers, residency, parents' occupation, and family economic status.

Data Processing and Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) software version 27. Data on substance use and socio-demographic characteristics were extracted from the raw data and displayed as frequencies, percentages, and critical intervals for categorical variables. This approach was based on previous studies, as the researchers used descriptive analysis to determine prevalence rates (Ismail et al., 2022).

Result

Participant Socio-Demographic Characteristics

As shown in Table 1, the total number of respondents was 3,382, where most of the participants were from Malaysia (73.2%). There was an approximately equal proportion of urban (48.3%) and rural (51.7%) respondents. Their mothers were either working (50.4%) or unemployed (49.7%). More than half of respondents were male (71.7%), Malay (74.5%), and lived in

Table 1. Socio-demographic characteristics of respondents (n = 3382

Information	Frequency	Percent (%)
State		
Peninsular Malaysia	2474	73.2
Sabah	620	18.3
Sarawak	288	8.5
Locality		
Rural	1747	51.7
Urban	1635	48.3
Age		
13 years old	145	4.3
14 years old	407	12.0
15 years old	648	19.2
16 years old	1375	40.7
17 years old	738	21.8
18 years old	69	2.0
Gender		
Male	2425	71.7
Female	957	28.3
Race		
Malay	2519	74.5
Chinese	261	7.7
Indian	176	5.2
Bumiputera Sabah & Sarawak	426	12.6
Type of house		
Landed property	2752	81.4
Shared property	630	18.6
Years living in that Community		
≤ 9 years	1027	30.4
≥ 10 years	2355	69.6
Like School		
Yes	3180	94.0
No	202	6.0
Change School due to Disciplinary Offences		
Yes	159	4.7
No	3223	95.3
Parental Relationship Status		
Living together	2709	80.1
Divorce	324	9.6
Not living together	93	2.7
One of them has died	256	7.6
Father's Job		
Employed	2974	87.9
Unemployed	408	12.1
Mother's Job		
Employed	1702	50.3
Unemployed	1680	49.7
Income Classification		
B40 (<MYR4850/USD 1155)	2909	86.0
M40 (MYR4850/ USD 1155 - MYR10,970/ USD 2612)	384	11.4
T20 (>MYR10,970/ USD 2612)	89	2.6

SD: standard deviation, MYR: Malaysian Ringgit, USD: United States Dollar

landed property (81.4%) in a community for 10 or more years (69.6%). Most of the respondents liked school (94.0%), had no history of disciplinary offences (95.3%), and had parents who were living together (80.1%), with an employed father (87.7%) and a B40 family income (86.0%).

Prevalence of Substance and Drug Use

The prevalence of current mono-substance use was 19.0% (n=643) for tobacco and 3.4% (n=116) for alcohol, as explained in Figure 2. Meanwhile, the prevalence of lifetime mono-substance use of tobacco was 15.8% (n=964) and alcohol was 8.0% (n=272), as shown in Figure 3.

The prevalence of current drug use among the school-going adolescents was 3.9% (n=133), with 3.0% (n=100) being mono-drug users and 0.9% (n=33) classified as poly-drug users, respectively. Meanwhile, the prevalence of lifetime drug use is 9.6%, (n=326) with 6.7% (228) being mono-drug users and 2.9% (n=98) being poly-drug users, as shown in Figure 4.

The prevalence of current poly-substance use involving both tobacco and drugs was 2.9% (n=99), followed by tobacco and alcohol at 2.1% (n=72), alcohol and drugs at 0.7% (n=23), and finally the combination of tobacco, alcohol, and drugs at 0.6% (21), as shown in Figure 3. On the other hand, the lifetime prevalence of poly-substance use involving both tobacco and drugs was 8.0% (n=270), followed by tobacco and alcohol at 5.3% (n=180), alcohol and drugs at 2.3% (n=73) and finally tobacco, alcohol, and drugs at 2.0% (n=67) (Figure 4).

Details of drug users are presented in Table 2. Among those who reported current and lifetime usage, the most frequently

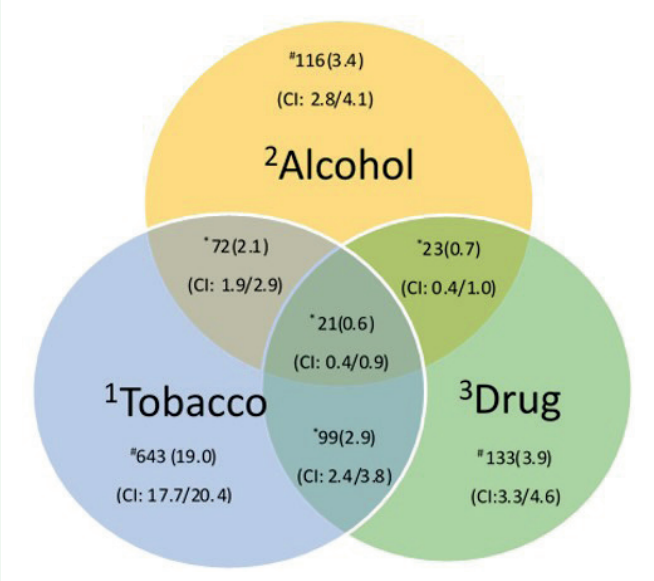

Figure 2. Self-reported prevalence of different substances used among respondents for current usage (n = 3382), (3.9%)

Figure 3. Self-reported prevalence of different substances used among school-going adolescents in Malaysia for lifetime users (n = 3382), (9.6%)

*Polysubstance users are those who checked yes for more than one substance, while #mono-substance users stated only one.

1Cigarette, Chewing Tobacco, Cigars, etc. 2 Beers, Wine, Liquor, etc. 3 Cannabis, Pot, Grass, Hash, Coke, Crack, Speed, Meth, Ecstasy, Nitrous, Glue, Gasoline, Paint Thinner, Diazepam, Alprazolam, Midazolam, LSD, Acid, Mushrooms, Thrips, Ketamine, Heroin, Morphine, Methadone, Buprenorphine, Codeine, Kratom, Depressant, Dissociative and etc. CI: Confident Interval 95% (Minimum/Maximum)

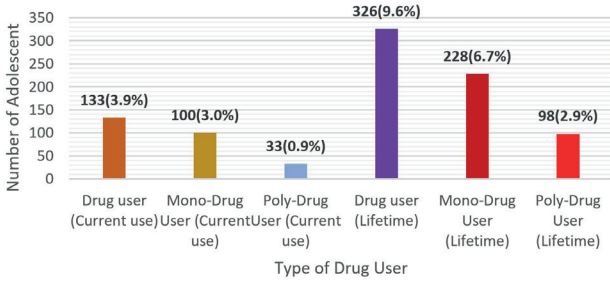

Figure 4. Self-reported prevalence of drug uses among respondents (n = 3382)

mentioned substances for current use were kratom (2.8%) and hallucinogens (1.2%), followed by sedatives (0.6%) and cannabis (0.5%). Kratom had the highest prevalence rate for lifetime use (5.8%), followed by hallucinogens (3.3%), cannabis (1.9%), and sedatives (0.9%).

Prevalence of Polydrug Use

Table 3 and Table 4 show the prevalence of school-going adolescents who were either current or lifetime users, respectively. The current drug use data indicated that the majority of adolescents were using hallucinogens and other substances (kratom) at a rate of 0.38%. This was followed by the combination of cannabis and other substances (kratom) at 0.98%, cannabis and ATS at 0.21%, and cannabis and sedatives at 0.21%.

Meanwhile, the lifetime user data revealed that most adolescents, about 1.27%, had tried hallucinogens in combination with kratom, followed by cannabis and kratom at 0.98%, cannabis and hallucinogens at 0.74%, and a mix of sedatives with hallucinogens at 0.47%.

Prevalence of Drug Use Based on Sociodemographic Factors

This section discusses the prevalence of drug use based on demographic factors, including gender, age, and parental income.

Prevalence Rate by Gender

Table 5 details the prevalence of current and lifetime use of tobacco, alcohol, and drugs by gender. Among school-going adolescents, the prevalence of current use of tobacco, alcohol, and drugs was 3.9% (n=133). Of these, 3.58% (n=121) were males, and 0.35% (n=12) were females. The prevalence of lifetime use of tobacco, alcohol, and drugs was at 1.98%, with 1.83% (n=62) among males and 0.15% (n=5) among females.

The prevalence of current drug use among male school-going adolescents was 3.58%, with 2.72% (n=92) mono-drugs and 0.86% (n=29) poly-drugs. In comparison, the prevalence of current drug use among female adolescents was 0.35% (n=12), with use rates of 0.24% (n=8) for mono-drugs and 0.11% (n=4) on poly-drugs.

The prevalence of lifetime drug use among the school-going male adolescents was 8.9%, with mono-drug and poly-drug users at 8.9% (n=302) and 2.7% (n=90), respectively. Lifetime use among female adolescents was 0.7% (n=24), with mono-drug and poly-drug use at 0.5% (n=16) and 0.2% (n=8), respectively.

Prevalence Rate by Age

Table 5 illustrates the prevalence of current and lifetime drug use by age. The prevalence of current use of tobacco, alcohol, and drugs among school-going adolescents was 0.71%, with the majority aged 16 years (0.27%). The prevalence of lifetime use of tobacco, alcohol, and drugs among school-going adolescents was 0.71%, with the majority aged 16 to 17 years.

Table 2. Self-reported prevalence of drug use of school-going adolescents in Malaysia (n = 3382)

Type of Drug	Status of drug user			
	Current use *n (%)	Confident Interval (Minimum/Maximum)	Lifetime use *n (%)	Confident Interval (Minimum/Maximum)
Cannabis1	18(0.5)	0.3/0.8	63 (1.9)	1.4/2.4
Cocaine2	16(0.5)	0.3/0.8	28 (0.8)	0.6/1.2
Amphetamine3	19(0.6)	0.3/0.9	29 (0.9)	0.6/1.2
Inhalant4	14(0.4)	0.2/0.7	22 (0.7)	0.4/1.0
Sedative5	16(0.5)	0.3/0.8	32 (0.9)	0.6/1.3
Hallucinogen6	41(1.2)	0.9/1.6	113 (3.3)	2.8/4.0
Opioid7	9(0.3)	0.1/0.5	20 (0.6)	0.4/0.9
Others8	68(2.0)	1.6/2.5	195 (5.8)	5.0/6.6

Based on: *Current substance use include respondents who answered "Yes" within 3 months preceding the survey. [1] Cannabis, Pot, Grass, Hash, etc. [2]Coke, Crack, etc.[3] Speed, Meth, Ecstasy, etc. [4]Nitrous, Glue, Gasoline, Paint Thinner, etc. [5]Diazepam, Alprazolam, Midazolam and Others. [6]LSD, Acid, Mushrooms, Thrips, Ketamine, etc. [7]Heroin, Morphine, Methadone, Buprenorphine, Codeine and Others. [8]Kratom, Depressant, Dissociative.

Table 3. Prevalence of dual drug use for current users (n = 3382)

Type of Drug	Cannabis	Cocaine	ATS	Solvents/ Inhalants	Sedatives or sleeping	Hallucinogens	Opiates	Others
Cannabis	-							
Cocaine	3 (0.09%)	-						
ATS	4 (0.12%)	7 (0.21%)	-					
Solvents/Inhalants	4 (0.12%)	5 (0.15%)	6 (0.18%)	-				
Sedatives or sleeping pills	5 (0.15%)	7 (0.21%)	6 (0.18%)	6 (0.18%)	-			
Hallucinogens	4 (0.12%)	3 (0.09%)	6 (0.18%)	3 (0.09%)	4 (0.12%)	-		
Opiates	2 (0.06%)	4 (0.12%)	4 (0.12%)	5 (0.15%)	4 (0.12%)	4 (0.12%)	-	
Others	6 (0.178%)	1 (0.03%)	5 (0.15%)	3 (0.09%)	4 (0.12%)	13 (0.38%)	2 (0.06%)	-

Table 4. Prevalence of dual drug use for lifetime users (n = 3382)

Type of Drug	Cannabis	Cocaine	ATS	Solvents/ Inhalants	Sedatives or sleeping	Hallucinogens	Opiates	Others
Cannabis	-							
Cocaine	6 (0.18%)	-						
ATS	11 (0.33%)	5 (0.15%)	-					
Solvents/Inhalants	8 (0.24%)	6 (0.18%)	3 (0.09%)	-				
Sedatives or sleeping pills	11 (0.33%)	7 (0.21%)	12 (0.35%)	4 (0.12%)	-			
Hallucinogens	25 (0.74%)	10 (0.30%)	12 (0.35%)	9 (0.27%)	16 (0.47%)	-		
Opiates	7 (0.21%)	7 (0.21%)	6 (0.18%)	7 (0.21%)	9 (0.27%)	8 (0.24%)	-	
Others	33 (0.98%)	12 (0.35%)	14 (0.41%)	7 (0.21%)	16 (0.47%)	43 (1.27%)	9 (0.27%)	-

Table 5. Prevalence of drug use based on sociodemographic factors (n = 3382)

Type	Demographic	Current use		Lifetime	
		Frequency	Prevalence	Frequency	Prevalence
		Prevalence rate by Gender			
Tobacco, alcohol and drug user	Male	19	0.56	62	1.83
	Female	2	0.06	5	0.15
Drug user	Male	121	3.58	302	8.9
	Female	12	0.35	24	0.7
Mono-drug	Male	92	2.72	212	6.2
Poly-drug		29	0.86	90	2.7
Mono-drug	Female	8	0.24	16	0.5
Poly-drug		4	0.11	8	0.2
		Prevalence rate by Age			
Tobacco, alcohol and drug user	13 years old	-	-	-	-
	14 years old	2	0.06	4	0.12
	15 years old	5	0.15	15	0.44
	16 years old	9	0.27	24	0.71
	17 years old	5	0.15	24	0.71
	18 years old	-	-	-	-
Drug user	13 years old	4	0.12	9	0.3
	14 years old	6	0.18	21	0.6
	15 years old	23	0.68	64	1.9
	16 years old	65	1.92	144	4.3
	17 years old	34	1.01	85	2.5
	18 years old	1	0.03	3	0.1
Mono-drug	13 years old	1	0.03	6	0.18
Poly-drug		3	0.09	3	0.09
Mono-drug	14 years old	4	0.12	17	0.50
Poly-drug		2	0.06	4	0.12
Mono-drug	15 years old	20	0.59	48	1.42
Poly-drug		3	0.09	16	0.47
Mono-drug	16 years old	46	1.36	103	3.05
Poly-drug		19	0.56	41	1.21
Mono-drug	17 years old	28	0.83	51	1.51
Poly-drug		6	0.18	34	1.01
Mono-drug	18 years old	1	0.03	3	4.3
Poly-drug		-	-	0	0.0
		Prevalence rate by Socioeconomic Status			
Tobacco, alcohol and drug user	B40	19	0.56	58	1.71
	M40	2	0.06	7	0.21
	T20	-	-	2	0.06
Drug user	B40	118	3.49	290	8.6
	M40	12	0.35	30	0.9
	T20	3	0.09	6	0.1
Mono-drug	B40	87	2.57	198	5.9
Poly-drug		31	0.92	92	2.7
Mono-drug	M40	10	0.30	25	0.7
Poly-drug		2	0.06	5	0.1
Mono-drug	T20	3	0.09	5	0.1
Poly-drug		-	-	1	0.03

The prevalence of current drug use among school-going adolescents was 3.9%, distributed as follows: 13 years old (0.12%), 14 years old (0.18%), 15 years old (0.68%), 16 years old (1.92%), 17 years old (1.01%), 18 years old (0.03%). The highest prevalence of poly-drug use was among 16-year-olds (0.56%), followed by 13 and 15-year-olds (0.09%), and 14-year-olds (0.06%).

Among lifetime drug users, prevalence varied by age as follows; 13 years old (0.3%), 14 years old (0.6%), 15 years old (1.9%), 16 years old (4.3%), 17 years old (2.5%), 18 years old (0.1%). The highest prevalence of poly-drug use was among 16-year-olds (1.21%), followed by 15-year-olds (0.47%), 14-year-olds (0.12%), and 13-year-olds (0.09%).

Prevalence Rate by Socioeconomic Status (SES)

Table 5 shows the prevalence of current and lifetime drug use according to socioeconomic status (SES). The prevalence of current use of tobacco, alcohol, and drugs among school-going adolescents was 0.56% in B40 and 0.06% in M40. The prevalence of drug use was 3.9%, with 3.49% in B40, 0.35% in M40, and 0.09% in T20. The prevalence of lifetime use of tobacco, alcohol, and drugs was 1.71% in B40, 0.21% in M40, and 0.06% in T20. Meanwhile, the prevalence of drug use among school-going adolescents was 9.6%, comprising 8.6% in B40, 0.9% in M40, and 0.1% in T20.

Prevalence of Drug Use Based on Location

This section discusses the prevalence of drug use based on demographic factors, including location and state.

Prevalence Rate by State

Table 6 shows the prevalence of current and lifetime use of tobacco, alcohol, and drugs across states. Among school-going adolescents, the prevalence of current use of tobacco, alcohol, and drugs was 0.24 % in Peninsular Malaysia, 0.24% in the Borneo Region of Malaysia (Sabah), and 0.15% in Sarawak. The prevalence of lifetime use of tobacco, alcohol, and drugs among these adolescents was 0.56% in Peninsular Region of Malaysia, 0.89% in Sabah, and 0.53% in Sarawak.

The prevalence of current drug use among school-going adolescents was 2.19% in Peninsular Malaysia, 1.25% in Sabah, and 0.50% in Sarawak In Peninsular Malaysia, the prevalence of mono-drug use was 1.60%, while poly-drug use was 0.59%. Meanwhile, in Sabah, the prevalence of mono-drug and poly-drug use was 0.95% and 0.30%, respectively. Lastly, in Sarawak, the prevalence of mono-drug use was 0.41% and poly-drug use was 0.09Sarawak%.

The prevalence of lifetime drug use among school-going adolescents was 5.4% in Peninsular Malaysia, 3.1% in Sabah, and 1.1% in Sarawak. The prevalence of mono-drug and poly-drug users was 3.9% and 1.5% respectively, in Peninsular Malaysia. Meanwhile, the prevalence of mono-drug and poly-drug users in Sabah were 2.2% and 0.9%, respectivelySabah. Lastly, the prevalence of mono-drug and poly-drug users were 0.7% and 0.4%, respectively, in Sarawak.

Prevalence Rate by Region

Table 6 shows the prevalence of current and lifetime use of tobacco, alcohol, and drugs by region. The prevalence of current use of tobacco, alcohol, and drugs among school-going adolescents was 0.15% (n=5) in rural areas and 0.47% (n=16) in urban areas. Similarly, the prevalence of lifetime use of these substances was 0.68% (n=23) in rural areas and 1.30% (n=44) in urban areas.

The prevalence of current drug use among the respondents was 2.07% (n=70) in rural areas and 1.86% (n=63) in urban areas. In rural areas, the prevalence of mono-drug and poly-drug use was 1.57% (n=53) and 0.50% (n=17), respectively. In urban areas, the prevalence of mono-drug use and poly-drug use was 1.39% (n=47) and 0.47% (n=16), respectively.

The prevalence of lifetime drug use among school-going adolescents was 4.4% (n=151) in rural areas and 5.2% (n=175) in urban areas. The prevalence of mono-drug and poly-drug use was 3.0% (n=100) and 1.5% (n=51) in rural areas. The prevalence of mono-drug and poly-drug use was 3.8% (n=128) and 1.4% (n=47) in urban areas.

Drug Information

Drug Information comprises the source of drugs, expenses, and age at onset of drug use.

Source of Drug

There were four main sources of drugs among school-going adolescents (Table 7); namely friends, neighbors, family members, and pushers. The respondents obtained drugs for current and lifetime use mainly from friends, followed by pushers/dealers, family members, and neighbors.

Drug Expenses

Table 7 shows drug expenses incurred by school-going adolescents. The majority of current and lifetime users spent MYR1- MYR20, followed by MYR21-MYR50, MYR51-MYR100, MYR101-MYR200, with the fewest spending more than MYR200.

Age at Onset of Drug Use

The majority of school-going adolescents were about 15 years old (16.87%) at the onset of drug use, for both current and lifetime use. The next highest was the 16-year-old group, followed by the 14 and 13-year-olds (Table 7).

Table 6. Prevalence of drug use based on location (n = 3382)

Type	Location	Current Use		Lifetime	
		Frequency	Prevalence	Frequency	Prevalence
		Prevalence Rate by State			
Tobacco, alcohol and drug user	Peninsular Malaysia	8	0.24	19	0.56
	Sabah	8	0.24	30	0.89
	Sarawak	5	0.15	18	0.53
Drug user	Peninsular Malaysia	74	2.19	184	5.4
	Sabah	42	1.25	105	3.1
	Sarawak	17	0.50	37	1.1
Mono-drug	Peninsular Malaysia	54	1.60	132	3.9
Poly-drug		20	0.59	52	1.5
Mono-drug	Sabah	32	0.95	73	2.2
Poly-drug		10	0.30	32	0.9
Mono-drug	Sarawak	14	0.41	23	0.7
Poly-drug		3	0.09	14	0.4
		Prevalence rate by region			
Tobacco, alcohol and drug user	Rural	5	0.15	23	0.68
	Urban	16	0.47	44	1.30
Drug user	Rural	70	2.07	151	4.4
	Urban	63	1.86	175	5.2
Mono-drug	Rural	53	1.57	100	3.0
Poly-drug		17	0.50	51	1.5
Mono-drug	Urban	47	1.39	128	3.8
Poly-drug		16	0.47	47	1.4

Table 7. Drug information

Item	Current use (n=133)		Lifetime (n = 326)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
	Source of Drug			
Friends	112	84.21	262	80.37
Neighbor	4	3.01	5	1.53
Family	6	4.51	20	6.13
Pusher	11	8.27	39	11.96
	Drug Expenses			
MYR1-MYR20	96	72.1	245	75.15
MYR21-MYR50	21	15.8	45	13.80
MYR51-MYR100	7	5.3	17	5.21
MYR101-MYR200	6	4.5	12	3.68
> MYR200	3	2.3	7	2.15
	Age at onset of drug use			
No information	47	35.2	113	34.66
7 years old	-	-	9	2.76
8 years old	1	0.8	1	0.31
10 years old	-	-	3	0.92
11 years old	1	0.8	4	1.23
12 years old	8	6.0	22	6.75
13 years old	9	6.8	27	8.28

MYR: Country Malaysian Ringgit

Table 8. Drug's influence

Information	Current use (n=133)	Lifetime (n=326)
	Frequency	Frequency
Friend	109/133	262/326
Family	14/133	29/326
Neighbours	10/133	20/326
Community	12/133	26/326
Ineffective laws	9/133	23/326
Social media	14/133	31/326
Own choice	104/133	244/326

Drug's Influence

There were seven influences on drug use: current and lifetime drug users were mainly influenced into addiction by seven factors (Table 8); friends, family, neighbors, community, ineffective laws, social media, and personal choice. The four most influential factors, in descending order, were friends, personal choice, social media, and family.

Discussion

Summary of core findings and comparisons with existing literature

Drug abuse is a crucial social issue of our age. Accordingly, the main purpose of this study was to determine the prevalence of drug and substance abuse among school-going adolescents aged 13 to 19 years in selected hotspot areas in Malaysia. We found that a total of 9.6% of the respondents admitted to misuse of drugs in their lifetime, and almost half of them (3.9%) reported being current users. The results show a higher prevalence than those previously reported by the National Health and Morbidity Survey (NHMS) in 2017 among adolescents aged 13-17 years. The NHMS report showed that the prevalence of lifetime drug use was 4.3% (Institute for Public Health, 2020b). A lower prevalence was also reported in an earlier study conducted in Malaysia (Rodzlan Hasani et al., 2021).

Our findings reveal that adolescents in Malaysia predominantly use kratom and hallucinogens, which contrasts with the Institute for Public Health Country Malaysia (IPH) report, which identifies cannabis as the most used drug among adolescents (Institute for Public Health, 2020a). However, for current drug use, our survey aligns with the IPH, with kratom being the most frequently used substance in the past 30 days. This trend can be attributed to the accessibility and affordability of kratom among adolescent students. Notably, kratom's ease of cultivation by users contributes to its widespread availability. In recent years, kratom has become a popular psychotropic substance, with its global cultivation on the rise (Yusoff et al., 2014). Furthermore, users often perceive kratom as a legal high, offering a cheaper and perceived safer alternative to other opioids (Hamid et al., 2016).

Our study, which began in June 2020 coinciding with the government's phased reopening of schools after the COVID-19 pandemic, hypothesized that the disruption of adolescents' routines during the school closures may have contributed to psychological distress, potentially increasing drug use. The global slowdown during the pandemic affected populations in various ways (Ali et al., 2021). Substantial evidence supports this connection. A US study using national data found a significant correlation between COVID-19 isolation and rising substance misuse (Patrick et al., 2022). Additionally, the Centers for Disease Control and Prevention (CDC) reported a 13% increase in drug use in recent years, attributing the surge to the emotional stress caused by the pandemic (Czeisler et al., 2020).

We accordingly conducted this study in pandemic hotspot areas that were gazetted by the National Anti-drugs Agency of Malaysia. According to Chainey and Ratcliffe (2005), a hotspot is a geographical location with a greater-than-normal concentration of an event or a cluster. The hotspots in this study were selected areas where drug activities were prominent and occurred frequently. Living in a hotspot area has also been identified as a contributing factor to the increasing trend of illicit substance abuse in general. Ismail (2017) emphasized that adolescents, particularly those living in identified hotspot areas of drugs, are more vulnerable to the impact and risk of drug abuse. The high prevalence found in this study may be due to differences in norms in the hotspot environment (Kortteinen, 2008). Daily and early exposures to high-risk situations such as drug misuse may contribute to adolescents' vulnerability (Shafie et al., 2023). This is further exacerbated when adolescents lack knowledge and skills for coping with such challenges.

In addition, the pandemic resulted in significant disruptions to students' daily lives, including intermittent school closures, reduced peer interactions, and heightened levels of stress and uncertainty. These changes may have impacted students' drug-taking behaviors, either by increasing substance use as a coping mechanism or decreasing use due to limited social opportunities and restricted access.

The availability and accessibility of drugs, particularly in hotspot neighborhoods, significantly contribute to the high prevalence of drug abuse. Previous studies have emphasized neighborhood influence as a key factor. In Malaysia, adolescents are especially vulnerable due to peer pressure and the community environment (Sulaiman & Zainuddin, 2021). Ramli (2012) also identified neighborhood influence as a risk factor among prisoners with drug addiction. A 2007 Bureau of Justice Statistics report revealed that 22% of students in grades 9 to 12 had been offered, sold, or given illegal drugs at school, heightening their exposure and risk of future abuse (Tam & Foo, 2012).

Similarly, Broman (2016) highlighted that drug availability in communities plays a crucial role in later drug use. Despite this, our study found lower prevalence rates compared to Western countries such as the United States (Substance Abuse and Mental Health Services Administration, 2020) and Norway

(Heradstveit et al., 2020). Drug misuse may be at odds with local cultural and religious norms, particularly in Muslim communities (Ismail et al., 2022). However, the legalization of cannabis in certain countries may influence perceptions of drug use among local adolescents, even though evidence suggests its harmful effects (Sefa & Ali, 2020).

Study Limitations and Recommendations

There are several limitations that we identified in this study. This study involved school-going adolescents aged between 13 and 19 years, who may not be forthright in their responses about drug use for fear of disciplinary action if they admit any involvement. As such, the prevalence rates reported here may not be entirely accurate. For similar reasons, some of the participants were also hesitant to disclose the truth about their past experiences and were unable to communicate effectively about what they were requested to share, particularly regarding drug-related activities in the past. In addition, some may be fearful and thus distrustful that the information provided may be detrimental to them. With this cognizance, we suggest that similar studies should be conducted in a more general setting and not be limited to school-going adolescents. By including adolescents from various backgrounds, for example non-schoolers or those outside the formal education setting, future studies can provide a more representative and comprehensive picture of the prevalence of drug abuse among adolescents. This way, we can identify different risks and protective factors that may influence drug abuse patterns among adolescents in the general population.

Conclusion

This study discovered a higher prevalence rate of drug abuse among adolescents compared to that previously reported in Malaysia. Our findings also found that kratom, hallucinogens, and cannabis are the most used substances among adolescents in Malaysia. Further research is necessary to elucidate and understand the trends in the use of these substances, especially hallucinogens, which we found to be closely associated with the use of e-cigarettes. Availability, accessibility, individual and community perceptions, and customary practices (cultural and faith-based) are possible factors that influence substance use across different localities and ethnic groups. Hence, policy measures must consider these socio-demographic variations in their prevention and treatment efforts. This study further draws attention to the urgent need to enhance existing intervention programs, drug-related policies, and educational programs to reduce drug abuse among adolescents in Malaysia.

Acknowledgements

The authors acknowledge the Ministry of Higher Education Malaysia and the Universiti Kebangsaan Malaysia, (UKM) for funding this study under the Long-Term Research Grant Scheme-(LGRS/1/2019/UKM-UKM/2/1). We also thank the team for their commitment and tireless efforts in ensuring that the manuscript was well executed.

Author contributions

Conception of the study: N.S.S., R.İ., M.S.S., A.M.N., N.A.L., M.R.A.M.; Study design: N.S.S., R.İ., M.R.A.M.; Data acquisition: N.S.S., R.İ., M.S.S., A.M.N., N.A.L., N.I., R.M.R., N.A.L., N.A., S.A.H., N.H., F.I., F.N., M.R.A.M.; Data analysis: M.S.S.; Drafting of the manuscript: N.S.S., M.S.S., F.N.; Critical revision of the manuscript: N.S.S., R.İ., M.S.S., A.M.N., N.I., R.M.R., N.A.L., N.A., S.A.H., N.H., F.I., F.N., M.R.A.M. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Ethics Committee of the Secretariat of Research Ethics Universiti Kebangsaan Malaysia (Date: March 23, 2020, Decision/Protocol No: PPI/111/8/JEP-2020-174(2).). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

This study was supported by the Ministry of Higher Education, Malaysia under Grant Number LRGS/1/2019/UKM-UKM/2/1.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Afifi, R. A., El Asmar, K., Bteddini, D., Assi, M., Yassin, N., Bitar, S., & Ghandour, L. (2019). Bullying victimization and use of substances in high school: Does religiosity moderate the association? *Journal of Religion and Health, 59*(1), 334-350. **[Crossref]**

Agensi Antidadah Kebangsaan Kementerian Dalam Negeri. (2019). *Maklumat dadah 2019*. https://online.anyflip.com/jxfni/vzzz/mobile/index.html

Ajzen, I., & Manstead, A. S. (2007). Changing health-related behaviours: An approach based on the theory of planned behaviour. In *The scope of social psychology* (pp. 55-76). Psychology Press. **[Crossref]**

Ali, F., Russell, C., Nafeh, F., Rehm, J., LeBlanc, S., & Elton-Marshall, T. (2021). Changes in substance supply and use characteristics among people who use drugs (PWUD) during the COVID-19 global pandemic: A national qualitative assessment in Canada. *International Journal of Drug Policy, 93*, 103237. **[Crossref]**

Ander, B., Fransson, E. I., Bergnehr, D., & Gerdner, A. (2020). Onset of substance use among early adolescents in Sweden. *Journal of Social Work Practice in the Addictions*, *20*(2), 105-121. **[Crossref]**

Anderberg, M., Dahlberg, M., Wennberg, P. (2022). Criminality among young people with substance use problems in Sweden: A one-year follow-up study. *Journal of Drug Issues, 52*(3), 406-420. **[Crossref]**

Breslau, J., Miller, E., Joanie Chung, W.-J., & Schweitzer, J. B. (2011). Childhood and adolescent onset psychiatric disorders, substance use, and failure to graduate high school on time. *Journal of Psychiatric Research, 45*(3), 295-301. **[Crossref]**

Broman, C. L. (2016). The availability of substances in adolescence: Influences in emerging adulthood. *Journal of Child & Adolescent Substance Abuse, 25*(5), 487-495. **[Crossref]**

Chainey, S., & Ratcliffe, J. (2005). *GIS and crime mapping*. Wiley. **[Crossref]**

Choi, H. J., Lu, Y., Schulte, M., & Temple, J. R. (2018). Adolescent substance use: Latent class and transition analysis. *Addictive Behaviors*, *77*, 160-165. **[Crossref]**

Czeisler, M. É., Lane, R. I., Petrosky, E., Wiley, J. F., Christensen, A., Njai, R., Weaver, M. D., Robbins, R., Facer-Childs, E. R., Barger, L. K., Czeisler, C. A., Howard, M. E., & Rajaratnam, S. M. W. (2020). Mental health, substance use, and suicidal ideation during the COVID-19 pandemic - United States, June 24-30, 2020. MMWR. *Morbidity and Mortality Weekly Report, 69*(32), 1049-1057. **[Crossref]**

El Kazdouh, H., El-Ammari, A., Bouftini, S., El Fakir, S., & El Achhab, Y. (2018). Adolescents, parents and teachers' perceptions of risk and protective factors of substance use in Moroccan adolescents: A qualitative study. *Substance Abuse Treatment, Prevention, and Policy, 13*(1), 31. **[Crossref]**

European Monitoring Centre for Drugs and Drug Addiction. (2021). *European drug report 2021: Trends and developments*. Publications Office. **[Crossref]**

Guttmannova, K., Skinner, M. L., Oesterle, S., White, H. R., Catalano, R. F., & Hawkins, J. D. (2018). The interplay between marijuana-specific risk factors and marijuana use over the course of adolescence. *Prevention Science, 20*(2), 235-245. **[Crossref]**

Hamid, R. T., Andrew, C. B., Ishraq, K. K., Arjamon D., & John, N. G. (2016). Kratom: A new product in an expanding substance abuse market. *Federal Practitioner, 33*(11), 32-36.

Heradstveit, O., Skogen, J. C., Edland-Gryt, M., Hesse, M., Vallentin-Holbech, L., Lønning, K.-J., & Sivertsen, B. (2020). Self-reported illicit drug use among Norwegian University and college students. *Associations With Age, Gender, and Geography. Frontiers in Psychiatry, 11*. **[Crossref]**

Institute for Public Health. (2020a). *National Health and Morbidity Survey (NHMS) 2019: Vol. I. NCDs—non-communicable diseases: Risk factors and other health problems*. http://www.iku.gov.my/nhms-2019

Institute for Public Health. (2020b). The National Health and Morbidity 2019. In *Institute for public health*. https://iku.gov.my/nhms-2019

Ismail, R. (2017). Pengaruh Faktor Individu, Keluarga dan Persekitaran Sosial Terhadap Tingkah Laku Penyalahgunaan Bahan dalam Kalangan Remaja. *Akademika, 87*(1), 7-16. **[Crossref]**

Ismail, R., Manaf, M. R. A., Hassan, M. R., Nawi, A. M., Ibrahim, N., Lyndon, N., Amit, N., Zakaria, E., Razak, M. A. A., Nor, N. I. Z., Shukor, M. S., & Kamarubahrin, A. F. (2022). Prevalence of drug and substance use among Malaysian youth: A nationwide survey. *International Journal of Environmental Research and Public Health*, *19*(8), 4684. **[Crossref]**

Ismail, R., Mohammed Nawi, A., Abdul Manaf, M. R., Hassan, M. R., Mohd, H. A., Ibrahim, N., Tan Abdullah, I. H., & Shukor, S. (2023). Risk and protective factors in predicting drug and substance abuse among Malaysian youths. *Addicta: The Turkish Journal on Addictions, 10*(1), 23-33. **[Crossref]**

Jedynak, W., & Motyka, M. A. (2020). Drug use predictors identified in the school environment. *Canadian Journal of Family and Youth, 12*(1), 163-177. **[Crossref]**

Jordan, C. J., & Andersen, S. L. (2017). Sensitive periods of substance abuse: Early risk for the transition to dependence. *Developmental Cognitive Neuroscience*, *25*, 29-44. **[Crossref]**

Kanato, M., Sarasiri, R., & Leyatikul, P. (2021). *ASEAN Drug Monitoring Report 2020. Bangkok: ASEAN Narcotics Cooperation Center*. https://asean.org/wp-content/uploads/2022/03/ADM-Report-2020_2021Nov02.pdf

Kortteinen, S. (2008). Negotiating etnic identities: Alcohol as a social marker in East and West Malaysia. *Akademika, 72*, 25-44.

Miech, R. A., Johnston, L. D., O'malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2021). *Monitoring the future national survey results on drug use, 1975-2020. Volume I, secondary school students*. Institute for Social Research. **[Crossref]**

NADA. (2021). *NADA strategic plan 2021*. https://www.aadk.gov.my/en/policies-acts-circulars/aadk-strategic-plan-2021-2025/

Nawi, A. M., Ismail, R., Ibrahim, F., Hassan, M. R., Manaf, M. R. A., Amit, N., Ibrahim, N., & Shafurdin, N. S. (2021). Risk and protective factors of drug abuse among adolescents: A systematic review. *BMC Public Health*, *21*(1), 2088. **[Crossref]**

Osborne, V., Serdarevic, M., Striley, C. W., Nixon, S. J., Winterstein, A. G., & Cottler, L. B. (2020). Age of first use of prescription opioids and prescription opioid non-medical use among older adolescents. *Substance Use & Misuse Journal, 55*(14), 2420-2427. **[Crossref]**

Patrick, M. E., Parks, M. J., Fairlie, A. M., Kreski, N. T., Keyes, K. M., & Miech, R. (2022). Using substances to cope with the COVID-19 pandemic: U.S. National data at age 19 years. *Journal of Adolescent Health, 70*(2), 340-344. **[Crossref]**

Ramli, W. S. W. (2012). *Pengaruh psikososial dan tahap pengetahuan bahaya dadah terhadap penagihan semula dalam kalangan banduan penagih dadah penjara Malaysia*. Retrieved July 25, 2019, from http://etd.uum.edu.my/3266/4/WAN_SALMI_WAN_RAMLI.pdf

Rodzlan Hasani, W. S., Saminathan, T. A., Ab Majid, N. L., Miaw Yn, J. L., Mat Rifin, H., Abd Hamid, H. A., Robert Lourdes, T. G., Ahmad, A., Ismail, H., Rashid, R. A., & Mohd Yusoff, M. F. (2021). Polysubstance use among adolescents in Malaysia: Findings from the National Health and Morbidity Survey 2017. *PLOS ONE, 16*(1), e0245593. **[Crossref]**

Santana-Airis, R., George, T. S., Padron-Salas, A., Sanjuan-Meza X. S., Landeros- Olvera, E A. & Cossio-Torres, P. E. (2021). The relationship between density of drug outlets, crime hot spots and family factors on the consumption of drugs and delinquent behavior of male adolescent Mexican students. *Social Science & Medicine, 279,* 113985. **[Crossref]**

Schauer, G. L., Clayton, H. B., Njai, R., & Grant, A. M. (2020). Adolescent marijuana use and related risk behaviors, national findings from 2015 to 2017. *American Journal of Preventive Medicine*, *59*(5), 714-724. **[Crossref]**

Sefa, B., & Ali, C. U. (2020). Adolescents and marijuana: Its prevalence, underpinning causes, effects and implications on the next generation. *International Journal of Psychology and Counselling*, *12*(3), 45-52. **[Crossref]**

Shafie, A. A.-H., Othman, K., Baharudin, D. F., Mohamad Yasin, N., Amat, S., Mohd Jaladin, R. A., Rahimi, M. K. A., Mokhtar, A. N., Wahab, S., & Khairul Anuwar, N. H. (2023). An analysis on youth drug abuse: Protective and risk factors in high-risk area. *Pertanika Journal of Social Science and Humanities, 31*(2), 585-605. **[Crossref]**

Shafini, S. N., Anak, L. N., & Rozmi, I. (2022). Pengetahuan dan sikap terhadap dadah dalam kalangan remaja di Malaysia. In *Prosiding Seminar Kaunseling, Sains Sosial & Pendidikan (SKSSP)* (Vol. 2, pp. 164-178).

Sharapova, S., Reyes-Guzman, C., Singh, T., Phillips, E., Marynak, K. L., & Agaku, I. (2020). Age of tobacco use initiation and association with current use and nicotine dependence among US middle and high school students, 2014-2016. *Tobacco Control*, *29*(1), 49-54. **[Crossref]**

Substance Abuse and Mental Health Services Administration. (2020). *Key substance use and mental health indicators in the United States: Results from the 2019 National Survey on Drug Use and Health* (HHS Publication No. PEP20-07-01-001, NSDUH Series H-55). Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/report/2019-nsduh-annual-national-report

Sulaiman, S. N., & Zainuddin, A. (2021). Social determinants of drug abuse among youth in selangor: A case study in Serendah's Rehabilitation Centre. *Journal of Administrative Science, 18*(1), 219-236.

Tam, C.-L., & Foo, Y.-C. (2012). Contributory factors of drug abuse and the accessibility of drugs. *International Journal of Collaborative Research on Internal Medicine & Public Health, 4*(9), 1621-1625.

UNODC. (2018). *World Drug Report 2018 (United Nations publication, Sales No. E.18.XI.9).* United Nations.

Yusoff, N. H. M., Suhaimi, F. W., Vadivelu, R. K., Hassan, Z., Rümler, A., Rotter, A., Amato, D., Dringenberg, H. C., Mansor, S. M., Navaratnam, V., & Müller, C. P. (2014). Abuse potential and adverse cognitive effects of mitragynine (kratom). *Addiction Biology, 21*(1), 98-110. **[Crossref]**

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.499

COVID-19 vaccination status and infection prevalence among individuals attending an addiction counseling unit

Mehmet Akif Sezerol[1,2], Zeynep Meva Altaş[3]

[1]Department of Public Health, Hamidiye Faculty of Medicine, University of Health Sciences, İstanbul, Türkiye
[2]Epidemiology Program, Institute of Health Sciences, İstanbul Medipol University, İstanbul, Türkiye
[3]Department of Public Health, Faculty of Medicine, Marmara University, İstanbul, Türkiye

Abstract

This study aims to determine the COVID-19 infection and vaccination statuses of individuals with substance use disorders. In this cross-sectional study, the population consisted of individuals with substance use disorders who were interviewed in Sultanbeyli district. Data were collected through a structured interview form, which included demographic information about the individual and their family, medical history, and addiction history. The COVID-19 infection and vaccination statuses of the individuals were verified using the system records. Nearly all of the individuals were male (n=264, 96.7%). Among the participants, 24.7% (n=38) reported a history of COVID-19 infection. Regarding the uptake of the COVID-19 vaccine, 57.8% (n=115) had received at least one dose of the vaccine. The proportion of fully vaccinated participants was 42.2% (n=84). Educational status, marital status, employment status, substance use status in the family, treatment attempts for substance use, age, age of substance initiation, and number of used substances were not found to be significantly associated with either having a COVID-19 infection or being fully vaccinated (p>0.05) The low rate of vaccine uptake highlights the need for targeted interventions, as well as further studies to increase understanding of factors that may affect vaccine uptake.

Keywords: substance use disorders, COVID-19, vaccination, pandemics

Main points

- The most common factors for substance use initiation included peer influence, family issues, social and work-related difficulties, and curiosity.
- The participants had low vaccination rates, with only 57.8% receiving at least one dose and 42.2% being fully vaccinated.
- Of the participants, 24.7% had a history of COVID-19 infection, and the proportion of fully vaccinated participants was 42.2%.

Introduction

Substance use disorder is defined according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), which emphasizes the recurrent use of substances leading to clinically significant impairment or distress (American Psychiatric Association [APA], 2013). Substance use disorders are leading causes of mortality and morbidity (World Health Organization [WHO], 2024). According to the Centers for Disease Control and Prevention (CDC), 17.1% of individuals aged 12 and older in the United States were reported to have a substance use disorder (Centers for Disease Control and Prevention [CDC], 2025). For these reasons, substance use disorder is a significant public health concern.

COVID-19, which emerged in China in late 2019, evolved into a global pandemic, impacting the entire world by 2020 (Nandy et al., 2020). The COVID-19 pandemic has negatively affected many areas of life, such as health, the economy, and social life, by causing high mortality and morbidity (Chang et al., 2022; WHO, 2020). The first COVID-19 case in Türkiye was reported on March 11, 2020 (T.C. Ministry of Health, General Directorate of Public Health, 2020). Various measures have been implemented to contain the spread of COVID-19. These measures include closing schools, remote education, changing work conditions, and reducing face-to-face interactions through social distancing rules (Ayouni et al., 2021; Diab-Bahman & Al-Enzi, 2020). People are naturally

Corresponding author: Zeynep Meva Altaş • **Email:** zeynep.meva@hotmail.com
Received: December 25, 2024 **Accepted:** October 02, 2025 **Published online:** June 22, 2026

Cite as: Sezerol, M. A., & Altaş, Z. M. (2026). COVID-19 vaccination status and infection prevalence among individuals attending an addiction counseling unit. *Addicta: The Turkish Journal on Addictions*, *13*(2), 197-204. https://doi.org/10.15805/addicta.2026.499

accustomed to living together, but during the pandemic, social isolation measures led to psychosocial problems (Pietrabissa & Simpson, 2020). For these reasons, the negative effects of the COVID-19 pandemic could be observed more clearly in vulnerable groups. One of these vulnerable groups includes individuals with substance use disorders (Lauvrak & Juvet, 2020). Such individuals may face a higher risk of COVID-19 infection due to their socioeconomic and behavioral characteristics, as well as certain health comorbidities (Wei & Shah, 2020). In addition, those with substance use disorders may encounter difficulties accessing many basic health services, including vaccination services (Livingston, 2020; Price et al., 2024).

Vaccination plays a crucial role in disease prevention, benefiting both individual health and the establishment of herd immunity (Ndwandwe & Wiysonge, 2021). COVID-19 vaccination efforts began progressively in Türkiye, similar to other countries worldwide. Initially, healthcare workers, the elderly, and individuals with chronic illnesses were prioritized for vaccination. Subsequently, the program expanded to cover all age groups. By the end of June 2021, the Ministry of Health had made free vaccination accessible to all adults (Sezerol & Altaş, 2023).

COVID-19 vaccines have been one of the most critical tools for suppressing the adverse effects of the pandemic. However, achieving equitable access to healthcare and vaccination remains a challenge, particularly among disadvantaged groups. One such vulnerable population is individuals with substance use disorders. This study aims to assess the COVID-19 vaccination rates and SARS-CoV-2 infection statuses among individuals with substance use disorders attending the addiction counseling center in Sultanbeyli, Istanbul, and to identify associated factors.

Methods

Study Design, Type, Population

In addiction counseling units operating within District Health Directorates, individuals with substance use disorders or their relatives apply for counseling services. The addiction counseling unit aims to provide counseling services to individuals with substance use disorders and their families, guide them to appropriate treatment centers, and ensure follow-up of treatment processes. Expert psychologists offer guidance on addiction, treatment methods, and social support. Motivational interviews, information sharing, and support are provided to individuals with substance use disorders and their families before, during, and after treatment. Additionally, supporting social adaptation processes and collaborating with other institutions when necessary are among the primary objectives. A "substance user interview form" is completed for each new application. The study population consists of individuals with substance use disorders who were interviewed in the Sultanbeyli district from the beginning of 2018 to May 2022. Sultanbeyli is a district located on the Anatolian side of Istanbul, Türkiye, and has 360,702 residents (Türkiye İstatistik Kurumu, 2023). Sultanbeyli has the lowest socio-economic development index compared to other districts of Istanbul (Altaş & Sezerol, 2024).

In this cross-sectional study, no sampling method was employed; instead, the file records of all individuals who applied to the institution and had the interview form completed were included in the study. No direct contact was made with the individuals, and only their file records were utilized for the research.

Evaluation

The substance user interview form, from which the data were collected, includes information such as gender, age, marital status, educational background, application date, details about the parents, family history of substance use, substances used by the individual, reasons for starting substance use, name of the substance used, method of use, quantity and duration of use, age of initiation, whether the individual received treatment, and whether they were referred for treatment. Additionally, for individuals whose information was available in the system, the number of COVID-19 tests, the number of positive and negative results, and vaccination status were also examined. In the study, full vaccination status for COVID-19 was defined as a minimum of two doses of vaccination regardless of the type of vaccine (CDC, 2022).

Statistical Analysis

The statistical analysis of the study data was performed using the SPSS 24.0 software package. Descriptive data were presented as numbers and percentages for categorical variables, and as minimum value, maximum value, and median for continuous variables. Categorical variables were analyzed using Pearson's chi square test and Fisher's exact chi-square test. The normality of continuous variables was evaluated through histograms, probability plots, and analytical methods, including the Kolmogorov-Smirnov and Shapiro-Wilk tests. Continuous variables were evaluated with the Mann-Whitney U test for two independent groups if they did not meet the normal distribution criteria. Statistical significance was set at $p<0.05$.

Ethics

Ethics committee approval for the study was obtained from the Istanbul Medipol University Non-Interventional Clinical Research Ethics Committee under decision number 747 on 25/08/2022.

Results

Over a five-year period, a total of 276 dependent individuals were interviewed. Three participants under the age of 18 were excluded from the analysis. Of the remaining 273, vaccination status was available for 199 and COVID-19 infection history was available for 154 (Figure 1). The substance use-related

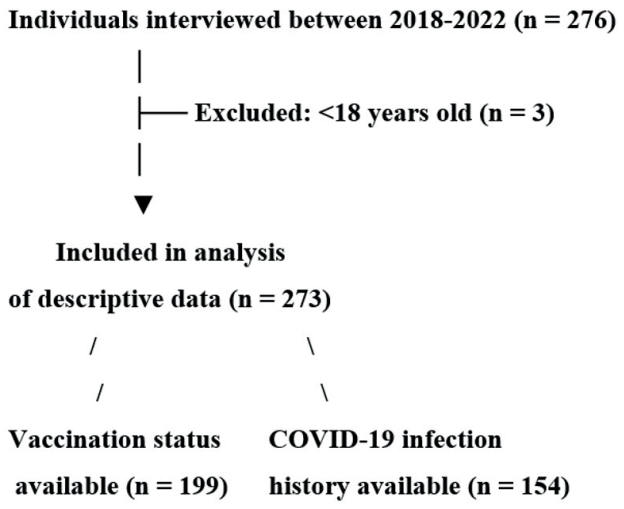

Figure 1. Flowchart of the study

variables and sociodemographic characteristics were presented based on data from the 273 individuals included in the analysis.

The median age was 29, with a minimum age of 18 and a maximum age of 53. Nearly all individuals were male (n=264, 96.7%). The majority of participants were unemployed (n=191, 71.3%) and unmarried (n=175, 64.8%). Nearly half of the participants were middle school graduates (n=130, 49.1%). The percentages of participants whose mothers and fathers had passed away were 3.1% (n=6) and 11.0% (n=21), respectively (Table 1).

Table 1. Sociodemographic features of the participants

		N (%)
Gender	Male	264 (96.7)
	Female	9 (3.3)
Marital status	Married	80 (29.6)
	Unmarried	175 (64.8)
	Divorced	15 (5.6)
Educational status	Illiterate	3 (1.1)
	Literate	12 (4.5)
	Primary school	97 (36.6)
	Secondary school	130 (49.1)
	Highschool	18 (6.8)
	University	5 (1.9)
Employment status	Not working	191 (71.3)
	Working	77 (28.7)
Mother alive	No	6 (3.1)
	Yes	188 (96.9)
Father alive	No	21 (11.0)
	Yes	170 (89.0)

The reason for substance use initiation was known for 72 participants. Advice from friends and the surrounding environment was the most common reason. Family issues, social life difficulties, work-related problems, and curiosity were the other reasons. The median age of initiation of substance use was 17.0 years (8.0–43.0). The median number of used substances was 2.0 (1.0-6.0). Of the participants, 77.5% (n=172) had attempted treatment for substance use. Among the participants, 16.5% (n=45) had a history of substance use in their family. Among these, the most common history was substance use by a sibling, while no participants reported substance use by their mother (Table 2).

Among the participants, 24.7% (n=38) reported a history of COVID-19 infection. Regarding uptake of the COVID-19 vaccine, 57.8% (n=115) had received at least one dose of the vaccine. The proportion of fully vaccinated participants was 42.2% (n=84) (Table 3).

Factors associated with participants' COVID-19 infection status were evaluated. Educational status, marital status, employment status, family history of substance use, full vaccination status, treatment attempt, age, age of substance initiation, and number of used substances were not found to be significantly associated with having a COVID-19 infection (Table 4).

Factors associated with participants' full vaccination status against COVID-19 were evaluated. Among those who had attempted substance use treatment, 45.8 % (n=60) were fully vaccinated against COVID-19, compared to 28.6 % (n=10) of those who had not attempted treatment (p=0.067). Educational status, marital status, employment status, family substance use, treatment attempt, age, age of initiation, and number of used substances showed no significant association with full vaccination (Table 5).

Discussion

Vaccine uptake is critically important for the control of infectious diseases (Excler et al., 2021). It is well-known that substance use disorders create significant barriers to accessing healthcare services (Motavalli et al., 2020; Ross et al., 2015). In this context, the study evaluated COVID-19 infection status, vaccination rates, and associated factors among individuals with substance use disorders.

In the study, nearly all the individuals were male (96.7%). Some studies in the literature have reported that hazardous alcohol consumption or heavy cannabis use is more prevalent in men than in women (Bosque-Prous et al., 2015; Colell et al., 2015; Mischley, 2016). Gender differences observed in substance use may stem from sociocultural structures, gender norms, and the varying societal roles and responsibilities attributed to women and men. In this study, the majority of participants were unemployed (71.3%). Nearly half of the participants were middle school graduates (49.1%). A population-based study reported that individuals with substance use disorders have lower levels of education compared to the general

population (Amundsen et al., 2022). A study found that unemployment was associated with increased heavy cannabis use and hypnosedative use (Teixidó-Compañó et al., 2018). Unemployment can lead to financial hardship, challenges in maintaining daily life, and difficulties in living standards and social interactions. Individuals facing such challenges may experience increased stress, which can contribute to the adoption of unhealthy behaviors such as substance use.

Table 2. Reasons for substance use initiation and history of use in close environment

		Median (min-max)
Age of initiation of substance use		17.0 (8.0-43.0)
Number used substance		2.0 (1.0-6.0)
		N (%)
Reason for substance use initiation	Friends' advice / Environmental factors	54 (75.0)
	Family issues	9 (16.7)
	Social life difficulties, work-related problems	7 (9.7)
	Curiosity	2 (2.8)
Treatment attempt	No	50 (22.5)
	Yes	172 (77.5)
Substance use in family		45 (16.5)
Substance use of father		10 (3.7)
Substance use of sibling		28 (10.3)
Substance use of other relatives and close circle		14 (5.1)
Substance use of mother		0 (0)

Table 3. Information about COVID-19 vaccines and history of COVID-19 infection

		N (%)
History of COVID-19 infection	No	116 (75.3)
	Yes	38 (24.7)
Uptake of COVID-19 vaccine	Unvaccinated	84 (42.2)
	Vaccinated	115 (57.8)
COVID-19 vaccine doses	One dose	31 (27.0)
	Two doses	63 (54.8)
	Three doses	20 (17.4)
	Four doses	1 (0.9)
Full vaccination	No	115 (57.8)
	Yes	84 (42.2)

Table 4. Factors associated with COVID-19 infection

		COVID-19 Infection		**P value**
		No	**Yes**	
		N (%)	**N (%)**	
Marital status	Married	32 (66.7)	16 (33.3)	0.100
	Unmarried/Divorced	83 (79.0)	22 (21.0)	
Educational status	Below high school	102 (75.0)	34 (25.0)	1.000
	High school and above	11 (78.6)	3 (21.4)	
Employment status	No	80 (74.8)	27 (25.2)	0.965
	Yes	32 (74.4)	11 (25.6)	
Family substance use	No	22 (75.9)	7 (24.1)	0.715
	Yes	20 (80.0)	5 (20.0)	
Treatment attempt	No	22 (78.6)	6 (21.4)	0.853
	Yes	80 (76.9)	24 (23.1)	
Full vaccination against COVID-19	No	59 (72.8)	22 (27.2)	0.543
	Yes	54 (77.1)	16 (22.9)	
Age, median (min-max)		28.0 (19.0-48.0)	30.0 (18.0-39.0)	0.231
Age of initiation of substance use, median (min-max)		17.0 (10.0-38.0)	17.5 (8.0-34.0)	0.747
Number used substance, median (min-max)		2.0 (1.0-6.0)	2.0 (1.0-5.0)	0.374

Table 5. Factors associated with full vaccination against COVID-19

		Full Vaccination		P value
		No	Yes	
		N (%)	N (%)	
Marital status	Married	36 (55.4)	29 (44.6)	0.620
	Unmarried/Divorced	78 (59.1)	54 (40.9)	
Educational status	Below high school	106 (59.6)	72 (40.4)	0.331
	High school and above	7 (46.7)	8 (53.3)	
Employment status	No	80 (59.7)	54 (40.3)	0.462
	Yes	33 (54.1)	28 (45.9)	
Family substance use	No	16 (44.4)	20 (55.6)	0.558
	Yes	16 (51.6)	15 (48.4)	
Treatment attempt	No	25 (71.4)	10 (28.6)	0.067
	Yes	71 (54.2)	60 (45.8)	
Age, median (min-max)		29.0 (18.0-45.0)	29.0 (19.0-49.0)	0.509
Age of initiation of substance use, median (min-max)		17.0 (8.0-35.0)	18.0 (10.0-43.0)	0.351
Number used substance, median (min-max)		2.0 (1.0-5.0)	2.0 (1.0-6.0)	0.266

In this study, friends' advice and the surrounding environment were the most common reasons for the initiation of substance use. Family issues, social life difficulties, work-related problems, and curiosity were the other reasons. Similarly, the literature has reported that reasons for initiating substance use are associated with factors such as curiosity, peer influence, academic problems, economic difficulties, and easy access to addictive substances (Al-Kandari et al., 2001; Wani & Ahmed, 2024). There is a need for multidisciplinary public health interventions to address the factors driving individuals toward substance use. Given that the median age of initiation was 17.0 years in this study, it is crucial to implement preventive interventions that support the development of young individuals, such as psychosocial support programs and structured educational initiatives.

Among the participants, 24.7% (n=38) reported a history of COVID-19 infection. The literature reports that individuals with substance use disorders are at an increased risk of COVID-19 infection (Wang et al., 2021). Moreover, it has been reported that COVID-19 patients with substance use disorders are at an increased risk for hospitalization and adverse outcomes (Baillargeon et al., 2021). This may be caused by the use of substances that negatively affect the cardiovascular and respiratory systems, as the users could be more vulnerable to respiratory complications of COVID-19 disease (Baillargeon et al., 2021). The increased vulnerability of individuals with substance use disorders to COVID-19 infection may also be attributed to the presence of comorbid conditions such as hepatitis C and HIV, as well as socioeconomic problems (Wei & Shah, 2020). In this study, educational status, marital status, employment status, family history of substance use, treatment attempts for substance use, age, age of substance initiation, and number of used substances were not found to be significantly associated with having a COVID-19 infection. The literature indicates that no significant age, gender, or ethnic disparities in breakthrough COVID-19 infections were observed among patients with substance use disorders after adjusting for other demographics, adverse socioeconomic determinants of health, comorbid medical conditions, and vaccine types, except in patients with cannabis use disorder (Wang et al., 2022).

In this study, the proportion of fully vaccinated participants (at least two doses) was 42.2%. In a study conducted in Türkiye, the rate of receiving two vaccine doses among individuals with substance use disorders was reported as 49.5% (Torun et al., 2025). According to data from the Turkish Ministry of Health, 85.7% of individuals aged 18 years and older received at least two doses of a COVID-19 vaccine ((T.C. Ministry of Health, n.d.). The COVID-19 vaccination rate among individuals with substance use disorders in the current study is significantly lower compared to the general population in Türkiye. Educational status, marital status, employment status, Family history of substance use, treatment attempts for substance use, age, age of substance initiation, and number of used substances were not found to be significantly associated with vaccine uptake. However, the proportion of fully vaccinated individuals was higher among those who had attempted treatment. Although this difference did not show statistical significance, the p value was close to the threshold, suggesting a potential relationship. This finding may indicate that individuals who have attempted treatment are also more likely to adhere to preventive measures such as vaccination. Further studies are needed in this regard. In Spain, 71% of individuals with opioid use disorder were vaccinated against COVID-19 (Vallecillo et al., 2022). In the same study, older age and the presence of comorbidities were found to be associated with vaccination. In another study, 20% of individuals with substance use disorders reported that they had not received the COVID-19 vaccine. The most common reasons cited were lack of trust in the vaccine and fear of side effects (Mondera et al., 2022). Another study conducted among youth aged 14–29 years reported that perceptions regarding vaccine safety and efficacy were the primary determinants influencing hesitant, uncertain, and acceptant vaccine attitudes (Everest et al., 2025). Thus, vaccine hesitancy and distrust, particularly prevalent in disadvantaged populations (Masson et al.,

2021), may also have influenced uptake patterns observed in our study. In a review on COVID-19 vaccine hesitancy and under-vaccination among marginalized populations, some structural factors such as stigma, institutional mistrust, limited vaccine supply and availability, transportation barriers, and the absence of culturally and linguistically appropriate information were found to predominate (Newman et al., 2023). These findings underline the crucial role of structural barriers affecting vaccine uptake, particularly among disadvantaged populations. Qualitative studies could be conducted to explore the individual and environmental factors that facilitate vaccination or act as barriers to vaccine uptake. Larger and multicenter studies may also help to understand the underlying barriers to vaccine uptake among individuals with substance use disorders.

Limitations and Directions/Suggestions for Future Research

The study examined SARS-CoV-2 infection, vaccination status, and associated factors among individuals with substance use disorders during the pandemic. A limited number of studies have simultaneously evaluated SARS-CoV-2 infection, vaccination status, and substance use. This highlights the originality of our research. Furthermore, the study provides valuable insights to the literature, contributing to the improvement of health policies and interventions targeting this group.

However, reliance on self-reported data from participants poses a limitation, as social desirability bias may have influenced the responses. Additionally, since the data were collected from a single center, the generalizability of the findings is limited. Another limitation of this study is the lack of complete records regarding COVID-19 vaccination and infection history for the 273 individuals who applied to the counseling unit. Those with missing data may have differed from those with complete information, and the frequency estimates might therefore be subject to under- or overestimation. The proportion of men in our study was substantially higher. This may limit the generalizability of the findings to women. The underrepresentation of women may be related to barriers to accessing healthcare, cultural or social constraints, or differences in health-seeking behaviors. This imbalance should be considered when interpreting the results, as women's perspectives and health needs may not have been adequately reflected. Another limitation is that the study did not fully address the environmental and socioeconomic factors affecting healthcare access for individuals with substance use disorders during the pandemic. Furthermore, as the vaccination dates of the participants were unknown, it remains unclear whether they were vaccinated before or after their COVID-19 infection. Consequently, the study does not provide data on vaccine efficacy within this population.

Future research should examine the underlying reasons for low vaccine uptake rates among people with substance use disorders, including psychosocial and cultural barriers. Moreover, interventional studies are needed to design and evaluate targeted programs, such as motivational interviewing or educational initiatives, to increase vaccine uptake in this population.

Conclusion

The study provides a unique contribution to the literature by examining SARS-CoV-2 infection, vaccination status, and associated factors among individuals with substance use disorders. Only 42.2% of participants were fully vaccinated against COVID-19, which is a relatively low rate. The findings highlight the challenges faced by this vulnerable group in accessing healthcare services and the disparities in vaccination rates. This information is crucial for improving health policies and developing interventions targeting individuals with substance use disorders. Targeted strategies, such as offering vaccination at substance use treatment centers, strengthening outreach programs for women who may face access barriers, and ensuring continuity of care, could be beneficial. In addition, mobile vaccination teams and telehealth-based vaccine reminders could further reduce barriers during public health crises. Broader and multicenter studies would be beneficial to better understand the socioeconomic and environmental factors associated with vaccine uptake, provide more data on vaccine efficacy, and enhance the generalizability of the findings.

Author contributions

Conception and design: M.A.S., Z.M.A.; Data acquisition: M.A.S., Z.M.A.; Data interpretation: M.A.S., Z.M.A.; Drafting of the manuscript: M.A.S., Z.M.A.; Critical revision of the manuscript: M.A.S., Z.M.A. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Istanbul Medipol University Interventional Clinical Research Ethics Committee (Date: August 25, 2022, Decision/Protocol No: 747). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that during the preparation of this study, the following AI-assisted technology was used: ChatGPT (OpenAI, version GPT-5.1) on December, 2025. Extent of Use: This study used the generative AI tool ChatGPT (OpenAI, version GPT-5.1) solely for language editing and improving the clarity of the manuscript. No content, interpretation, analysis, or scientific conclusions were generated by the AI. The authors confirm that they have critically reviewed and edited any AI-generated content and take full responsibility for the integrity, accuracy, and originality of the publication. The authors certify that the original human contribution is maintained and that AI-assisted tools are not listed or cited as authors.

References

Al-Kandari, F. H., Yacoub, K., & Omu, F. (2001). Initiation factors for substance abuse. *Journal of Advanced Nursing, 34*(1), 78-85. **[Crossref]**

Altaş, Z. M., & Sezerol, M. A. (2024). Frequency of SARS-COV-2 infection and COVID-19 vaccine uptake and protection among Syrian refugees: COVID-19 vaccine among Syrian refugees. *BMC Infectious Diseases, 24*(1), 570. **[Crossref]**

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing. **[Crossref]**

Amundsen, E. J., Bretteville-Jensen, A. L., & Rossow, I. (2022). Patients admitted to treatment for substance use disorder in Norway: A population-based case-control study of socio-demographic correlates and comparative analyses across substance use disorders. *BMC Public Health, 22*(1), 792. **[Crossref]**

Ayouni, I., Maatoug, J., Dhouib, W., Zammit, N., Fredj, S. B., Ghammam, R., & Ghannem, H. (2021). Effective public health measures to mitigate the spread of COVID-19: A systematic review. *BMC Public Health, 21*(1), 1015. **[Crossref]**

Baillargeon, J., Polychronopoulou, E., Kuo, Y.-F., & Raji, M. A. (2021). The impact of substance use disorder on COVID-19 outcomes. *Psychiatric Services, 72*(5), 578-581. **[Crossref]**

Bosque-Prous, M., Espelt, A., Borrell, C., Bartroli, M., Guitart, A. M., Villalbí, J. R., & Brugal, M. T. (2015). Gender differences in hazardous drinking among middle-aged in Europe: The role of social context and women's empowerment. *European Journal of Public Health, 25*(4), 698-705. **[Crossref]**

Centers for Disease Control and Prevention. (2022). *Requirement for proof of COVID-19 vaccination for air passengers*. https://stacks.cdc.gov/view/cdc/116833

Centers for Disease Control and Prevention. (2025). Substance use and substance use disorders in travelers. In *CDC yellow book: Health information for international travel*. https://www.cdc.gov/yellow-book/hcp/travelers-with-additional-considerations/substance-use.htm

Chang, D., Chang, X., He, Y., & Tan, K. J. (2022). The determinants of COVID-19 morbidity and mortality across countries. *Scientific Reports, 12*(1), 5888. **[Crossref]**

Colell, E., Sánchez-Niubò, A., Delclos, G. L., Benavides, F. G., & Domingo-Salvany, A. (2015). Economic crisis and changes in drug use in the Spanish economically-active population. *Addiction, 110*, 1129-1137. **[Crossref]**

Diab-Bahman, R., & Al-Enzi, A. (2020). The impact of COVID-19 pandemic on conventional work settings. *International Journal of Sociology and Social Policy, 40*(9/10), 909-927. **[Crossref]**

Everest, L., Henderson, J., Ma, C., Prebeg, M., Relihan, J., & Hawke, L. D. (2025). Relationship between mental health and substance abuse on COVID-19 vaccine hesitancy in youth: A mixed methods longitudinal cohort study. *PLoS ONE, 20*(1), e0313157. **[Crossref]**

Excler, J. L., Saville, M., Berkley, S., & Kim, J. H. (2021). Vaccine development for emerging infectious diseases. *Nature Medicine, 27*(4), 591-600. **[Crossref]**

Lauvrak, V., & Juvet, L. (2020). *Social and economic vulnerable groups during the COVID-19 pandemic. Rapid review*. Norwegian Institute of Public Health.

Livingston, J. D. (2020). *Structural stigma in health-care contexts for people with mental health and substance use issues: A literature review*. Mental Health Commission of Canada.

Masson, C. L., McCuistian, C., Straus, E., Elahi, S., Chen, M., Gruber, V. A., Le, T., & Guydish, J. (2021). COVID-19 vaccine trust among clients in a sample of California residential substance use treatment programs. *Drug and Alcohol Dependence, 225*, 108812. **[Crossref]**

Mischley, L. K. (2016). Sex differences in cannabis use and effects: A cross-sectional survey of cannabis users. *Cannabis and Cannabinoid Research, 1*(1), 166-175. **[Crossref]**

Mondera, F., Direnzo, G. F. M., Cammalleri, V., Forestiero, F. M., Turatto, F., Baccolini, V., Marzuillo, C., Barra, M., & Villari, P. (2022). COVID-19 vaccination adherence and correlated factors in patients with substance use disorders. *European Journal of Public Health, 32*(Supplement_3), ckac131.351. **[Crossref]**

Motavalli, D., Taylor, J. L., Childs, E., Valente, P. K., Salhaney, P., Olson, J., Biancarelli, D. L., Edeza, A., Earlywine, J. J., Marshall, B. D. L., Drainoni, M.-L., Mimiaga, M. J., Biello, K. B., & Bazzi, A. R. (2020). "Health is on the back burner:" Multilevel barriers and facilitators to primary care among people who inject drugs. *Journal of General Internal Medicine, 36*, 129-137. **[Crossref]**

Nandy, K., Salunke, A., Pathak, S. K., Pandey, A., Doctor, C., Puj, K., Sharma, M., Jain, A., & Warikoo, V. (2020). Coronavirus disease (COVID-19): A systematic review and meta-analysis to evaluate the impact of various comorbidities on serious events. *Diabetes & Metabolic Syndrome, 14*(5), 1017-1025. **[Crossref]**

Ndwandwe, D., & Wiysonge, C. S. (2021). COVID-19 vaccines. *Current Opinion in Immunology, 71*, 111-116. **[Crossref]**

Newman, P. A., Dinh, D. A., Nyoni, T., Allan, K., Fantus, S., Williams, C. C., Tepjan, S., Reid, L., & Guta, A. (2023). COVID-19 vaccine hesitancy and under-vaccination among marginalized populations in the United States and Canada: A scoping review. *Journal of Racial and Ethnic Health Disparities, 12*(2), 413-434. **[Crossref]**

Pietrabissa, G., & Simpson, S. G. (2020). Psychological consequences of social isolation during COVID-19 outbreak. *Frontiers in Psychology, 11*, 2201. **[Crossref]**

Price, O., Swanton, R., Grebely, J., Hajarizadeh, B., Webb, P., Peacock, A., Dore, G. J., Cowie, B. C., Vickerman, P., & Degenhardt, L. (2024). Vaccination coverage among people who inject drugs: A systematic review. *International Journal of Drug Policy, 127*, 104382. **[Crossref]**

Ross, L. E., Vigod, S., Wishart, J., Waese, M., Spence, J. D., Oliver, J., Chambers, J., Anderson, S., & Shields, R. (2015). Barriers and facilitators to primary care for people with mental health and/or substance use issues: A qualitative study. *BMC Family Practice, 16*, 1-13. **[Crossref]**

Sezerol, M. A., & Altaş, Z. M. (2023). Vaccine uptake and COVID-19 frequency in pregnant Syrian immigrant women. *Vaccines, 11*(2), 257. **[Crossref]**

T.C. Ministry of Health. (n.d.). *COVID-19 vaccine information platform*. Retrieved December 20, 2024, from https://covid19asi.saglik.gov.tr/

T.C. Ministry of Health, General Directorate of Public Health. (2020). *COVID-19 (SARS-CoV-2 enfeksiyonu) genel bilgiler, epidemioloji ve tanı*. Sağlık Bakanlığı.

Teixidó-Compañó, E., Espelt, A., Sordo, L., Bravo, M. J., Sarasa-Renedo, A., Indave, B. I., Bosque-Prous, M., & Brugal, M. T. (2018). Differences between men and women in substance use: The role of educational level and employment status. *Gaceta Sanitaria, 32*, 41-47. **[Crossref]**

Torun, H. O., Akdöner, B., & Keskinoğlu, P. (2025). Sociodemographic and clinical characteristics of vaccine hesitancy at an outpatient addiction treatment center. *Addicta: The Turkish Journal on Addictions, 12*(2), 120-126. **[Crossref]**

Türkiye İstatistik Kurumu. (2023). *Adrese dayalı nüfus kayıt sistemi sonuçları 2023*. https://data.tuik.gov.tr/Bulten/Index?p=Adrese-Dayali-Nufus-Kayit-Sistemi-Sonuclari-2023-49684

Vallecillo, G., Durán, X., Canosa, I., Roquer, A., Martinez, M. C., & Perelló, R. (2022). COVID-19 vaccination coverage and vaccine hesitancy among people with opioid use disorder in Barcelona, Spain. *Drug and Alcohol Review, 41*(6), 1311-1318. **[Crossref]**

Wang, L., Wang, Q., Davis, P. B., Volkow, N. D., & Xu, R. (2022). Increased risk for COVID-19 breakthrough infection in fully vaccinated patients with substance use disorders in the United States. *World Psychiatry, 21*(1), 124-132. **[Crossref]**

Wang, Q. Q., Kaelber, D. C., Xu, R., & Volkow, N. D. (2021). COVID-19 risk and outcomes in patients with substance use disorders: Analyses from electronic health records in the United States. *Molecular Psychiatry, 26*(1), 30-39. **[Crossref]**

Wani, H. R., & Ahmed, A. (2024). A qualitative study of the initiation, causes, and consequences of drug addiction. *Journal of Mental Health and Human Behaviour, 29*(1), 10-15. **[Crossref]**

Wei, Y., & Shah, R. (2020). Substance use disorder in the COVID-19 pandemic: A systematic review of vulnerabilities and complications. *Pharmaceuticals, 13*(7), 155. **[Crossref]**

World Health Organization. (2020). *Impact of COVID-19 on people's livelihoods, their health and our food systems*. https://www.who.int/news/item/13-10-2020-impact-of-covid-19-on-people's-livelihoods-their-health-and-our-food-systems

World Health Organization. (2024). *Over 3 million annual deaths due to alcohol and drug use, majority among men*. https://www.who.int/news/item/25-06-2024-over-3-million-annual-deaths-due-to-alcohol-and-drug-use-majority-among-men

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.500

Twinkle twinkle little star: Gambling and child recognition of the Irish national lottery logo

Frank Houghton[1], John Lombard[2], Anne Campbell[3], Marley Shianna Delaney[1], Erin Macneill[1], Boluwatiwi Ogunye[1], Linda Duggan[1], Kayla Asregadoo[1]

[1]Department of Applied Social Sciences, Faculty of Applied Sciences and Health, Technological University of the Shannon, Limerick, Ireland
[2]School of Law, University of Limerick, Limerick, Ireland
[3]School of Sciences, Education and Social Work, Queen's University of Belfast, Belfast, Northern Ireland, UK

Abstract

Online and physical gambling activity has increased exponentially in the UK, Ireland, and Europe over the last 15 years. In Ireland, the National Lottery logo depicts a friendly, anthropomorphic 'dancing star', which is reminiscent of a nursery rhyme character. This research sought to examine children's recognition of the National Lottery logo. A child-friendly survey was administered in nine Irish primary schools in the mid-west region of Ireland. This convenience sample facilitated the gathering of information from 671 participants aged 6-13 years. The results indicate widespread familiarity with the National Lottery logo amongst children in Ireland. Forty percent of the youngest age group examined (7 years) and 85% of the oldest age group examined (12 years) identified the National Lottery logo. The level of familiarity with the logo suggests a high level of cultural recognition of gambling advertising among younger and older children. The proportion of children who correctly identified the National Lottery logo is an issue of concern. The 'dancing star' logo may appeal to younger audiences, which may be a violation of the National Lottery Advertising and Promotion Code of Practice.

Keywords: gambling, child, adolescent, Ireland, marketing, lottery

Main points

- Problem Gambling (PG) is a significant issue for a minority of people and is increasingly acknowledged as a public health issue.
- Exposure to marketing predicts uptake/participation, and early gambling is linked to problem gambling in later life.
- This research identified high levels of recognition of the National Lottery logo in Ireland.
- Ireland's National Lottery logo is overly child-friendly and should be amended.
- Further research in this field is required.

Twinkle, twinkle, little star,
How I wonder what you are?
(Taylor, 1811)

Introduction

Gambling worldwide was estimated to have a turnover of roughly US$711.4 Billion in 2020 (Cision, 2021) and is projected to rise by over US$150 Billion over the subsequent five years (Cision, 2021). The gambling industry in Ireland, as in many other countries, continues to expand. Its estimated worth is now in the region of €10 billion annually (Michael, 2019). In the context of this examination, it is important to note that Irish National Lottery sales recently passed the €1 Billion per annum mark (Slattery, 2022). Ireland has been identified as having the leading gross gambling revenue on a per capita basis in Europe, making it an attractive target for gambling marketing (Griffiths et al., 2009). A recent Lancet Public Health Commission on gambling noted the international dimension of the gambling industry (Wardle et al., 2021). It may be no surprise, therefore, that Ireland's National Lottery is now operated by the French firm La Française des Jeux (FDJ), having been previously controlled by the Ontario Teachers' Pension Plan (Daly, 2014). It has been suggested that a key element of the success of PLI was its ability to facilitate online

Corresponding author: Frank Houghton • **Email:** frank.houghton@tus.ie
Received: March 14, 2025 **Accepted:** January 15, 2026 **Published online:** June 22, 2026

Cite as: Houghton, F., Lombard, J., Campbell, A., Delaney, M. S., Macneill, E., Ogunye, B., Duggan, L. ve Asregadoo, K. (2026). Twinkle twinkle little star: Gambling and child recognition of the Irish national lottery logo. *Addicta: The Turkish Journal on Addictions*, *13*(2), 205-215. https://doi.org/10.15805/addicta.2026.500

gambling (Burke-Kennedy, 2023). Particular concerns have been raised over the last decade in connection with the growth of online gambling, both globally and specifically in Ireland (Columb & O'Gara, 2018; Columb et al., 2022, 2023; Cooney et al., 2021; McMahon, 2022). Concerns have increased in recent years over gambling advertising during sporting events (Columb et al., 2023), and the issue of co-addiction in relation to gambling (Condron et al., 2022).

This paper concentrates on children's familiarity with trademarks used by the National Lottery. In particular, the quantitative research underpinning this paper examines local school children's recognition of the National Lottery 'dancing star' logo. To provide context, this paper first highlights the public health dimension of gambling, reports on underage gambling in Ireland, and draws attention to emerging concerns over gambling advertising. The research methodology, results, and discussion sections are then presented. Overall, the paper highlights the child-friendly nature of the National Lottery trademark and addresses the implications of this design direction.

The harms of gambling should not be underestimated. Figure 1 details the many dimensions of gambling harm from life course and intergenerational perspectives. The College of Psychiatrists of Ireland (2020) stated that gambling in Ireland is a 'major public health concern'. Gambling represents an important Commercial Determinant of Health (CDoH) in Ireland for a vulnerable minority (McAvoy et al., 2023; Mialon, 2024; van Schalkwyk & Cassidy, 2023). Concerns over gambling, and particularly gambling advertising, have in part prompted the development of Ireland's Gambling Regulation Bill 2022. Research by Fulton (2015) has identified the problematic perception of National Lottery purchases as gambling that "wasn't really gambling." This research also noted concerns from Addiction Service Providers about underage teenagers engaging in online gambling using new technologies.

In recent years, a growing body of Irish research has explored this issue (Condron et al., 2022; Kerr et al., 2021; National Advisory Committee on Drugs and Alcohol [NACDA], 2018). An in-depth exploration of gambling in Ireland states that 0.3% of the population (or 12,000 people) were problem gamblers (Mongan et al., 2022). This report suggested that a further 0.9% (35,000 adults) should be designated moderate-risk gamblers, while 2.3% (90,000 adults) of the adult population were deemed low-risk gamblers. Other investigations of gambling in Ireland have also explored its impact across the general population, with other studies examining groups of particular concern, including young athletes (Murphy, 2019; Turk et al., 2023).

Historically, information on gambling prevalence in Ireland has been a notable deficit (Institute of Public Health, 2010). The Institute of Public Health (2010) specifically noted this information gap concerning high-risk groups, such as adolescents. However, substantial information on this topic has emerged over the last decade in Ireland. Youth gambling is of significant concern as a recent examination of 3,000

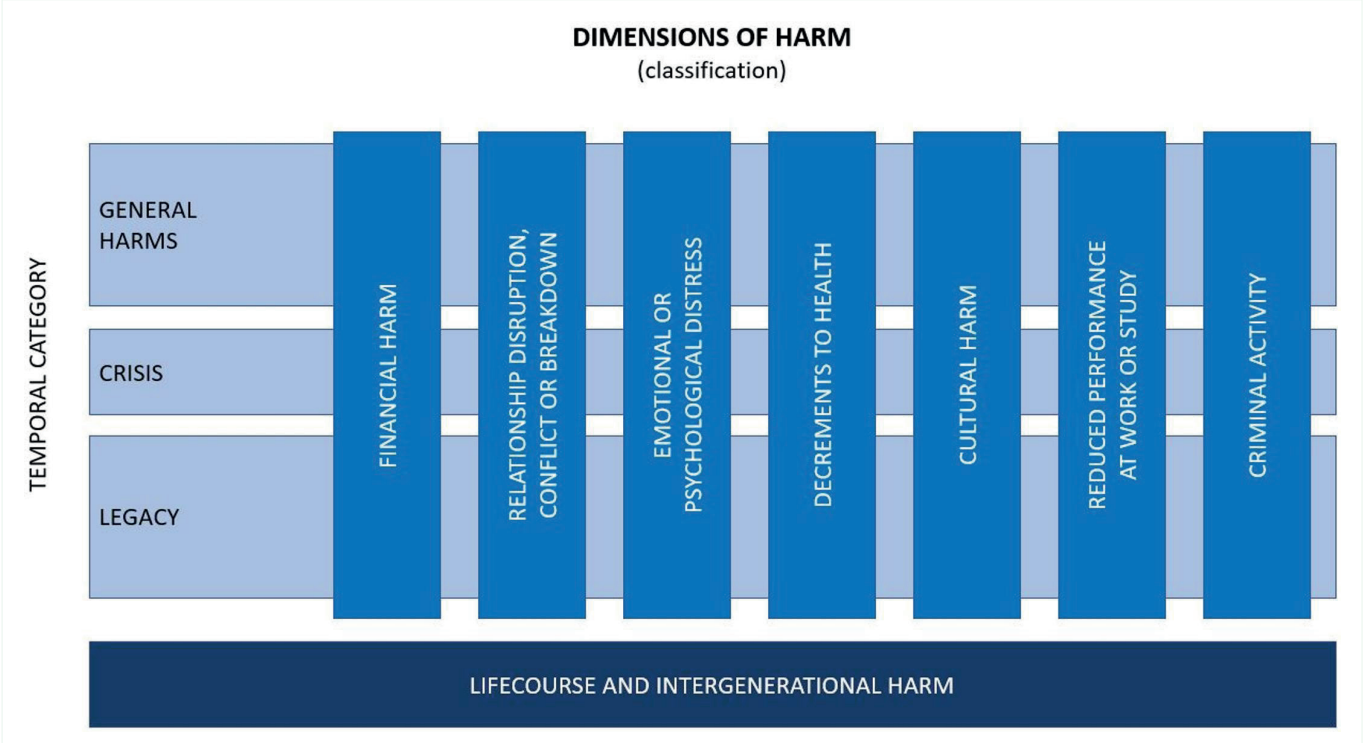

Figure 1. Dimensions of gambling harm identified by Langham et al. (2016)

people treated for problem gambling in Ireland between 2008-2019 found that half of these people had started to gamble before the age of 17 (Condron et al., 2022). On this point, the longitudinal Growing Up in Ireland (GUI) cohort study identified the prevalence of online gambling among 17-year-olds as 4.4% in males and 0.9% in females. Online gambling at age 17 was an independent and significant predictor of future engagement in online gambling at age 20, alongside participation in team sports (Duggan & Mohan, 2023; Mohan & Duggan, 2023).

Prior examinations of youth gambling in Ireland have also noted issues of concern. For example, the 2015 ESPAD Secondary School data identified a 21.1% prevalence of gambling with money (30.0% of males and 11.9% of females). This comprised a prevalence rate of 14.0% for gambling online for money (20.7% of males and 7.1% of females) and a 17.3% prevalence of gambling offline for money (24.9% of males and 9.5% of females). Looking specifically at lottery gambling for money in Ireland, an online prevalence of 4.4% was noted, while the equivalent rate for offline lottery gambling was 5.6% (Molinaro et al., 2018). In European terms, Ireland is identified in this research as a medium gambling prevalence country (GPC) (Molinaro et al., 2018).

Another study conducted in Ireland in 2015 noted a prevalence of gambling in the last year among adults of 64.5% (NACDA, 2018). Among respondents aged 15 and older, 56.7% had bought a lottery ticket or scratch card in person, while just 3% had played lottery games online in the last year. Although 0% of 15–17-year-olds reported playing lottery games online, 9.7% reported buying a lottery ticket or scratch card in person, and 4.6% reported having bought one or more in the last month. The figures for males were higher than those for females in this age group. The last year's prevalence of having bought a lottery ticket or scratch card in person among males aged 15-17 years was 11.6%, whereas the figure for females was 8.5%. Alarmingly, there was already a 0.8% prevalence of DSM-IV Problem Gambling among those aged just 15-17 (0.8% among males and 0.7% among females).

In 2018, the Office of the Regulator of the National Lottery (ORNL) commissioned a test purchasing exercise on the underage purchase of National Lottery products in retail premises by Ipsos MRBI. In this exercise, 510 retail premises were tested. This research noted that 63% of underage purchasers were challenged for ID, and 6 out of 10 test purchases were refused. Following this, the ORNL commissioned a subsequent piece of research. This consisted of several questions included in Ireland's first Children's Omnibus survey conducted by Ipsos MRBI in August 2018. In this research, Ipsos MRBI asked a nationally representative sample of over 1,000 children aged 10 to 17 years whether they had ever purchased National Lottery tickets themselves with their own money. The results indicated that approximately 4% of respondents reported having done so. A more recent examination of underage test-purchase attempts commissioned by the ORNL noted that, although the situation had improved, only 71% of underage test purchasers were refused (Regulator of the National Lottery, 2024).

A more recent analysis of the Irish element of the European School Survey Project on Alcohol and Other Drugs (ESPAD) data collected in 2019, examining 16-year-olds, noted that 28.2% of males and 17.9% of females of the same age reported having gambled for money in the last 12 months (McAvoy et al., 2023). Of these, almost a third of males (30.8%) and just over a tenth of females (11.8%) had used the internet to gamble. Among gamblers, 51.8% had gambled on lotteries. In response to this research, Minister Browne stated, "The findings of this report are deeply troubling and serve to highlight why we, as a society, must protect children and vulnerable citizens from the harms associated with gambling" (Department of Justice, Home Affairs and Migration, 2023).

Recent research conducted in Ireland has specifically examined problem gambling. This research found strong links between underage gambling and later adult problem gambling. It identified that almost two-thirds of a nationally representative sample of adults (64%) had gambled before turning 18. The research also noted that 31% of respondents had gambled through scratch cards and 20% through lotteries (Ó Ceallaigh et al., 2024). The Northern Ireland Assembly All Party Group on Reducing Harm Related to Gambling (2024) has similarly noted the negative impacts of gambling, including its adverse effects on children.

A major concern in Ireland in recent years has been what one member of the Seanad (upper house of the Irish Parliament) described as the 'tsunami of gambling advertisements' to which the public is exposed (Wall, 2022). Warnings about this issue have been voiced repeatedly by the former President of Ireland, Michael D. Higgins (Burnhill, 2023; Independent.ie Newsdesk, 2018; MacNamee, 2021).

Of particular concern and relevance to this paper is the impact of gambling advertising on young people. Children are identified as a demographic that is highly receptive to advertising (Kopelman et al., 2007), and the ubiquity of gambling advertising has been noted by children, adolescents, young adults, and parents (David, Thomas, Randle, Pitt et al., 2020; McMullen et al. 2012; Pitt et al., 2016; Torrance et al., 2021). Familiarity with the National Lottery logo is important as '*exposure is the first building block in any marketing strategy, and can shape positive attitudes towards, and the initiation of use of the products in question*' (Thomas et al., 2023). In this respect, gambling on the national lottery may be comparable to tobacco and alcohol exposure and use (Harris et al., 2021; Petrescu et al., 2017; Thomas et al., 2023; Wakefield et al., 2006).

Research has demonstrated an association between increased exposure to alcohol marketing among children and adolescents, and increased alcohol consumption levels (Jones & Magee, 2011). Research on gambling has noted similar findings (Felsher et al., 2004). Strong evidence indicates that exposure to gambling in children increases their risk of developing gambling issues later in adolescence or adulthood (Smith et al., 2020), and that those who start gambling while young are at increased risk of developing severe gambling issues (Saugeres et al., 2012; Valentine, 2008; Volberg

Table 1. Relevant national lottery advertising and promotion code of practice
National Lottery Advertising and Promotion Code of Practice
30. Advertising and Promotion activities shall not be likely to be of particular appeal to children, especially by being associated with youth culture;
31. Advertising and Promotion activities shall not make direct use of:
a. signs, symbols, themes, drawings, fictitious characters or real people of primary or particular appeal to children;...
d. induce a child to regard National Lottery play as a natural element of his or her leisure time/activities;
32. Advertising and Promotion activities shall not be aimed at persons under 18 years of age;

et al., 2010; Winters et al., 1993). Parental gambling activities were also found to influence youth gambling participation (Delfabbro & Thrupp, 2003; Emond & Griffiths, 2020; Vachon et al., 2004; Winters et al. 1993, 2002). Evidence suggests that the best predictor of youth lottery purchases is their parents' participation (Ariyabuddhiphongs, 2011). Deans et al. (2017) note that marketing is a significant contributor to the normalisation of gambling. Such normalisation can influence both children's behavioural intentions and actions (Bestman et al., 2015). National Lottery gambling is highly normalised in Ireland. For example, in 2022, an average of 1.2 million people played each week (National Lottery, 2023).

Although this article focuses specifically on Ireland and its National Lottery, it must be noted that lottery gambling is a global phenomenon. Approximately 100 countries have lotteries, and 88 countries are members of the World Lottery Association (2025). This is more than one in two countries globally. A focus on lotteries is important, both because of their aggressive advertising, but also because for many, they are the first form of gambling that they engage in (Felsher et al., 2004). It should be noted that evidence suggests that youths typically start gambling before experimenting with alcohol, tobacco, other drugs, or engaging in sexual behaviour (Volberg et al., 2010). Concerns over youth lottery participation are widespread and evident across a wide range of countries (Richard & King, 2023; Tran et al., 2024; Volberg et al., 2010; Zhai et al., 2021).

Labrador et al. (2021) highlighted a lack of balance in gambling adverts, which focus almost purely on positive portrayals of gambling. Gambling advertising is often framed to highlight three key themes (Labrador et al., 2021). These are: winning money, normalising gambling, and gambling as a source of entertainment (McMullen et al., 2012). Similarly, Gainsbury et al. (2016) note that gambling advertising tends to focus on the high possibility of winning, specifically using the phrase 'it can happen to you'. This phrase is almost identical to the tagline for the Irish National Lottery, 'it could be you'.

Exploring real-world child and youth exposure to gambling advertising is complex. Wearable cameras have been used to explore children's exposure to gambling advertising (Smith et al., 2020; Watkins et al., 2022). Although food brands were the most common brands observed (Watkins et al., 2022), one such wearable camera study noted that national lottery and scratch cards were the most common forms of gambling advertising identified (Smith et al. 2020). A growing body of research examining children's awareness of gambling advertising has emerged in recent years (Nyemcsok et al., 2018; Pitt et al., 2017; Thomas et al., 2016, 2023).

Logo recognition surveys with young children have been conducted across several key determinants of health products, including tobacco (Fischer et al., 1991; Peters et al., 1995), and food (Borzekowski & Pires, 2018). It is also noteworthy that an increasing volume of logo- and advertising-oriented research has been conducted with very young children, sometimes as young as two years old (Fischer et al., 1991; Horner, 2006; Kinsky & Bichard, 2011; Kopelman et al., 2007; McNeal & Ji, 2003; Roberto et al., 2010; Robinson et al., 2007; Valkenburg & Buijzen, 2005). Such research is important, as it supports the approach used in the present study, which focused on national school children.

As can be seen from Table 1, it is clear that advertising and promotion by the Irish National Lottery should not be of particular appeal to children. This Code explicitly mentions the prohibition on 'fictitious characters... of primary or particular appeal to children'.

Figure 2 details the current and former Irish National Lottery logos. It is hard to reconcile the prohibitions in the Code outlined in Figure 1 with the current National Lottery logo shown in Figure 2. The current anthropomorphic logo is child-friendly (You, 2021). It features an anthropomorphic smiling star that, in various adverts, both pivots and winks. This star has been registered as a trademark with the Intellectual Property Office of Ireland, with the Minister for Public Expenditure & Reform as proprietor and Premier Lotteries Ireland as licensee (Trademark Registration No. 238066).

Figure 2. Current and former versions of Ireland's national lottery logo

The WHO-UNICEF-Lancet Commission (Clark et al., 2020) has recently noted the threat to children from gambling. The commission suggested the adoption of a new protocol to the United Nations Convention on the Rights of the Child (UNCRC) to regulate against commercial harm to children. Ireland ratified the UNCRC on 21 September 1992. Ratification of the UNCRC signalled a commitment by the Irish State to promote, protect, and fulfil all rights in the Convention for all Irish children. The UNCRC establishes minimum standards for the protection of children's rights (United Nations, 1989). It follows that States can exceed these standards to provide greater protection of the rights of the child. At a minimum, gambling can be said to engage the right to health (Article 28 UNCRC), and the right to protection against economic exploitation (Article 32 UNCRC). The online availability of many lottery games creates another avenue through which such rights may be put at risk. The UN Committee on the Rights of the Child has noted that *'reaching adolescence can mean exposure to a range of risks, reinforced or exacerbated by the digital environment, including … economic exploitation'* (General comment No. 20 (2016) on the implementation of the rights of the child during adolescence) Furthermore, the UN Convention on the Rights of the Child, in General Comment No. 25 on children's rights in relation to the digital environment, states the following:

States parties should ensure that appropriate enforcement mechanisms are in place and support children, parents and caregivers in gaining access to the protections that apply. They should legislate to ensure that children are protected from harmful goods, […], or services, such as gambling (United Nations, 2021).

The widely acknowledged global success of the UN's Framework Convention on Tobacco Control (FCTC) is also a potential model for further action. This avenue of concerted international action has been so successful that calls have been made for similar actions in other areas, most notably alcohol (Colin, 2021; Yeung & Lam, 2019). This format for a global strategy to combat the threat posed by gambling is another potential avenue that should be explored in depth (David, Thomas, Randle, & Daube, 2020).

Recent research in Ireland has identified the child-friendly nature of National Lottery advertising, as well as inadequate systems to prevent underage gambling (Daly, Campbell, & Houghton, 2026; Daly, Houghton, Campbell et al., 2025; Houghton, Daly et al., 2026; Houghton, Ní Phríosáin, Daly et al., 2026; Houghton, Ní Phríosáin, Houghton et al., 2026). (Given the child-friendly nature of Ireland's National Lottery logo and the impact such exposure may have on future gambling acceptance and practice, this research sought to examine familiarity with this logo among a sample of young children.

Methods

A convenience sample of National (Primary) Schools in the Mid-West region of Ireland (Counties Clare, Limerick & Tipperary) were invited to participate in the survey by post. Three follow-ups were conducted by phone and email. Written parental consent was a precondition of inclusion in the study, as was assent from the children themselves.

Participants were asked to complete an anonymous hard-copy questionnaire in class, which asked for their age and gender and then, following a worked example using the Nike logo, presented them with six additional logos (McDonald's, the UK lottery, Domino's Pizza, the Irish National Lottery, the Gaelic Athletic Association, and Kentucky Fried Chicken [KFC]. Participants were asked to identify the logos and provide the associated tagline. Approval for this study was granted by the Institutional Research Ethics Committee at the Technological University of the Shannon.

Data was collected from nine Irish schools in total: four schools in County Clare, three in Limerick City, and two in County Tipperary. The sample included a mix of urban and rural schools, as well as a broad socioeconomic spectrum based on the surrounding areas. The survey collected information from 671 participants. However, this sample included nine children aged 6 and one aged 13. Given the small numbers at both ages, they were not included in subsequent analyses, leaving a sample of 661. This sample consisted of 340 males and 324 females, as well as one respondent who identified as non-binary.

Limitations

This study has a number of limitations that must be clearly acknowledged. The use of a convenience sample and the geographical focus on the Mid-West region of Ireland limit the generalizability of the data. It must also be acknowledged that the cross-sectional research design precludes developmental or causal claims. In addition, support for logo recognition as a proxy measure of advertising exposure is limited. Finally, in an effort to create a child-friendly survey that could be administered quickly, confounding variables, such socioeconomic background, parental gambling habits, and personal and family media consumption habits, were not included. These factors could influence lottery recognition.

Results

As can be seen from Table 2, 39.4% of 7-year-old children were able to correctly identify the Irish National Lottery logo. This figure rose to 86.8% among children aged 12. Younger females were less likely than younger males to identify the logo; however, in older age groups they were more likely to do so.

Table 3 details the percentage of children able to recall the Irish National Lottery tagline. This rose from a low of 3.0% among 7-year-olds to 40.7% in 12-year-olds.

Once again, younger females were less likely than younger males to recall the lottery tagline, but were more likely to do so in older age groups.

Table 2. Numbers correctly identifying the Irish national lottery logo

Percentage, Number and Confidence Intervals* for Participants Correctly Identifying the Irish National Lottery Logo by Age & Gender				
Age	**Male**	**Female**	**Total Sample**	**Population Weighted Average****
7	41.7% (n=25) (CI 29.1% - 54.3%)	34.2% (n=13) (CI 19.0% - 50.0%)	39.4% (n=39) (CI 30.0% - 49.0%)	38.1%
8	57.4% (n=35) (CI 44.6% - 69.9%)	50.0% (n=19) (CI 33.3% - 65.9%)	54.5% (n=54) (CI 4.8% - 64.4%)	53.8%
9	68.6% (n=35) (CI 55.4% - 81.0%)	63.5% (n=40) (CI 50.9% - 75.4%)	65.8% (n=75) (CI 56.7% - 74.4%)	66.1%
10	63.3% (n=38) (CI 50.8% - 75.4%)	71.7% (n=43) (CI 60.0% - 82.7%)	67.5% (n=81) (CI 58.9% - 75.7%)	67.4%
11	80.6% (n=50) (CI 70.3% - 90.0%)	80.3% (n=57) (CI 70.7% - 89.1%)	80.5% (n=107) (CI 73.4% - 86.9%)	80.5%
12	85.4% (n=35) (CI 73.7% - 95.2%)	89.8% (n=44) (CI 80.8% - 97.7%)	86.8% (n=79) (CI 79.5% - 93.5%)	87.6%
Total	65.1% (n=218) (CI 59.8% - 70.3%)	67.8% (n=217) (CI 62.6% - 72.8%)	66.4% (n=436) (CI 62.7% - 70.0%)	66.5%

*Based on bootstrapping with 10,000 samples; **Based on 2022 Census population counts by age and gender.

Table 3. Numbers correctly recalling the Irish national lottery tagline

Percentage, Number & Confidence Intervals* for Participants Correctly Giving the Irish National Lottery Tagline by Age & Gender				
Age	**Male**	**Female**	**Total Sample**	**Population Weighted Average****
7	5% (n=3) CI 0.0% - 11.3%	0% (n=0) CI 0.0% - 0.0%	3.0% (n=3) CI 0.0% - 6.7%	2.6%
8	14.8% (n=9) CI 6.5% - 24.2%	5.3% (n=2) CI 0.0% - 13.5%	11.1% (n=11) CI 5.3% - 17.8%	10.2%
9	21.6% (n=11) CI 10.7% - 33.3%	11.1% (n=7) CI 3.6% - 19.4%	15.8% (n=18) CI 3.4% - 9.3%	16.5%
10	25.0% (n=15) CI 14.3% - 36.5%	16.7% (n=10) CI 7.6% - 26.9%	20.8% (n=25) CI 13.8% - 28.4%	21.0%
11	32.3% (n=20) CI 20.9% - 44.4%	43.7% (n=31) CI 32.0% - 55.2%	38.3% (n=51) CI 29.9% - 46.8%	37.9%
12	31.7% (n=13) CI 17.6% - 46.7%	49.0% (n=24) CI 34.8% - 63.2%	40.7% (n=37) CI 30.6% - 51.1%	41.1%
Total	21.1% (n=71) CI 16.9% - 25.6%	23.4% (n=74) CI 18.7% - 27.8%	22.1% (n=145) CI 18.9% - 25.3%	22.2%

*Based on bootstrapping with 10,000 samples; **Based on 2022 Census population counts by age and gender.

Table 4. Logistic regression predicting the likelihood of identifying the Irish lotto logo

	B	**SE**	**Wald**	***df***	***p***	**OR**	**95% CI OR**	
							LL	**UL**
Age	.445	.06	61.93	1	<.001	1.56	1.40	1.74
Gender	-.042	.18	.06	1	.810	.96	.68	1.35
Constant	-3.42	.56	37.40	1	<.001	.03		

Binary logistic regression was used to examine whether gender and age were associated with the likelihood of being able to identify the Irish lottery logo. A preliminary analysis suggested that the assumption of multicollinearity was met (tolerance = .99). An inspection of standardised residual values revealed that there were just six outliers (Std. residuals = -2.55), which were kept in the dataset. The model was statistically significant, X^2 (2, N = 654) = 69.53, p<.001, suggesting that it could distinguish between those who could and could not identify the Irish lottery logo. The model explained between 10.1% (Cox & Snell R square) and 14.0% (Nagelkerke R square) of the variance in the dependent variable and correctly classified 68.7% of cases. The explanatory value of this model must therefore be acknowledged as somewhat limited. As shown in Table 4, age, but not gender, significantly contributed to the model. The age odds ratio suggests that for each one-year increase in age, participants were 1.56 times more likely to identify the Irish lottery logo.

Table 5. Logistic regression predicting the likelihood of identifying the Irish lotto tagline

	B	SE	Wald	*df*	*p*	OR	95% CI OR	
							LL	UL
Age	.542	.07	59.87	1	<.001	1.72	1.50	1.97
Gender	-.025	.20	.02	1	.902	.98	.66	1.44
Constant	-6.597	.77	74.40	1	<.001	.001		

As can also be seen from Table 3, the number of respondents able to recall the tagline ('it could be you') was lower than the number able to recognise the lottery logo. A preliminary analysis of these results suggested that the assumption of multicollinearity was met (tolerance = .99). An inspection of standardised residual values revealed that there were 14 outliers (Std. residuals = 3.13 – 4.11), which were kept in the dataset. The model was statistically significant, X^2 (2, N = 654) = 72.59, p<.001, suggesting that it could distinguish between those who could and could not identify the Irish lottery tagline. The model explained between 10.5% (Cox & Snell R square) and 16.1% (Nagelkerke R square) of the variance in the dependent variable and correctly classified 77.7% of cases. Therefore, the explanatory value of this model is, once again, rather limited. As shown in Table 5, age, but not gender, significantly contributed to the model. The age odds ratio suggests that for each one-year increase in age, participants were 1.72 times more likely to identify the Irish lottery tagline.

It should be noted that an additional 4.2% (28) of respondents could be described as having answered the National Lottery logo recognition question partially correctly. These students misidentified the logo but provided the name of a bookmaker instead (e.g. Paddy Power).

Discussion

Given the ubiquity of National Lottery advertising and the child-oriented logo used, the results are perhaps not surprising. However, from a public health perspective, to have almost 40% of seven-year-olds able to identify the National Lottery logo is an issue of concern. It is not surprising that this familiarity rises with age. However, for this rate to be approximately 85% by the age of 12, six years in advance of being able to gamble legally at the age of 18, is concerning. The explanatory models explored revealed only modest explanatory power. Further, more comprehensive exploration of the factors involved is required.

In terms of gambling trajectories (Smith et al., 2020) and future risks for young people (Saugeres et al., 2012; Valentine, 2008; Volberg et al., 2010; Winters et al., 1993), the proportion of children able to identify the National Lottery logo and recall the tagline may be problematic. This evidence suggests that relatively young children in Ireland may be exposed to National Lottery advertising, which could serve to normalise gambling. This issue may be important because, as noted above, gambling on the National Lottery is often not considered to be gambling (Fulton, 2015). The adverse impacts of gambling, as detailed by Langham et al. (2016) in Figure 1, make this issue one of significant importance.

The proportion of children who identified the National Lottery logo correctly is an issue of concern. However, these figures may still under-represent the extent of the problem. A further proportion of respondents named bookmakers as the company that owned the logo. Unlike many other countries, in Ireland bets can be placed predicting the winning lottery numbers at bookmakers (Hosford, 2022; Ladbrokes, 2023; Paddypower, 2023). Therefore, the association in some children's minds conflating the National Lottery logo with some bookmakers is not necessarily inappropriate.

The Irish National Lottery logo is child-friendly and violates the National Lottery Advertising and Promotion Code of Practice. It is interesting to note that the Office of the Regulator of the National Lottery has a legislated role in protecting National Lottery intellectual property (IP). This IP is then licensed to the lottery operator. Therefore, the lottery operator, Premier Lotteries Ireland (PLI), is simply using the trademarks licensed from the State. This presents an unusual set of circumstances such that the regulator is unlikely to question or object to the existing IP. Nonetheless, a revised and less child-friendly logo is warranted and should be developed and adopted. State action on this issue will therefore be required.

It is crucial to note that any attempts to curtail the activities of the gambling industry will be resisted. As noted above, the industry is highly lucrative (Markham & Young, 2015; Neate & Jolly, 2019). It seems likely that the industry will adopt what may be termed the 'Big Tobacco Playbook' of tactics and strategies to minimise, delay, and deflect attempts at regulation and enforcement (Houghton, 2022, 2023; Oreskes & Conway, 2010; Petticrew et al., 2017; Proctor, 2012).

Conclusion

Gambling represents a significant threat to a minority of the population (Langham et al., 2016; McAvoy et al., 2023; Mialon, 2024; van Schalkwyk & Cassidy, 2023). Children are not excluded from this threat, and a small but vulnerable minority may be in danger of developing problematic gambling habits. National Lottery gambling may be a particular threat, as it is often not even considered gambling (Fulton, 2015). The current National Lottery logo is child-friendly, contravening its own Advertising and Promotion Code of Practice, which prohibits 'signs, symbols, themes, drawings, fictitious characters or real people of primary or particular appeal to children'. This research identifies that over two-thirds of national school children in Ireland aged 7 to 12 can identify and name the National Lottery logo. This may testify both to the appeal of the logo and the high level of advertising undertaken by the National Lottery. The logo may need to be redesigned to be

less child-friendly, and curbs on National Lottery advertising may be appropriate. At present, the Irish Government may be failing to fulfil its duties on this issue as laid out under the UNCRC.

Further research on the high levels of gambling advertising in Ireland should be conducted, focusing on youth environments. Any proposed revision to the National Lottery logo and tagline should be carefully evaluated to see how children perceive it. Even misjudged health promotion initiatives can have unexpected and unwelcome outcomes (Houghton & Hopkins, 2023; Houghton, Del Monte et al., 2016; Houghton, Hopkins et al., 2016; Houghton et al., 2017). Future research might also explore the relationship between National Lottery gambling and other forms of gambling.

The Gambling Regulation Act, 2024 has recently been passed in Ireland. This Act curtails gambling advertising and establishes a Gambling Regulatory Authority of Ireland (GRAI) to oversee gambling in Ireland. However, the National Lottery is exempt from this legislation, and from the important safeguards it will introduce. This exemption reflects the growth of the 'industry-state gambling complex' in Ireland (Markham & Young, 2015). Such an exemption is inappropriate and will help reinforce the misperception that betting on the National Lottery is not gambling. The banning of other types of gambling advertising under the Act may also serve to increase the relative prominence of National Lottery advertising.

Although this research has focused specifically on Ireland, the implications of the findings here may have relevance in other countries. As noted above, more than 100 countries currently operate lotteries. Further research might usefully explore advertising forms and logos across these territories. Future research exploring these issues should adopt nationally representative sampling frames and ideally involve a longitudinal element. Such research should also address potentially confounding factors such as social class, parental gambling habits, and media consumption habits. This research would ideally also address issues such as children's attitudes towards lotteries and their advertising, and their behavioural intentions towards both lotteries and gambling generally.

Acknowledgements

We would like to sincerely thank all of the children who took part in this study, as well as their parents for giving their consent. We would also like to thank the teachers, school principals, and school secretaries who helped make this study a reality.

Author contributions

Conception and design: F.H.; Data acquisition: F.H., M.S.D., E.M., B.O., L.D., K.A.; Data interpretation: F.H., J.L., A.C.; Drafting of this study: F.H., J.L., A.C.; Critical revision of this study: F.H., J.L., A.C., M.S.D., E.M., B.O., L.D., K.A.; All authors reviewed the results, approved the final version of this study, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the TUS Research Ethics Committee (Date: September 29 2020). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Ariyabuddhiphongs, V. (2011). Lottery gambling: A review. *Journal of Gambling Studies*, 27(1), 15-33. **[Crossref]**

Bestman, A., Thomas, S. L., Randle, M., & Thomas, S. D. M. (2015). Children's implicit recall of junk food, alcohol and gambling sponsorship in Australian sport. *BMC Public Health, 15*, 1022. **[Crossref]**

Borzekowski, D. L. G., & Pires, P. P. (2018). A six country study of young children's media exposure, logo recognition, and dietary preferences. *Journal of Children and Media, 12*(2), 143-158. **[Crossref]**

Burke-Kennedy, E. (2023). *National Lottery to be sold as Canadian pension fund owner plans Irish exit*. The Irish Times. https://www.irishtimes.com/business/2023/03/21/national-lottery-to-be-sold-as-canadian-pension-fund-owner-plans-irish-exit/

Burnhill, E. (2023). *President says gambling wrecking much of sport*. RTE. https://www.rte.ie/news/2023/0519/1384548-coolmine-higgins/

Cision. (2021). *Global gambling market to reach $876 billion by 2026*. Cision PR Newswire. https://www.prnewswire.com/news-releases/global-gambling-market-to-reach-876-billion-by-2026-301305923.html

Clark, H., Coll-Seck, A. M., Banerjee, A., Peterson, S., Dalglish, S. L., Ameratunga, S., Balabanova, D., Bhan, M. K., Bhutta, Z. A., Borrazzo, J., Claeson, M., Doherty, T., El-Jardali, F., George, A. S., Gichaga, A., Gram, L., Hipgrave, D. B., Kwamie, A., Meng, Q., ... Costello, A. (2020). A future for the world's children? A WHO-UNICEF-Lancet commission. *The Lancet, 395*(10224), 605-658. **[Crossref]**

Colin, J. (2021). Taking steps toward coherent global governance of alcohol: The challenge and opportunity of managing conflict of interest. *Journal of Studies on Alcohol and Drugs, 82*(3), 387-394. **[Crossref]**

College of Psychiatrists of Ireland. (2020). *Gambling disorder position paper. EAP/01/20 approved by council April 2020*. https://www.drugsandalcohol.ie/33550/1/Gambling-Disorder.pdf

Columb, D., & O'Gara, C. (2018). A national survey of online gambling behaviours. *Irish Journal of Psychological Medicine, 35*(4), 311-319. **[Crossref]**

Columb, D., Griffiths, M., & O'Gara, C. (2022). Online gaming and gaming disorder: More than just a trivial pursuit. *Irish Journal of Psychological Medicine, 39*(1), 1-7. **[Crossref]**

Columb, D., Griffiths, M., & O'Gara, C. (2023). A descriptive survey of online gaming characteristics and gaming disorder in Ireland. *Irish Journal of Psychological Medicine, 40*(2), 200-208. **[Crossref]**

Condron, I., Lyons, S., & Carew, A. M. (2022). Gambling in Ireland: Profile of treatment episodes from a national treatment reporting system. *Irish Journal of Psychological Medicine*, *41*(1), 1-8. **[Crossref]**

Cooney, C., Columb, D., Costa, J., Griffiths, M. D., & O'Gara, C. (2021). An analysis of consumer protection for gamblers across different online gambling operators in Ireland: A descriptive study. *International Journal of Mental Health and Addiction, 19*(1), 19-21. **[Crossref]**

Daly, M., Campbell, A., & Houghton, F. (2026). Examining youth protections against gambling in Ireland: A tiger team (red team) examination of the national lottery. *Epidemiology, Biostatistics, and Public Health, 21*(1), 1-5. **[Crossref]**

Daly, M., Houghton, D., Campbell, A., & Houghton, F. (2025). Child oriented advertising on Ireland's national lottery website: A visual content analysis. *Journal of Global, Public and One Health, 2025*(2), 19. https://jgpoh.com/wp-content/uploads/2025/11/Mia-Daly-JGPOH-2025-APPROVED.pdf

Daly, S. (2014). *Canadian-owned group to run the Lotto for next 20 years*. The Journal. https://www.thejournal.ie/new-lottery-operator-ireland-lotto-1336521-Feb2014/

David, J. L., Thomas, S. L., Randle, M., & Daube, M. (2020). A public health advocacy approach for preventing and reducing gambling related harm. *Australian and New Zealand Journal of Public Health, 44*(1), 14-19. **[Crossref]**

David, J. L., Thomas, S. L., Randle, M., Pitt, H., & Daube, M. (2020). Parent and child perceptions of gambling promotions in Australian sport. *Health Promotion International, 35*(2), 362-372. **[Crossref]**

Deans, E. G., Thomas, S. L., Derevensky, J., & Daube, M. (2017). The influence of marketing on the sports betting attitudes and consumption behaviours of young men: Implications for harm reduction and prevention strategies. *Harm Reduction Journal, 14*(5). **[Crossref]**

Delfabbro, P., & Thrupp, L. (2003). The social determinants of youth gambling in South Australian adolescents. *Journal of Adolescence, 26*(3), 313-330. **[Crossref]**

Department of Justice, Home Affairs and Migration. (2023). *Report findings on Children and Gambling deeply troubling - Minister Browne*. Department of Justice, Home Affairs and Migration. https://www.gov.ie/en/department-of-justice-home-affairs-and-migration/press-releases/report-findings-on-children-and-gambling-deeply-troubling-minister-browne/

Duggan, B., & Mohan, G. (2023). A longitudinal examination of young people's gambling behaviours and participation in team sports. *Journal of Gambling Studies*, *39*, 541-557. **[Crossref]**

Emond, A. M., & Griffiths, M. D. (2020). Gambling in children and adolescents. *British Medical Bulletin*, *136*(1), 21-29. **[Crossref]**

Felsher, J. R., Derevensky, J. L., & Gupta, R. (2004). Lottery playing amongst youth: Implications for prevention and social policy. *Journal of Gambling Studies, 20*(2), 127-153. **[Crossref]**

Fischer, P. M., Schwartz, M. P., Richards, J. W. Jr., Goldstein, A. O., & Rojas, T. H. (1991). Brand logo recognition by children aged 3 to 6 years. *JAMA, 266*(22), 3145-3148. **[Crossref]**

Fulton, C. (2015). *Playing social roulette: The impact of gambling on individuals and society in Ireland*. UCD.

Gainsbury, S. M., Delfabbro, P., King, D. L., & Hing, N. (2016). An exploratory study of gambling operators' use of social media and the latent messages conveyed. *Journal of Gambling Studies, 32*(1), 125-141. **[Crossref]**

Griffiths, M., Hayer, T., & Meyer, G. (Eds.). (2009). *Problem gambling in Europe*. Springer. **[Crossref]**

Harris, J. L., Yokum, S., & Fleming-Milici, F. (2021). Hooked on junk: Emerging evidence on how food marketing affects adolescents' diets and long-term health. *Current Addiction Reports, 8*(1), 19-27. **[Crossref]**

Horner, S. L. (2006). Categories of environmental print: All logos are not created equal. *Early Childhood Education Journal, 33*(2), 113-119. **[Crossref]**

Hosford, P. (2022). *Bookies reject proposal to ban bets on the Lotto*. The Irish Examiner. https://www.irishexaminer.com/news/arid-40815075.html

Houghton, F. (2022). Feigning Corporate Social Responsibility (CSR) Through health washing: Gambling industry conflicts of interest in health service provision and training in Ireland. *Medicina Internacia Revuo - International Medicine Review, 30*(118), 27-36. https://interrev.com/mir/index.php/mir/article/view/198

Houghton, F. (2023). Researching gambling: Have we learned nothing from Big Tobacco's overt manipulation of science? *South Eastern European Journal of Public Health, 6*. **[Crossref]**

Houghton, F., & Hopkins, E. (2023). Zombies and weapons: Examining blog responses to the Centers for Disease Control & Prevention's (CDC) 'Preparedness 101: Zombie pandemic' entertainment-education initiative. *Medicina Internacia Revuo - International Medicine Review, 30*(121), 249-259. https://interrev.com/mir/index.php/mir/article/view/219/168

Houghton, F., Daly, M., Campbell, A. (2026). The art of deception: an introduction to the Tiger Team (Red Team) online age verification penetration method. *Journal of Academic Research and Innovation, 3*(1), 2. **[Crossref]**

Houghton, F., Del Monte, K., Glessner, D., Goff, J., Hopkins, E., Loney, K., Meratnia, G., & Toms, J. (2016). Zombie pandemic preparedness: A cautionary observation. *New Zealand Medical Journal, 129*(1432), 97-99.

Houghton, F., Hopkins, E., Loney, K., Luther, L., Norris, A., & Toms, J. (2016). Examination of the impact of using a zombie pandemic scenario to encourage emergency preparedness among elementary school children: The weapons issue. *Washington State Journal of Public Health Practice, 9*.

Houghton, F., Ní Phríosáin, E., Daly, M., Houghton, D., & Campbell, A. (2026) Youth Oriented Advertising in Ireland's National Lottery: A Quantitative Content Analysis of Advertisements. *Epidemiology, Biostatistics, and Public Health, 21*(1). **[Crossref]**

Houghton, F., Ní Phríosáin, E., Houghton, D., Daly, M., & Campbell, A. (2026). Child-Oriented Marketing Practices Associated with Ireland's Televised National Lottery Draws: A Secondary Analysis of Associated Programming and Screening Times. *Epidemiology, Biostatistics, and Public Health, 21*(2). https://riviste.unimi.it/index.php/ebph/article/view/30736/26094

Houghton, F., Toms, J, Meratnia, G., Loney, K., Hopkins, E., & Del Monte, K. (2017). Concerns with entertainment-education: Zombie pandemic preparedness and the unanticipated promotion of a weapons culture. *Health Education & Behavior*, *44*(4), 519-523. **[Crossref]**

Independent.ie Newsdesk. (2018). *President Michael D Higgins wants gambling advertising removed from sport*. Irish News. https://www.independent.ie/irish-news/president-michael-d-higgins-wants-gambling-advertising-removed-from-sport/37165065.html

Institute of Public Health. (2010). *Developing a population approach to gambling: Health issues*. Institute of Public Health. https://www.drugsandalcohol.ie/32802/1/Developing_a_population_approach_to_gambling.pdf

Jones, S. C., & Magee, C. A. (2011). Exposure to alcohol advertising and alcohol consumption among Australian adolescents. *Alcohol and Alcoholism, 46*(5), 630-637. **[Crossref]**

Kerr, A., O'Brennan, J., & Vazquez-Mendoza, L. (2021). *Gambling trends, harms, and responses: Ireland in an international context*. Maynooth University. https://mural.maynoothuniversity.ie/id/eprint/14258/1/MGRG%20Gambling%20in%20Ireland%20report%20final.pdf

Kinsky, E. S., & Bichard, S. (2011). "Mom! I've seen that on a commercial!" US preschoolers' recognition of brand logos. *Young Consumers: Insight and Ideas for Responsible Marketers, 12*(2), 145-158. **[Crossref]**

Kopelman, C. A., Roberts, L. M., & Adab, P. (2007). Advertising of food to children: Is brand logo recognition related to their food knowledge, eating behaviours and food preferences? *Journal of Public Health, 29*(4), 358-367. **[Crossref]**

Labrador, F. J., Estupina, F. J., Vallejo-Achon, M., Sanchez-Iglesias, I., Gonzalez-Alvarez, M., Fernandez-Arias, I., Labrador, M., & Bernald-de-Quiros, M. (2021). Exposure of adolescents and youth to Gambling advertising: A systematic review. *Anales De Psicología Annals of Psychology, 37*(1), 149-160. **[Crossref]**

Ladbrokes. (2023). *Lotto*. https://www.ladbrokes.com/en/sports/lotto/irish

Langham, E., Thorne, H., Browne, M., Donaldson, P., Rose, J., & Rockloff, M. (2016). Understanding gambling related harm: A proposed definition, conceptual framework, and taxonomy of harms. *BMC Public Health, 16*, 80. **[Crossref]**

MacNamee, G. (2021). *Michael D Higgins describes TV gambling ads as a 'scourge' as he urges debate around the issue*. The Journal. https://www.thejournal.ie/problem-gambling-michael-d-higgins-5491317-Jul2021/

Markham, F., & Young, M. (2015). "Big gambling": The rise of the global industry-state gambling complex. *Addiction Research & Theory, 23*(1), 1-4. **[Crossref]**

McAvoy, H., Reynolds, C. M. E., Sunday, S., Hanafin, J., & Clancy, L. (2023). *Children and gambling - Evidence to inform regulation and responses in Ireland. Based on a secondary analysis of the European School Survey Project on Alcohol and Other Drugs (ESPAD)*. Institute of Public Health. https://www.drugsandalcohol.ie/39525/1/Gambling_and_children_report.pdf

McMahon, K. (2022) *Omnipresent: Online gambling in Ireland* [Master's thesis, Ireland University]. National College of Ireland.

McMullen, J. L., Miller, D. E., & Perrier, D. C. (2012). "I've seen them so much they are just there": Exploring young people's perceptions of Gambling in advertising. *International Journal of Mental Health and Addiction, 10*, 829-848. **[Crossref]**

McNeal, J. U., & Ji, M. F. (2003). Children's visual memory of packaging. *Journal of Consumer Marketing, 20*(5), 400-427. **[Crossref]**

Mialon, H., Larkin, J., Patton, C., Tatlow-Golden, M., Reilly, K., Leonard, P., Walsh, M., & Campbell, N. (2024). The commercial determinants of health in Ireland: Fueling an industrial epidemic at home and abroad. *BJGP Open*, *8*(2), 29. **[Crossref]**

Michael, N. (2019). *€10bn staked by Irish gamblers in 2019 dubbed a 'very worrying' statistic*. Irish Examiner. https://www.irishexaminer.com/news/arid-30972076.html#:~:text=IN%20FOCUS%3A-,%E2%82%AC10bn%20staked%20by%20Irish%20gamblers%20in%202019%20dubbed%20a,379.51%20per%20head%20of%20population.&text=Neil%20Michael-,As%20a%20nation%20we%20gambled%20an%20estimated%20%E2%82%AC9.8bn,379.51%20per%20head%20of%20population

Mohan, G., & Duggan, B. (2023). *Young people who gamblin in Ireland*. Economic & Social Research Institute. https://www.esri.ie/system/files/publications/RB202301_3.pdf

Molinaro, S., Benedetti, E., Scalese, M., Bastiani, L., Fortunato, L., Cerrai, S., Canale, N., Chomynova, P., Elekes, Z., Feijão, F., Fotiou, A., Kokkevi, A., Kraus, L., Rupšienė, L., Monshouwer, K., Nociar, A., Strizek, J., & Urdih Lazar, T. (2018). Prevalence of youth gambling and potential influence of substance use and other risk factors throughout 33 European countries: First results from the 2015 ESPAD study. *Addiction, 113*, 1862-1873. **[Crossref]**

Mongan, D., Millar, S. R., Doyle, A., Chakraborty, S., & Galvin, B. (2022). *Gambling in the Republic of Ireland: Results from the 2019-20 national drug and alcohol survey*. Health Research Board. https://www.hrb.ie/publication/gambling-in-the-republic-of-ireland-results-from-the-2019-20-national-drug-and-alcohol-survey/#:~:text=Key%20findings&text=There%20is%20a%20notable%20decrease,42%25%20in%202019%2F20

Murphy, M. (2019). *An investigation of problem gambling and young sports players in an Irish amateur sporting organisation*. Dept. of Management & Enterprise Conference Material, Munster Technological University. https://sword.cit.ie/dptmecp/1

National Advisory Committee on Drugs and Alcohol. (2018). *Prevalence of drug use and gambling in Ireland and drug use in Northern Ireland 2014/15 drug prevalence survey: Gambling results*. NACDA, Department of Health. https://www.drugsandalcohol.ie/30299/1/Drug-Prevalence-B7-Gambling-Results.pdf

National Lottery. (2023). *The national lottery in 2022: A year in review*. National Lottery. https://cdn2.lottery.ie/uploads/2022_annual_report_national_lottery_7cfecaa6fb.pdf

Neate, R., & Jolly, J. (2019). *Bet365 boss Denise Coates hits jackpot with £323m payday*. The Guardian. https://www.theguardian.com/business/2019/dec/18/bet365-boss-denise-coates-hits-jackpot-with-323m-payday

Nyemcsok, C., Thomas, S. L., Bestman, A., Pitt, H., Daube, M., & Cassidy, R. (2018). Young people's recall and perceptions of gambling advertising and intentions to gamble on sport. *Journal of Behavioral Addictions, 7*(4), 1068-1078. **[Crossref]**

Ó Ceallaigh, D., Timmons, S., Robertson, D., & Lunn, P. (2024). *Childhood gambling experiences and adult problem gambling*. ESRI Working Paper. https://www.esri.ie/publications/childhood-gambling-experiences-and-adult-problem-gambling

Oreskes, N., & Conway, E. M. (2010). *Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*. Bloomsbury Publishing.

Paddypower. (2023). *Lotteries*. https://www.paddypower.com/lotteries?tab=irish-lotto&msockid=0dbb657c5fcf64b5361373a35e4d65f9

Peters, J., Lane Benson, C., Johnson Hedley, A., Lam, T-H., Ong, S-G., Wong, C-M., & Fielding, R. (1995). Recognition of cigarette brand names and logos by young children in Hong Kong. *Tobacco Control, 4,* 150-155. **[Crossref]**

Petrescu, D., Vasiljevic, M., Pepper, J., Ribisl, K., & Marteau, T. (2017). What is the impact of e-cigarette adverts on children's perceptions of tobacco smoking? An experimental study. *Tobacco Control, 26*(4), 421-427. **[Crossref]**

Petticrew, M., Katikireddi, S. V., Knai, C., Cassidy, R., Maani Hessari, N., Thomas, J., & Weishaar, H. (2017). 'Nothing can be done until everything is done': The use of complexity arguments by food, beverage, alcohol and gambling industries. *Journal of Epidemiology & Community Health, 71*(11), 1078-1083. **[Crossref]**

Pitt, H., Thomas, S. L., Bestman, A., Daube, M., & Derevensky, J. (2017). What do children observe and learn from televised sports betting advertisements? A qualitative study among Australian children. *Australian and New Zealand Journal of Public Health, 41*(6), 604-610. **[Crossref]**

Pitt, H., Thomas, S. L., Bestman. A., Stoneham, M., & Daube, M. (2016). "It's just everywhere!" Children and parents discuss the marketing of sports wagering in Australia. *Australian and New Zealand Journal of Public Health, 40*(5), 480-486. **[Crossref]**

Proctor, R. N. (2012). *Golden holocaust: Origins of the cigarette catastrophe and the case for abolition.* University of California Press. **[Crossref]**

Regulator of the National Lottery. (2024). *Test purchasing exercise on under-age purchase of national lottery products in retail premises 2024*. Office of the Regulator of the National Lottery. https://www.rnl.ie/assets/PDFs/independent-research/24-017329-RNL-Underage-Test-Purchasing-Research-Report-Client-FINAL-26th-Nov.pdf

Richard, J., & King, S. M. (2023). Annual research review: Emergence of problem gambling from childhood to emerging adulthood: A systematic review. *Journal Of Child Psychology and Psychiatry, And Allied Disciplines, 64*(4), 645-688. **[Crossref]**

Roberto, C. A., Baik, J., Harris, J. L., & Brownell, K. D. (2010). Influenced of licensed characters on children's taste and snack preferences. *Pediatrics, 126*(1), 88-93. **[Crossref]**

Robinson, T. N., Borzekowski, D. L. G., Matheson, D. M., & Kraemer, H. (2007). Effects of fast food branding on young children's taste preferences. *JAMA Pediatrics, 161*(8), 792-797. **[Crossref]**

Saugeres, L., Thomas, S., & Bates, G. (2012). *Gamblers tell their stories: Life patterns of gambling*. Victoria, Australia: Victorian Responsible Gambling Foundation.

Slattery, L. (2022). *National Lottery's annual ticket sales pass €1bn mark for first time*. The Irish Times. https://www.irishtimes.com/business/2022/07/22/national-lotterys-annual-ticket-sales-pass-1bn-mark-for-first-time/

Smith, M., Chambers, T., Abbott, M., & Signal, L. (2020). High Stakes: Children's exposure to gambling and gambling marketing using wearable cameras. *International Journal of Mental Health and Addiction, 18*, 1025-1047. **[Crossref]**

Taylor, J. (1811). Twinkle, twinkle, little star. In *Rhymes for the nursery*. Darton, Harvey & Darton.

The Northern Ireland Assembly All Party Group on Reducing Harm Related to Gambling. (2024). *Public health approaches to tackling gambling related harms*. https://www.gamharmapg.org/s/1-APG_RGH_Report-on-Inquiry-into-Public-Health-Approaches_AW_Revised-Nov-2024_V41.pdf

Thomas, S. L., Pitt, H., Bestman, A., Randle, M., Stoneham, M., & Daube, M. (2016). *Child and parent recall of gambling sponsorship in Australia*. Victorian Responsible Gambling.

Thomas, S. L., van Schalkwyk, M. C. I., Daube, M., Pitt, H., McGee, D., & McKee, M. (2023). Protecting children and young people from contemporary marketing for gambling. *Health Promotion International, 38*(2), daac194. **[Crossref]**

Torrance, J., Roderique-Davies, G., Thomas, S. L., Davies, N., & John, B. (2021). 'It's basically everywhere': Young adults' perceptions of gambling advertising in the UK. *Health Promotion International, 36*(4), 976-988. **[Crossref]**

Tran, L. T., Wardle, H., Colledge-Frisby, S., Taylor, S., Lynch, M., Rehm, J., Volberg, R., Marionneau, V., Saxena, S., Bunn, C., Farrell, M., & Degenhardt, L. (2024). The prevalence of gambling and problematic gambling: A systematic review and meta-analysis. *The Lancet Public Health, 9*(8), e594-e613. **[Crossref]**

Turk, M. A., Murphy, C., McCaffrey, J., & Murray, K. (2023). Predictors of adverse gambling behaviours amongst elite athletes. *Scientific Reports, 13*(1), 823. **[Crossref]**

United Nations. (1989). *Convention on the rights of the child*. United Nations. https://www.refworld.org/docid/3ae6b38f0.html

United Nations. (2021). *General comment No. 25 (2021) on children's rights in relation to the digital environment*. United Nations. https://www.ohchr.org/en/documents/general-comments-and-recommendations/general-comment-no-25-2021-childrens-rights-relation

Vachon, J., Vitaro, F., Wanner, B., & Tremblay, R. E. (2004). Adolescent gambling: Relationships with parent gambling and parenting practices. *Psychology of Addictive Behaviors, 18*(4), 398-401. **[Crossref]**

Valentine, G. (2008). *Literature review of children and young people's gambling*. Gambling Commission.

Valkenburg, P. M., & Buijzen, M. (2005). Identifying determinants of young children's brand awareness: Television, parents, and peers. *Applied Developmental Psychology, 26*(4), 456-468. **[Crossref]**

Van Schalkwyk, M. C. I., & Cassidy, R. (2023). The gambling industry: Harmful products, predatory practices, and the politics of knowledge. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 120-130). Oxford University. **[Crossref]**

Volberg, R. A., Gupta, R., Griffiths, M. D., Olason, D. T., & Delfabbro, P. (2010). An international perspective on youth gambling prevalence studies. *International Journal of Adolescent Medicine and Health, 22*(1), 3-38. **[Crossref]**

Wakefield, M., Terry-McElrath, Y., Emery, S., Saffer, H., Chaloupka, F. J., Szczypka, G., Flay, B., O'Malley, P. M., & Johnston, L. D. (2006). Effect of televised, tobacco company-funded smoking prevention advertising on youth smoking-related beliefs, intentions, and behavior. *American Journal of Public Health, 96*(12), 2154-2160. **[Crossref]**

Wall, M. (2022). Gambling (prohibition of advertising) Bill 2021: Second stage. *Seanad Éireann debate, 283*(11).

Wardle, H., Degenhardt, L., Ceschia, A., & Saxena, S. (2021). The Lancet Public Health Commission on gambling. *The Lancet, 6,* e2-e3. **[Crossref]**

Watkins, L., Gage, R., Smith, M., McKerchar, C., Aitken, R., & Signal, L. (2022). An objective assessment of children's exposure to brand marketing in New Zealand (Kids'Cam): A cross-sectional study. *Lancet Planet Health, 6*(2), E132-E138. **[Crossref]**

Winters, K. C., Stinchfield, R., & Fulkerson, J. (1993). Patterns and characteristics of adolescent gambling. *Journal of Gambling Studies, 9*, 371-386. **[Crossref]**

Winters, K. C., Stinchfield, R. D., Botzet, A., & Anderson, N. (2002). A prospective study of youth gambling behaviors. *Psychology of Addictive Behaviors, 16*(1), 3-9. **[Crossref]**

World Lottery Association. (2025). *The world lottery association-serving the lottery industry worldwide*. https://www.world-lotteries.org

Yeung, S. L. A., & Lam, T. H. (2019). Unite for a framework convention for alcohol Control. *The Lancet, 393*(10183), 1778-1779. **[Crossref]**

You, C. (2021). The necessity of an anthropomorphic approach to children's literature. *Children's Literature in Education, 52*, 183-199. **[Crossref]**

Zhai, Z. W., Hoff, R. A., Howell, J. C., Wampler, J., Krishnan-Sarin, S., & Potenza, M. N. (2021). Lottery-purchasing adolescents: Gambling perceptions, problems, and characteristics. *Journal of Gambling Studies*, *37*(4), 1177-1195. **[Crossref]**

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.501

The associations between gambling disorder, object relations, loneliness and quality of life

Yeşim Delice Bocaoğlu[1], Leman Elif Aybay[2]

[1]Department of Psychology, Graduate Education Institute, İstanbul Arel University, İstanbul, Türkiye
[2]Independent Researcher

Abstract

Gambling disorder (GD) is a behavioral addiction that reduces an individual's quality of life, is associated with feelings of loneliness, and is negatively influenced by object relations. This study aimed to examine the relationships between GD, object relations, loneliness, and quality of life. This research primarily seeks to understand the etiological foundations of GD by analyzing the direct and indirect effects of object relations-related factors on GD using structural equation modeling.

The study was conducted with 443 participants living in Turkey, who were included in an online survey. The data were analyzed using structural equation modeling. The indirect effect of object relations on GD via the mediating role of loneliness was found to be significant ($\beta = .169$, $p < .001$). Reality testing was found to have both a direct and indirect effect via the mediating role of loneliness on GD ($\beta = .030$, $p < .05$). The findings indicate that impairments in object relations increase feelings of loneliness and indirectly influence the severity of GD. The findings also highlight the importance of addressing loneliness and impaired reality testing in therapeutic interventions for GD. The results suggest that the current study contributes to the literature by providing insights into the psychodynamic and psychosocial factors associated with GD.

Keywords: gambling disorder, object relations, loneliness, quality of life, reality testing, behavioral addiction

Main points

- Gambling disorder is significantly associated with impairments in object relations, loneliness, and deterioration in quality of life.
- Loneliness is a key mediating variable that explains the indirect effect of impairments in object relations on gambling disorder.
- Reality testing affects gambling disorder both indirectly through loneliness and directly.
- Quality of life decreases as the severity of gambling disorder increases.

Introduction

Gambling refers to risking money or valuables on uncertain outcomes and encompasses various forms such as lotteries, sports betting, casino games, card games, and online platforms (Ferentzy & Turner, 2013). The rapid expansion of online gambling in recent decades has increased accessibility and elevated the risk of addiction, prompting public health systems to expand prevention and intervention efforts. In recognition of its addictive nature, the DSM-5 classifies Gambling Disorder (GD) under "Substance-Related and Addictive Disorders," citing neurobiological and behavioral similarities to substance use disorders (American Psychiatric Association [APA], 2013). A GD diagnosis requires persistent and recurrent gambling behavior that causes significant distress or functional impairment.

The global prevalence of GD varies across populations and methodologies, yet existing evidence suggests that it constitutes a serious public health concern. A recent meta-analysis reported that 2.43% of adults engage in at-risk gambling and 1.29% meet criteria for problem gambling (Gabellini et al., 2022). National-level data show consistent patterns: In the UK, GD affects 0.5% of the population, with higher prevalence among men (1.0%) than women (0.1%) (Wardle, 2007). In Turkey, one study found a 2.9% GD prevalence among adults (Uygur, 2022), while a high school-

Corresponding author: Yeşim Delice Bocaoğlu • **Email:** yesim.delice@hotmail.com
Received: May 22, 2025 **Accepted:** September 15, 2025 **Published online:** June 22, 2026

Cite as: Delice Bocaoğlu, Y., & Aybay, L. E. (2026). The associations between gambling disorder, object relations, loneliness and quality of life. *Addicta: The Turkish Journal on Addictions*, *13*(2), 216-224. https://doi.org/10.15805/addicta.2026.501

based study reported gambling experience in 68.0% of males and 37.7% of females (Delice, 2017). Across contexts, men are generally at higher risk, and earlier initiation of gambling is consistently associated with more severe problems in adulthood (Australian Productivity Commission, 1999; Kessler et al., 2008).

Demographic variables such as gender, age, and socioeconomic status (SES) have been repeatedly linked to gambling behaviors. Males are more likely to initiate gambling earlier, engage in higher-risk and more frequent gambling, and report greater GD severity than females (Jimenez-Murcia et al., 2020; Wardle, 2007). While men often gamble for excitement, escape, or competition, women are more likely to use gambling as an emotion-focused coping mechanism (Arcan & Karancı, 2014; Potenza et al., 2001). Younger individuals and those from lower SES backgrounds also demonstrate increased vulnerability (Welte et al., 2008), suggesting that structural and psychosocial factors intersect in the development of gambling-related harm.

Object relations theory offers a psychodynamic framework for understanding the development of addictive behaviors such as GD. Rooted in the works of Klein (1952), Fairbairn (1946), and Winnicott (1965), the theory emphasizes the primacy of early interpersonal experiences—particularly the caregiver-infant bond—in shaping internal object representations. Unlike drive theory or ego psychology, object relations theory posits that relational needs, not biological instincts, drive behavior. Failures in early caregiving, such as unavailability or inconsistency, may lead to fragmented self-concepts and the internalization of punitive or absent object representations. In this view, addiction is understood as a compensatory strategy to manage internalized distress, wherein external objects like gambling substitute for unmet relational needs. Tools such as the Bell Object Relations and Reality Testing Inventory (BORRTI; Bell, 1995) have enabled the quantitative assessment of such intrapsychic structures through dimensions like Alienation, Egocentricity, and Social Incompetence.

Empirical research supports the association between disturbed object relations and addictive behaviors. Alienation, insecure attachment, and egocentric traits have been linked to increased relapse risk in substance use disorders (Khademi et al., 2020) and are also prominent in problem gambling. Adolescents with attachment anxiety and emotional regulation deficits are more likely to engage in addictive behavior (Estévez et al., 2017), while lower levels of cognitive empathy and emotional intelligence are associated with gambling problems (Parker et al., 2008; Zhou & Wu, 2024). During the COVID-19 pandemic, loneliness and social isolation were associated with increased gambling behavior, especially among first-time gamblers, who also reported elevated psychiatric symptoms (Forsström et al., 2022; Håkansson et al., 2020).

Loneliness, in particular, has emerged as a crucial psychological factor in the etiology of GD. From an object relations perspective, loneliness reflects early disruptions in attachment and internal object constellations, which can lead to chronic social disconnection and emotional dysregulation in adulthood (Ogden, 1989). Several studies have emphasized the mediating role of loneliness in the link between disturbed object relations and behavioral addictions (Trevorrow & Moore, 1998). Thus, loneliness may not only be a symptom but also a mechanism that amplifies vulnerability to gambling as a maladaptive coping strategy.

Furthermore, GD is associated with substantial impairments in quality of life across psychological, social, and economic domains. Affected individuals often experience elevated levels of depression, anxiety, and suicidality (Petry, 2005), alongside interpersonal disruptions such as family conflict, divorce, and social withdrawal. Financial burdens from gambling-related debt frequently exacerbate stress and erode support systems (Bernhard, 2007), contributing to a downward spiral of psychological and relational deterioration.

Accordingly, the present study aims to examine the relationship between object relations and GD, focusing on the mediating role of loneliness, and further evaluating how these factors influence quality of life. Given the limited research specifically exploring the intersection of object relations theory and GD, this study seeks to contribute to the theoretical understanding and provide implications for clinical and preventive interventions.

Methods

This study employed a cross-sectional and correlational research design based on the structural equation modeling (SEM) framework. The primary objective was to examine the direct and indirect relationships between object relations, loneliness, reality testing, gambling disorder (GD), and quality of life.

Quantitative data were collected through online self-report measures. The sample consisted of 443 adults residing in Turkey who volunteered to participate in the study. Participants were recruited through social media platforms and online forums. Inclusion criteria required participants to be over 18 years old and fluent in Turkish. Exclusion criteria included having a self-reported diagnosis of severe psychiatric disorders (e.g., schizophrenia, bipolar disorder) or cognitive impairments that would hinder survey comprehension. The final sample included 235 individuals who reported engaging in gambling at least once in the past year, and others who had not.

Demographically, 60.5% of the participants were male, and the average age was 30.41 (SD = 10.2). Most participants had a university-level education (68.6%) and lived in urban areas (74.2%) (Table 1).

Informed Consent and Measures

All participants provided informed consent prior to their participation in the study. They were informed about the aim of the research, the voluntary nature of their involvement, and their right to withdraw at any stage without any negative

Table 1. Socio-demographic frequencies of the participations

Category	Sub-groups	n	%	Mean	Range
Age Group					
	18-25	150	33.9	39,99	18-71
	26-35	120	27.1		
	36-45	90	20.3		
	46+	83	18.7		
Sex					
	Female	163	36.8		
	Male	280	63.2		
Education Level					
	Primary School	50	11.3	-	-
	Secondary School	70	15.8	-	-
	High School	150	33.9	-	-
	University	120	27.1	-	-
	Postgraduate/ Doctorate	50	11.9	-	-
Employment status					
	Employed	287	64.8	-	-
	Unemployed	156	35.2	-	-
Monthly Income (Turkish Lira; TL)					
	0-17000	84	18.9	59481	0-400000
	17001-34000	52	11.7	-	-
	34001-51000	67	15.1	-	-
	51001-68000	68	15.3	-	-
	68001-125000	60	13.5		
	125001-200000	40	9.0		
	200001+	72	16.5		
Monthly Gambling Expenditure (TL)					
	0	208	47.0	3362	0-100000
	1-5000	132	29.8	-	-
	5001-10000	80	18.1	-	-
	10001+	23	5.1	-	-

consequences. The study strictly adhered to ethical research principles, ensuring the anonymity and confidentiality of participant data throughout the research process.

Personal Information Form

A Personal Information Form was developed to gather participants' sociodemographic and gambling-related background information. This included variables such as age, gender, education level, employment status, and monthly income. Additionally, participants were asked specific questions to assess gambling behaviors, including "At what age did you first gamble?" and "How much money do you spend monthly on gambling (Turkish Lira; TL)?"

South Oaks Gambling Screen (SOGS)

To assess gambling-related problems, the South Oaks Gambling Screen (SOGS), developed by Lesieur and Blume (1987), was used. This 20-item instrument evaluates the psychological, social, and economic effects of gambling behavior, with binary "Yes" or "No" responses. The original version demonstrated strong reliability, with a test-retest correlation of 0.95 and internal consistency of α = .86. The Turkish adaptation by Duvarcı and Varan (2001) modified the scale by removing three items irrelevant to Turkish culture and adding two culturally appropriate items, resulting in a 19-item version. A score of 8 or above indicates probable pathological gambling. In this study, the internal consistency coefficient was found to be α = .96, indicating excellent reliability.

Bell Object Relations and Reality Testing Inventory (BORRTI)

The BORRTI, developed by Bell (1995), is a 90-item instrument measuring both object relations and reality testing capacities through "True" or "False" responses. Object relations subscales include Alienation, Insecure Attachment, Egocentricity, and Social Incompetence, while reality testing includes Reality Distortion, Uncertainty of Perception, and Hallucinations and Delusions. The Turkish adaptation by Uluç et al. (2015) reported acceptable internal consistency coefficients (α = .70–.80). In the present study, Cronbach's alpha values ranged from .80 to .91 across subscales, indicating strong reliability.

UCLA Loneliness Scale

Loneliness levels were measured using the UCLA Loneliness Scale (Russell et al., 1978), which includes 20 items scored on a 4-point Likert scale. Higher scores indicate greater perceived loneliness. The original internal consistency was α = .96, with test-retest reliability of .73. The Turkish version by Demir (1989) demonstrated high reliability (α = .96; test-retest = .94). In the current study, Cronbach's alpha was calculated as .80.

World Health Organization Quality of Life Scale – Short Form (WHOQOL-BREF)

Participants' quality of life was assessed using the WHOQOL-BREF (The Whoqol Group, 1998), a 26-item measure covering four domains: Physical Health, Psychological Health, Social Relationships, and Environment. Items are rated on a 5-point Likert scale reflecting the previous two weeks. Eser et al. (1999) adapted the Turkish version, reporting internal consistency coefficients of α = .83 for Physical Health, .66 for Psychological Health, .53 for Social Relationships, and .73 for Environment. In this study, the total reliability of the scale was α = .96, with subscale alphas ranging from .83 to .92, demonstrating strong psychometric properties.

Data Collection

Ethical approval for this study was granted by the Ethics Committee of the affiliated institution. Afterwards, participants voluntarily completed an online survey as part of the data collection process. A mixed-method sampling strategy was utilized to ensure a representative sample. Initially, snowball

sampling was used to collect data from a general population by connecting with individuals in the researchers' networks and expanding through their social circles.

Purposive sampling was later adopted to specifically target individuals predisposed to gambling behaviors. This involved targeting groups and platforms (e.g., relevant social media communities and online forums) where gambling behaviors were prevalent. Online data collection methods enabled access to individuals from diverse socioeconomic and demographic backgrounds. The sampling methods aimed to enhance both internal and external validity.

Analysis

The data collection process was completed between April 2024 and December 2024. Data from participants were digitized, and statistical analyses were conducted. Responses from five participants were excluded for inconsistency (e.g., entering an 11-digit number for the question, "What is the highest amount of money you have spent on gambling in a day?") or for being under 18 years old.

Descriptive statistics and correlational analyses were conducted using IBM SPSS Statistics (Version 28). Frequency analysis was conducted to examine data distribution, and the Skewness and Kurtosis method was used to test normality. As variables followed a normal distribution, parametric tests were applied. Pearson correlation analysis was used to assess relationships between continuous variables. Independent samples t-tests were conducted to compare gamblers and non-gamblers.

To classify participants based on gambling behavior, the question "How much money do you spend monthly on gambling/betting/games of chance (in Turkish Lira; TL)?" was used. Participants spending 1 TL or more monthly were classified as 'gamblers' (n = 235), while those spending less than 1 TL or none were labeled 'non-gamblers'.

The hypothesized model was tested using structural equation modeling (SEM) in AMOS 26. Goodness-of-fit indices, including chi-square (χ^2), comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR), were used to evaluate how well the theoretical model fit the data.

Results

Gambling participation frequencies were analyzed for the total sample (N = 443) and for those who reported spending at least 1 TL monthly on gambling (n = 235). Participation rates were classified as "never," "less than once per week," and "once per week or more," with the latter two combined to calculate overall participation.

The analysis (Table 2) indicated that scratch cards exhibited the highest participation rates across both groups. Scratch cards had the highest participation (61.2% overall; 86.4% among gamblers), followed by numeric lottery (81.3%) and national lottery (76.2%) in the gambling group. Card games for money and online betting were also common (74.5% and 69.4% among gamblers; 43.1% and 39.5% overall, respectively). Dice games (15.2% among gamblers) and casino games (44.2% among gamblers) had the lowest rates. These findings suggest that lottery-based activities were the most preferred forms of gambling.

Pearson correlation analysis (Table 3) examined the associations between gambling behaviors and variables such as age, income, age of first gambling, monthly gambling expenditure, and the expenditure/income ratio. SOGS scores were negatively but non-significantly related to income ($r = -.09$, $p > .05$), while a significant negative correlation was found with age of first gambling ($r = -.11$, $p \leq .05$), indicating greater problem severity among early starters. SOGS scores showed significant positive correlations with monthly gambling expenditure ($r = .39$, $p < .001$) and the highest amount gambled in a day ($r = .42$, $p < .001$), suggesting that higher spending is linked to greater gambling problems. SOGS scores and daily maximum gambling were also negatively associated with age ($r = -.11$ and $-.12$, respectively; $p < .05$), indicating higher risk among younger individuals.

A significant negative correlation was found between monthly income and age of first gambling ($r = -.15$, $p < .01$), suggesting that lower-income individuals began gambling earlier. Monthly income showed no significant relationship with average gambling expenditure ($r = -.05$, $p > .05$) or the highest single-day wager ($r = .04$, $p > .05$). A significant positive correlation was observed between the gambling expenditure/income ratio and SOGS scores ($r = .30$, $p < .001$), indicating greater problem severity among those spending a larger share of their income. Earlier gambling initiation was associated with higher monthly expenditure ($r = -.14$, $p < .01$), but not with the single-day maximum ($r = -.04$, $p > .05$). Lastly, monthly gambling expenditure was positively related to the highest amount gambled in a day ($r = .32$, $p < .001$).

To examine gender differences in gambling behaviors, Independent Samples t-Tests were conducted (see Table 4). The analysis revealed a significant difference in SOGS total scores between females (M = .75) and males (M = 7.02) ($t = -11.59$, $p < .001$), demonstrating that males exhibited markedly higher scores for problematic gambling behaviors than females.

A Structural Equation Model (SEM) was employed to examine how Object Relations and Reality Testing affect Gambling Disorder (GD), both directly and indirectly, with Loneliness as a mediating variable. In the model, Object Relations and Reality Testing were specified as independent variables, while Loneliness and GD served as mediators and Quality of Life was the final outcome variable. The results indicated that Object Relations did not have a significant direct effect on GD ($\beta = 0.008$, $p = .421$), whereas Reality Testing showed a strong and significant direct effect on GD ($\beta = 0.403$, $p < .001$), suggesting that distortions in reality perception are closely linked to gambling severity.

Table 2. Distribution of all participants and gamblers by types of gambling

	All participants (N=443)		Gamblers (n=235)	
Gambling Types	n	(%)	n	(%)
Betting	147	33.2	139	59.2
Online Roulette 21	175	39.5	104	44.2
Other Types of Gambling (e.g., tennis)	100	22.5	92	39.1
Numerical Lottery	255	57.5	191	81.3
Scratch Cards	271	61.2	203	86.4
National Lottery	263	59.4	179	76.2
Stock Market Trading	183	41.4	131	55.7
Casino Games	116	26.2	104	44.2
Skill-Based Games for Money (e.g., billiards)	96	21.7	84	35.7
Online Betting	175	39.5	163	69.4
Card Games for Money (e.g., poker)	191	43.1	175	74.5
Rummy for Money	140	31.6	120	51.1
Dice Games for Money (e.g., craps)	64	14.4	36	15.2
Sports Lottery/Numerical Lottery	211	47.6	112	47.7

Table 3. Correlation findings related to gambling behavior

	1	2	3	4	5	6
1. SOGS						
2. Age	-.11*					
3. Monthly Income (Turkish Lira; TL)	-.09	-.01				
4. Monthly Gambling Expenditure / Monthly Income	.30***	.04	-.15**			
5. Age of First Time Gambling (onset)	-.11*	.24***	-.15**	.15**		
6. Monthly Gambling Expenditure (TL)	.39***	-.01	-.05	.83***	-.14**	
7. Highest Amount Spent on Gambling in a Day (TL)	.42***	-.12*	.04	.25***	-.04	.32***

SOKTT: South Oaks Kumar Tarama Testi * p < .05, p < .01, ***p < .001; N = 443

Table 4. Comparison of variables by sex

Variable	Sex	n	Mean	SD	df	t
SOGS	Female	163	.75	1.57	441	-11.59*
	Male	280	7.02	6.81		

*p<.001

Both Object Relations and Reality Testing significantly predicted Loneliness (β = 0.655, p < .001; β = 0.117, p = .042, respectively), and Loneliness, in turn, had a significant direct effect on GD (β = 0.257, p < .001). These findings suggest that impaired early relational patterns and reality distortions increase feelings of loneliness, which contributes to greater gambling problems. Additionally, indirect paths were confirmed: Object Relations had a significant indirect effect on GD through Loneliness (β = 0.168, p < .001), and Reality Testing also had a smaller but significant indirect effect via Loneliness (β = 0.030, p = .041). Regarding Quality of Life, both Object Relations (β = −.215, p < .001) and Reality Testing (β = −.445, p < .001) had significant negative effects. The model explained 41% of the variance in GD (R^2 = 0.410), 57% of the variance in Loneliness (R^2 = 0.575), and 53% of the variance in Quality of Life (R^2 = 0.533).

The model fit indices demonstrated the theoretical framework's validity: χ^2 (14) = 28.12, p = 0.065; RMSEA = 0.029 (90% CI: 0.017–0.042); CFI = 0.990; TLI = 0.987; GFI = 0.980; AGFI = 0.970 (see Table 5). These values indicate excellent model fit and alignment with recommended thresholds (Tabachnick & Fidell, 2007). Figure 1 illustrates the structural relationships and standardized path coefficients.

Discussion

This study provides valuable findings concerning the associations between object relations, loneliness, and gambling disorder (GD), particularly highlighting the mediating role of loneliness and the detrimental impact of GD on quality of life. The results of the correlational analyses and structural equation modeling confirm most of the hypotheses and contribute to the theoretical and clinical understanding of GD.

The findings indicate that lottery-based gambling activities, such as scratch cards, numerical lottery, and national lottery, were the most frequently preferred types among both the general sample and individuals who gamble regularly. This may be attributed to their accessibility, perceived legality, and low entry cost. The high prevalence of scratch cards aligns with prior research suggesting that instant-win games appeal more strongly to habitual gamblers. Among individuals classified as gamblers, participation rates in certain gambling types—particularly those involving higher risk and potential illegality—

Table 5. Fit indices for the structural equation model

X2	df	P value	GFI	AGFI	NFI	TLI	CFI	RMSEA
1.118	1	0.290	.998	.985	.984	.990	.999	.016

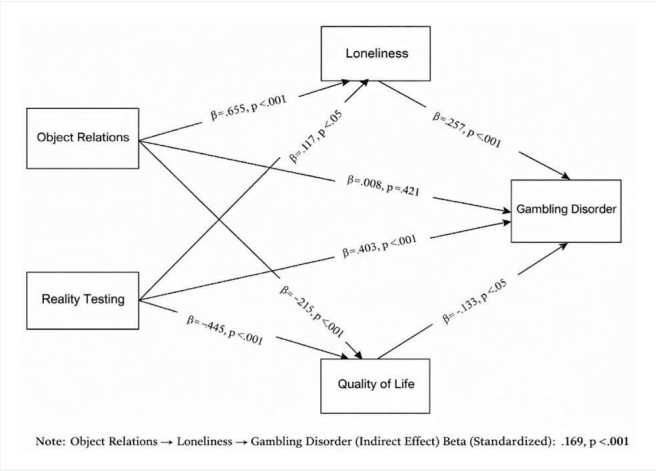

Figure 1. Path analysis of the study variables

were markedly higher than in the general sample, with notable increases observed in online betting, card games for money, and casino games, all of which may involve unregulated or illegal platforms within the Turkish context. The sharp contrast between the overall sample and the gambling subgroup in these categories suggests that frequent gamblers are more likely to engage in high-risk, fast-reward gambling behaviors. These activities are often associated with higher financial stakes, reduced perceived control, and increased cognitive distortions, which are known to exacerbate gambling-related harm. The elevated rates of participation in digital or informal gambling environments further imply a shift toward more persistent and less socially visible gambling patterns among this group, highlighting the importance of addressing risk propensity and regulatory gaps in intervention strategies.

A primary finding of the study was the significant negative correlation between age of first gambling and the total score on the South Oaks Gambling Screen (SOGS). This result is consistent with the literature indicating that individuals who start gambling at an earlier age are at heightened risk of developing more severe gambling problems later in life (Jimenez-Murcia et al., 2020; Wardle, 2007). Early onset of gambling appears to be associated with impulsivity, risk-taking tendencies, and a longer exposure to gambling-related reinforcement patterns. This finding underscores the need for preventive interventions during adolescence, a critical developmental period for shaping attitudes toward risk and behavioral regulation.

Another key finding was the significant positive relationship between the severity of GD and both monthly gambling expenditure and the highest amount of money gambled in a single day. These results are consistent with prior research suggesting that financial investment is closely linked with the intensity of gambling behavior (Bernhard, 2007). Interestingly, monthly income alone did not significantly predict gambling severity, indicating that problematic gambling behaviors may cut across different socioeconomic strata. A particularly noteworthy finding was that the ratio of monthly gambling expenditure to monthly income had a strong positive association with GD severity. This suggests that the proportion of income allocated to gambling—rather than absolute income—serves as a more accurate indicator of risk. This supports the view that perceived financial strain and over-commitment to gambling are stronger predictors of harm than income level per se (Blanco et al., 2015; Hodgins & Stevens, 2021).

The study also revealed findings regarding gender differences. Male participants were more likely to gamble, initiated gambling at earlier ages, and engaged in illegal forms of gambling behavior, consistent with both international and Turkish studies (Arcan & Karancı, 2014; Blanco, 2016; Griffiths & Wood, 2000; Uygur, 2022). These findings support the assertion that GD is strongly gendered in nature, with men overrepresented in clinical and community samples of gamblers. Moreover, gender differences extended to psychological motivations for gambling: men tended to gamble for excitement, status, or competitiveness—traits typically associated with externalizing tendencies—whereas women more often gambled in response to loneliness, stress, or emotional dysregulation (Dowling et al., 2021; Grant et al., 2007). These findings have implications for gender-sensitive prevention and treatment strategies, calling for adapted approaches that address impulsivity and loss-chasing in men, and emotional regulation and trauma in women.

The structural model offered further insights by identifying a significant indirect pathway from object relations to GD via loneliness. Specifically, object relations did not directly predict gambling severity, but dysfunctional object relations—such as feelings of alienation, egocentricity, and social ineffectiveness—contributed to increased levels of loneliness, which in turn predicted increased gambling behavior. This finding aligns with psychodynamic theories (e.g., Fairbairn, Winnicott) and empirical research emphasizing the role of early relational disruptions in shaping adult psychopathology. In the context of GD, this suggests that impaired internalized representations of others and difficulties in forming secure attachments may lead to social withdrawal and compensatory behaviors such as gambling.

Another significant finding was the direct effect of reality evaluation on GD. Individuals who exhibited distorted perceptions of reality—such as magical thinking, illusion of control, or cognitive misinterpretations—were more likely to report severe gambling symptoms. This result is supported by clinical and neurobiological studies (e.g., Corbeil et al., 2024; van Holst et al., 2012) demonstrating that distorted cognitive processes are core mechanisms maintaining gambling behavior. Subscales such as "Distortion of Reality" and "Hallucinations/Delusions" may reflect the underlying beliefs

and perceptual biases that reinforce maladaptive decision-making in gambling contexts.

The study also revealed that both object relations and reality evaluation had direct and negative effects on quality of life, independently of gambling severity. Poor object relations predicted lower psychological and social well-being, while compromised reality testing was associated with greater emotional distress and impaired functioning. Most prominently, GD itself demonstrated a strong and negative association with all domains of quality of life—physical, psychological, social, and environmental—validating findings from prior research (Bonfils et al., 2022; The Whoqol Group, 1998).

These findings collectively underscore the importance of comprehensive treatment strategies for GD. Interventions must address not only the behavioral symptoms but also the underlying emotional, psychodynamic, cognitive, and relational difficulties. Cognitive-behavioral therapy (CBT), trauma-informed care, and relationally focused approaches such as schema therapy or psychodynamic psychotherapy may be particularly effective. Moreover, the mediating role of loneliness points to the necessity of rebuilding social connectedness and addressing interpersonal functioning as part of therapeutic goals.

The study's integration of intrapsychic, interpersonal, and cognitive predictors of GD provides empirical support for the Pathways Model (Blaszczynski & Nower, 2002), which distinguishes between behaviorally conditioned, emotionally vulnerable, and antisocial-impulsive pathways to gambling. The findings especially align with the emotionally vulnerable pathway, characterized by early attachment issues, loneliness, and emotional dysregulation.

Limitations and Directions/Suggestions for Future Research

Limitations include the cross-sectional design, which excludes causal interpretations; reliance on self-report measures, which may be biased due to social desirability effects, recall bias, or variability in self-awareness. This limitation is particularly relevant for behaviors such as gambling, which may be socially stigmatized and thus underreported or distorted. Additionally, the sample consisted solely of participants from Turkey and was recruited online, limiting the cultural generalizability of the findings. Individuals with limited internet access or from socioeconomically disadvantaged, older, or less-educated groups may have been underrepresented in the model. Furthermore, the use of mixed sampling methods, including snowball and purposive sampling, may limit the representativeness of the sample and should be considered when interpreting the generalizability of the findings.

Future research should employ longitudinal designs to examine causal directions among variables, incorporate clinical populations to enhance generalizability, and explore additional psychological factors such as trauma, impulsivity, and emotion regulation. Cross-cultural comparisons could also offer insight into the sociocultural dynamics influencing GD. Mixed-methods studies integrating qualitative interviews would deepen the understanding of subjective experiences related to object relations, loneliness, and reality perception.

In sum, this study highlights that GD is not merely a behavioral issue but a complex psychosocial syndrome embedded in impaired object relations, distorted cognition, and emotional disconnection. Interventions should therefore be multidimensional, integrating psychodynamic, cognitive-behavioral, and systemic approaches to address both symptoms and underlying mechanisms. Public health policies should also prioritize community-level strategies that mitigate social isolation and promote psychological resilience, especially in high-risk populations.

Author contributions

Conception: Y.D.B., L.E.A.; Design: Y.D.B.; Data acquisition: Y.D.B.; Data analysis: Y.D.B.; Data interpretation: Y.D.B., L.E.A.; Drafting of the manuscript: Y.D.B.; Critical revision of the manuscript: Y.D.B., L.E.A. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Istanbul Arel University Graduate Education Institute Ethical Committee (Date: March 22, 2024, Decision/Protocol No: E-69396709-050.04-568581 2024/07). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing. **[Crossref]**

Arcan, K., & Karancı, A. (2014). Adaptation, validity, and reliability study of the five-factor gambling motives scale. *Anatolian Journal of Psychiatry*, *15*(3), 248. **[Crossref]**

Australian Productivity Commission. (1999). *Australia's gambling industries: Fact sheet: The costs and benefits of gambling*. Productivity Commission.

Bell, M. D. (1995). *Bell object relations and reality testing inventory manual*. Western Psychological Services.

Bernhard, B. J. (2007). The voices of vices: Sociological perspectives on the pathological gambling entry in the *diagnostic and statistical manual of mental disorders*. *American Behavioral Scientist*, *51*(1), 8-32. **[Crossref]**

Blanco, C., Hanania, J., Petry, N. M., Wall, M. M., Wang, S., Jin, C. J., & Kendler, K. S. (2015). Towards a comprehensive developmental model of pathological gambling. *Addiction, 110*(8), 1340-1351. **[Crossref]**

Blanco, R. M. (2016). *Experiential avoidance, mindfulness, and values clarification as moderaters of the association between impulsivity and gambling behavior* (Publication No. 10246559) [Doctoral dissertation, Illinois Institute of Technology]. ProQuest Dissertations & Theses Global.

Blaszczynski, A., & Nower, L. (2002). A pathways model of problem and pathological gambling. *Addiction, 97*(5), 487-499. **[Crossref]**

Bonfils, N. A., Aubin, H. J., Grall-Bronnec, M., Caillon, J., Perney, P., Limosin, F., & Luquiens, A. (2022). Development and psychometric properties of a new patient-reported outcome instrument of health-related quality of life specific to patients with gambling disorder: The gambling quality of life scale (GQoLS). *International Journal of Environmental Research and Public Health, 19*(17), 10806. **[Crossref]**

Corbeil, O., Anderson, É., Béchard, L., Desmeules, C., Huot-Lavoie, M., Bachand, L., Brodeur, S., Carmichael, P., Jacques, C., Solmi, M., Giroux, I., Dorval, M., Demers, M., & Roy, M. (2024). Problem gambling in psychotic disorders: A systematic review and meta-analysis of prevalence. *Acta Psychiatrica Scandinavica, 149*(6), 445-457. **[Crossref]**

Delice, Y. (2017). *Lise düzeyindeki ergenlerin kumar oynamaları ile riskli davranışları arasındaki ilişkiler* (Thesis No. 469373) [Master's thesis, Maltepe University]. Council of Higher Education National Thesis Center.

Demir, A. G. (1989). UCLA yalnızlık ölçeğinin geçerlik ve güvenirliği. *Psikoloji Dergisi, 7*(23), 14-18. https://psikolog.org.tr/tr/yayinlar/dergiler/1031828/tpd1300443319890000m000359.pdf

Dowling, N. A., Youssef, G. J., Greenwood, C., Merkouris, S. S., Suomi, A., & Room, R. (2021). The development of empirically derived Australian low-risk gambling limits. *Journal of Clinical Medicine, 10*(2), 167. **[Crossref]**

Duvarcı, I., & Varan, A. (2001). Reliability and validity study of the Turkish form of the South Oaks gambling screen. *Turk Psikiyatri Dergisi, 12*(1), 34-45. https://www.turkpsikiyatri.com/PDF/C12S1/southOaksKumar.pdf

Eser, E., Fidaner, H., Fidaner, C., Eser, S. Y., Elbi, H., & Göker, E. (1999). WHOQOL-100 ve WHOQOL-BREF'in psikometrik özellikleri. *Psikiyatri Psikoloji Psikofarmakoloji (3P) Dergisi, 7*(Suppl 2), 23-40.

Estévez, A., Jáuregui, P., Sánchez-Marcos, I., López-González, H., & Griffiths, M. D. (2017). Attachment and emotion regulation in substance addictions and behavioral addictions. *Journal of Behavioral Addictions*, *6*(4), 534-544. **[Crossref]**

Fairbairn, W. R. D. (1946). Object-relationships and dynamic structure. *The International Journal of Psychoanalysis, 27*, 30-37.

Ferentzy, P., & Turner, N. E. (2013). *The history of problem gambling: Temperance, substance abuse, medicine, and metaphors*. Springer. **[Crossref]**

Forsström, D., Lindner, P., Månsson, K. N. T., Ojala, O., Hedman-Lagerlöf, M., El Alaoui, S., Rozental, A., Lundin, J., Jangard, S., Shahnavaz, S., Sörman, K., Lundgren, T., & Jayaram-Lindström, N. (2022). Isolation and worry in relation to gambling and onset of gambling among psychiatry patients during the COVID-19 pandemic: A mediation study. *Frontiers in Psychology*, *13*, 1045709. **[Crossref]**

Gabellini, E., Lucchini, F., & Gattoni, M. E. (2022). Prevalence of problem gambling: A meta-analysis of Recent Empirical Research (2016-2022). *Journal of Gambling Studies*, *39*(3), 1027-1057. **[Crossref]**

Grant, J. E., Williams, K. A., & Potenza, M. N. (2007). Impulse-control disorders in adolescent psychiatric inpatients: Co-occurring disorders and sex differences. *Journal of Clinical Psychiatry, 68*(10), 1584. **[Crossref]**

Griffiths, M., & Wood, R. T. (2000). Risk factors in adolescence: The case of gambling, videogame playing, and the internet. *Journal of Gambling Studies, 16*(2), 199-225. **[Crossref]**

Håkansson, A., Fernández-Aranda, F., Menchón, J. M., Potenza, M. N., & Jiménez-Murcia, S. (2020). Gambling during the COVID-19 crisis - A cause for concern. *Journal of Addiction Medicine*, *14*(4), e10-e12. **[Crossref]**

Hodgins, D. C., & Stevens, R. M. (2021). The impact of COVID-19 on gambling and gambling disorder: emerging data. *Current Opinion in Psychiatry, 34*(4), 332-343. **[Crossref]**

Jimenez-Murcia, S., Granero, R., Giménez, M., Del Pino-Gutiérrez, A., Mestre-Bach, G., Mena-Moreno, T., Moragas, L., Baño, M., Sánchez-González, J., De Gracia, M., Baenas-Soto, I., Contaldo, S. F., Valenciano-Mendoza, E., Mora-Maltas, B., López-González, H., Menchón, J. M., & Fernández-Aranda, F. (2020). Contribution of sex on the underlying mechanism of the gambling disorder severity. *Scientific Reports*, *10*(1), 18722. **[Crossref]**

Kessler, R. C., Hwang, I., LaBrie, R., Petukhova, M., Sampson, N. A., Winters, K. C., & Shaffer, H. J. (2008). DSM-IV pathological gambling in the National Comorbidity Survey Replication. *Psychological Medicine, 38*(9), 1351-1360. **[Crossref]**

Khademi, M. J., Monirpoor, N., Ebrahimi, Z., & Rashedi, V. (2020). *Object relations and vulnerability to substance abuse relapse among substance abusers visiting narcotics anonymous centers in Qom City, 2018*.

Klein, M. (1952). The origins of transference. *International Journal of Psychoanalysis, 33*(4), 433-438.

Lesieur, H. R., & Blume, S. B. (1987). The south oaks gambling screen: A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144*(9), 1184-1188. **[Crossref]**

Ogden, T. A. (1989). On the concept of an autistic-contiguous position. *The International Journal of Psycho-Analysis, 70*, 127-140. https://pubmed.ncbi.nlm.nih.gov/2535621/

Parker, J. D. A., Taylor, R. N., Eastabrook, J. M., Schell, S. L., & Wood, L. M. (2008). Problem gambling in adolescence: Relationships with internet misuse, gaming abuse and emotional intelligence. *Personality and Individual Differences, 45*(2), 174-180. **[Crossref]**

Petry, N. M. (2005). *Pathological gambling: Etiology, comorbidity, and treatment*. American Psychological Association. **[Crossref]**

Potenza, M. N., Steinberg, M. A., McLaughlin, S. D., Wu, R., Rounsaville, B. J., & O'Malley, S. S. (2001). Gender-related differences in the characteristics of problem gamblers using a gambling helpline. *American Journal of Psychiatry, 158*(9), 1500-1505. **[Crossref]**

Russell, D., Peplau, L. A., & Ferguson, M. L. (1978). Developing a measure of loneliness. *Journal of Personality Assessment, 42*(3), 290-294. **[Crossref]**

Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental designs using ANOVA* (Vol. 724). Thomson/Brooks/Cole.

The Whoqol Group. (1998). Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychological Medicine, 28*(3), 551-558. **[Crossref]**

Trevorrow, K., & Moore, S. (1998). The association between loneliness, social isolation and women's electronic gaming machine gambling. *Journal of Gambling Studies*, *14*(3), 263-284. **[Crossref]**

Uluç, S., Tüzün, Z., Haselden, M., & Erbaş, S. P. (2015). Bell Nesne İlişkileri ve Gerçeği Değerlendirme Ölçeği'nin Türkçe'ye uyarlama çalışması. *Klinik Psikiyatri Dergisi, 18*(4), 112-123.

Uygur, A. B. (2022). Kumar oynama bozukluğunun davranişsal inhibisyon-aktivasyon sistemleri ve sosyodemografik etkenler ile ilişkisi. *Kahramanmaraş Sütçü İmam Üniversitesi Tıp Fakültesi Dergisi*, *17*(1), 36-45. **[Crossref]**

van Holst, R. J., Veltman, D. J., Büchel, C., van den Brink, W., & Goudriaan, A. E. (2012). Distorted expectancy coding in problem gambling: Is the addictive in the anticipation? *Biological Psychiatry*, *71*(8), 741-748. **[Crossref]**

Wardle, H. (2007). *British gambling prevalence survey 2007*. The Stationery Office.

Welte, J. W., Barnes, G. M., Tidwell, M.-C. O., & Hoffman, J. H. (2008). The prevalence of problem gambling among U.S. adolescents and young adults: Results from a national survey. *Journal of Gambling Studies*, *24*(2), 119-133. **[Crossref]**

Winnicott, D. W. (1965). A clinical study of the effect of a failure of the average expectable environment on a child's mental functioning. *The International Journal of Psycho-Analysis, 46*, 81-87.

Zhou, H., & Wu, A. M. S. (2024). The protective effects of cognitive empathy and emotional empathy on gambling disorder are mediated by risk aversion and responsible gambling attitude. *BMC Psychiatry*, *24*(1), 63. **[Crossref]**

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.502

Examining the relationship between internet gaming disorder, and internet addiction, psychological inflexibility and hopelessness in university students

Elmas Nur İbaoğlu[1], Zeliha Traş[2]

[1]Department of Special Education, Faculty of Education, Gaziantep University, Gaziantep, Türkiye
[2]Department of Guidance and Psychological Counselling, Ahmet Keleşoğlu Faculty of Education, Necmettin Erbakan University, Konya, Türkiye

Abstract

The current study aims to investigate the relationship between internet gaming disorder, internet addiction, psychological inflexibility, and hopelessness among university students. We employed a correlational survey model in the study. As data collection tools, the Internet Gaming Disorder Scale Short Form, Young Internet Addiction Test Short Form, Acceptance and Action Questionnaire-2, Beck Hopelessness Scale, and Personal Information Form were used. We conducted an unpaired t-test, one-way analysis of variance (ANOVA), Pearson product-moment correlation coefficient analysis, and multiple linear regression analysis. University students' level of internet gaming disorder differs significantly according to gender, time of playing games during the week and the weekend, type of device preferred to play games, and type of the preferred game. The study findings also showed that internet gaming disorder was significantly related to internet addiction, psychological inflexibility, and hopelessness in the positive direction. There were also significant positive relations between internet addiction and psychological inflexibility, as well as hopelessness, and between psychological inflexibility and hopelessness. Lastly, internet addiction, psychological inflexibility, and hopelessness had a predictive effect on internet gaming disorder.

Keywords: internet, internet gaming disorder, internet addiction, psychological inflexibility, hopelessness, university students, hope, young adult

Main points

- There is a positive relationship between internet gaming disorder and internet addiction at a statistically significant level.
- There is a positive relationship between internet gaming disorder and psychological inflexibility at a statistically significant level.
- There is a positive relationship between internet gaming disorder and hopelessness at a statistically significant level.
- Internet addiction, psychological inflexibility and hopelessness predict internet gaming disorder at a statistically significant level.

Introduction

In recent years, many changes have occurred in daily life and leisure time activities with the development of technology and the internet. However, the changes brought by the internet might lead to negative consequences such as internet gaming disorder. Internet gaming disorder (IGD) is described as a state lasting at least 12 months in which people affected by this disorder give more priority to games; games take precedence over other hobbies and daily activities; behavioral patterns cause significant breakdowns in personal, familial, social, educational, and professional life; and gaming continues or increases even more despite the negative consequences (World Health Organization, 2020). In this regard, it is possible to state that playing games too much has negative effects on people's lives physically, psychologically, and socially, resulting in negative consequences. These negativities include psychosocial problems such as antisocial

Corresponding author: Elmas Nur İbaoğlu • **Email:** elmasibaoglu@gmail.com
Received: May 31, 2024 **Accepted:** October 14, 2025 **Published online:** June 22, 2026

This study was produced from the master's thesis titled "Examination of the relationship between internet gaming disorder and internet addiction, psychological inflexibility, and hopelessness in university students", carried out by graduate student Elmas Nur İbaoğlu under the supervision of Prof. Dr. Zeliha Traş in 2023.

Cite as: İbaoğlu, E. N., & Traş, Z. (2026). Examining the relationship between internet gaming disorder, and internet addiction, psychological inflexibility and hopelessness in university students. *Addicta: The Turkish Journal on Addictions*, *13*(2), 225-233. https://doi.org/10.15805/addicta.2026.502

behaviors, problems with anger management (Wartberg et al., 2017), loneliness (André et al., 2020; Batmaz & Çelik, 2021), depression, stress, anxiety, and physical problems such as fatigue, insomnia, and concentration problems (Männikkö et al., 2015). There are some risk factors for IGD such as being male, depression, impulsivity, weekly gaming time, loneliness (Ropovik et al., 2023), stressful life events, social support, rumination, personality traits, maladaptive cognitions (Ji et al., 2022), fearful attachment style (Yılmaz & Özkan, 2022), internet addiction (Traş, 2019), age, and type of games (Şendurur & Şendurur, 2018).

It is stated that the rate of gaming addiction decreases especially as the age of individuals increases (André et al., 2020). Considering other studies in the literature which show that being male and being at a young age can cause IGD (Bonnaire & Baptista, 2019; Torez, 2019; Wittek et al., 2016; Zhang et al., 2019), it can be said that young adults, university students, and men are in the risk group in terms of IGD. The fact that playing internet games is a relatively new phenomenon and does not attract the interest of older generations is considered an explanation for this situation (Wittek et al., 2016). The emergence of sports branches based on online games such as e-sports, which are generally pursued by young adults due to developing technology (Martončik, 2015; Mustafaoğlu, 2018), and the fact that most of the people who earn income from platforms such as YouTube and Twitch as a job that requires playing games for more than 20 hours a week are young adults (Johnson, 2021) support the idea that internet games are more attractive leisure activities for young individuals.

Internet addiction is defined by certain criteria such as an individual's excessive preoccupation with the internet to escape from problems such as hopelessness, anxiety, and depression, and as a result, missing the opportunity for education, a job, or a relationship, repetitively failing attempts to control internet use, and experiencing negative emotional states in this process (Young, 1998). The literature review shows that internet addiction leads to quite many psychological disorders such as impulsivity, depression (Devine et al., 2022), bullying and cyberbullying (Zsila et al., 2018), a high level of anxiety (Stavropoulos et al., 2017), stress and loneliness (Ostovar et al., 2016), and a low level of life satisfaction (Traş et al., 2020).

Psychological flexibility, the skill of being conscious, being open-minded to life experiences, and being able to take action in a value-driven manner, is grounded on six fundamentals of dissociation, acceptance, contact with the moment, contextual self, values and value-driven behaviors, which increase life quality (Hayes et al., 2006). Additionally, psychological inflexibility, which can be briefly defined as the lack of psychological flexibility (Kashdan & Rottenberg, 2010), occurs when a person tries to escape from undesirable inner life experiences, reduces their contact with the moment and the possibility of taking value-driven actions, and makes a dysfunctional effort to control their feelings, thoughts, and behaviors in order to escape from this experience (Bond et al., 2011). Psychological inflexibility leads to emotional burnout in individuals (Toprak et al., 2020), decreases well-being (Avsec et al., 2022), creates problems with emotion regulation (Lilly & Allen, 2015), and causes problems such as stress, anxiety, and depression (Yao et al., 2023).

Another variable thought to be related to IGD is hopelessness. Hopelessness is described as one's having negative expectations about thier individual life goals and future plans (Melges & Bowlby, 1969). Chronic hopelessness is a variable that can affect individuals' social skills and psychological well-being and causes people who feel desperate, pessimistic, and hopeless to develop pathological cases about their lives, which is a threat to their well-being (Beck et al., 1985). It is seen that hopeless individuals who do not strive to develop useful strategies to cope with negative situations and do not have any goals (Huen et al., 2015) are self-critical (Gong et al., 2019) and have difficulties in interpersonal relationships (Savaşan et al., 2013). It has been found that hopelessness, which can develop with low levels of social support and meaning in life (Zuo et al., 2020), is associated with variables such as cyberbullying (Dilmaç, 2017), stressful experiences (Parada-Fernández et al., 2021), depression, and suicidal ideation (Keshoofy et al., 2023).

The literature review shows that there are significant positive relationships between internet addiction and video gaming addiction (Günüç, 2015), hopelessness and internet addiction (Şimşek et al., 2015), and internet gaming addiction and psychological inflexibility (İnce, 2020). Therefore, it is thought that psychological inflexibility, internet addiction, and hopelessness might have a predictive effect on internet gaming disorder. In the light of the current body of knowledge in related literature, this study aims at investigating the predictive relationship between internet gaming disorder and psychological inflexibility, internet addiction, and hopelessness among university students.

Method

Research Model

In the current study, we employed a correlational survey model, which is a general survey model that aims to identify the relationship between two or more variables (Büyüköztürk et al., 2016). Internet gaming disorder is the dependent variable of the study, and the independent variables are psychological inflexibility, internet addiction, and hopelessness.

Study Group

The study group was composed of 642 university students, 464 (72.3%) of whom were female and 178 (27.7%) of whom were, male with an average age of 21 (Table 1). The study group of the research was determined by the convenience sampling method. The convenience sampling method involves collecting data starting from the most accessible participants in order to save time, money, and labor (Büyüköztürk et al., 2016).

Table 1. Information about the demographic variables

Personal Information	Groups	n	%
Gender	Female	464	72.3
	Male	178	27.7
Game Playing Time during the Week	None	371	57.8
	Less than an hour	124	19.3
	1-3 hours	105	16.4
	More than 3 hours	42	6.5
Game Playing Time at the Weekend	None	355	55.3
	Less than an hour	116	18.1
	1-3 hours	106	16.5
	More than 3 hours	65	10.1
Type of the Device Preferred to Play Games	Not playing games	329	51.2
	Desktop	50	7.8
	Laptop	86	13.4
	Game console	11	1.7
	Smartphone/tablet	166	25.9
Type of the Preferred Game	Not playing games	376	58.6
	Battle Royale	69	10.7
	FPS	78	12.1
	MMORPG	18	2.8
	MOBA	41	6.4
	Playing other games	60	9.3

Data Collection Tools

Internet Gaming Disorder Scale-Short Form (IGDS-SF)

The scale was developed by Pontes and Griffiths (2015), and adopted into Turkish culture by Arıcak et al. (2018). It is composed of nine items and one factor. The items are scored on a 5-point Likert-type scale. The scale has no reverse item, and the total score to be received from the scale varies between 9 and 45. Scoring all the items "Often" will result in a total score of 36, so this score is stated to be considered as the cut-off score for IGD. Cronbach alpha internal consistency coefficient was found to be .82 for the whole scale. In this study, we calculated the Cronbach alpha coefficient to be .85.

Young Internet Addiction Test-Short Form (YIAT-SF)

The scale was developed by Young (1998), transformed into a short form by Pawlikowski et al. (2013), and adapted into Turkish culture by Kutlu et al. (2016). It is a 5-point Likert-type scale with one factor and 12 items. The scale has no reverse item. A high score refers to a high level of internet addiction. Cronbach alpha coefficient was found to be .91 for university students. In this study, we calculated the Cronbach alpha coefficient to be .88.

Acceptance and Action Form-2

The scale was developed by Bond et al. (2011), and adopted into Turkish culture by Yavuz et al. (2016). It is a 7-point Likert-type scale with seven items. The scale has no reverse item. A high score refers to a high level of psychological inflexibility. Cronbach alpha coefficient was found to be .84. In this study, we calculated the Cronbach alpha coefficient to be .90.

Beck Hopelessness Scale

The scale was developed by Beck et al. (1974), and adopted into Turkish culture by Seber et al. (1993). It is composed of 20 items, 11 of which are true-keyed items and nine of which are false-keyed items. The total score can vary between 0 and 20. Cronbach alpha coefficient was found to be .86. In this study, we calculated the Cronbach alpha coefficient to be .89.

Personal Information Form

The personal information form was developed by the researchers to gather general information about the participants.

Data Collection

We collected the study data by going into classrooms at a university in Türkiye. We conducted the data collection process on a voluntary basis. We distributed the data collection tools as hard copies to the participants after they signed the consent form. It took the participants 15-20 minutes to respond to the items in the scales.

The ethics committee approval (Decision no: 2021/212), dated April 16, 2021, was obtained from the Ethics Committee for Social and Human Sciences Scientific Research of Necmettin Erbakan University.

Data Analysis

We analyzed the study data via the SPSS 25.0 package program. We collected data from 712 participants at first. We calculated the Mahalanobis Distance value to find outliers, which were excluded from the data set afterwards. There was no missing data in the data set. Finally, data gathered from 642 participants were included in the analysis. After excluding the outliers from the data set, we examined the coefficients of skewness and kurtosis to see if the participants' scores displayed a normal distribution or not. As seen in Table 2, coefficients of skewness and kurtosis belonging to the Internet Gaming Disorder, Acceptance and Action Form-2, Young Internet Addiction, and Beck Hopelessness scales

Table 2. Descriptive statistics about the variables

Variables	n	$\bar{X}$	Ss	CS	SDCS	CK	SECK
Internet Gaming Disorder	642	12.20	4.403	1.482	.096	1.317	.193
Internet Addiction	642	26.47	8.486	.548	.096	-.057	.193
Psychological Inflexibility	642	23.59	10.42	.346	.096	-.762	.193
Hopelessness	642	5.71	4.965	.873	.096	-.221	.193

CS: Coefficient of Skewness, SDCS: Standard Deviation Coefficient of Skewness, CK: Coefficient of Kurtosis, SECK: Standard Error Coefficient of Kurtosis

are within the interval of ±1.5. Coefficients of skewness and kurtosis being within the interval of ±1.5 means that the study data display a normal distribution (Tabachnick & Fidell, 2013). Therefore, we concluded that the study data displayed a normal distribution in the current study. After the preliminary analysis, we conducted an independent samples t-test to see if there was a significant difference between the two unrelated sample means, and we conducted a one-way analysis of variance (ANOVA) to see if there was a significant difference between more than three unrelated sample means. During the analysis of variance, we used Tamhane's T2 multiple comparison test to identify which group caused the difference between the groups, as the variances did not have a homogeneous distribution. We conducted Pearson product-moment correlation coefficient analysis to test the correlations between the scores gathered from the scales. Lastly, we conducted multiple linear regression analysis to analyze the predictive relationship between the dependent variable and independent variables.

Results

Findings about the Differences in Demographic Variables

As is seen in Table 3, male students had a higher score ($\bar{X}$=15.37) in IGD than female students ($\bar{X}$=10.98) at a statistically significant level (p<.05).

As is seen in Table 4, the participants who stated that they did not play games during the week had a lower level of IGD ($\bar{X}$=10.07) than those who stated that they played games for less than an hour ($\bar{X}$=13.27), between 1-3 hours ($\bar{X}$=16.46), and more than 3 hours ($\bar{X}$=17.26) at a statistically significant level (p<.05). The participants who stated that they played games less than an hour during the week had a lower level of IGD ($\bar{X}$=13.27) than those who stated that they played games for 1-3 hours ($\bar{X}$=16.46), and more than 3 hours ($\bar{X}$=17.26) at a statistically significant level (p<.05). The participants who stated that they did not play games at the weekend had a lower level of IGD ($\bar{X}$=9.90) than those who stated that they played games for less than an hour ($\bar{X}$=12.96), between 1-3 hours ($\bar{X}$=15.65), and more than 3 hours ($\bar{X}$=17.76) at a statistically significant level (p<.05). The participants who stated that they played games for less than an hour at the weekend had a lower level of IGD ($\bar{X}$=12.96) than those who stated that they played games for 1-3 hours ($\bar{X}$=15.65) and more than 3 hours ($\bar{X}$=17.76) at a statistically significant level (p<.05). The participants who stated that they played games for 1-3 hours at the weekend ($\bar{X}$=15.65) had a lower level of IGD than those who stated that they played games for more than 3 hours ($\bar{X}$=17.76) at a statistically significant level (p<.05). The participants who stated that they did not play games had a lower level of IGD ($\bar{X}$=9.64) than those who stated that they preferred a desktop/laptop to play games ($\bar{X}$=16.36) and a smartphone/tablet/game console to play games ($\bar{X}$=13.76) at a statistically significant level (p<.05). The participants who stated that they preferred a smartphone/tablet/game console to play games had a lower level of IGD ($\bar{X}$=13.76) than those who stated that they preferred a desktop/laptop to play games ($\bar{X}$=16.36) at a statistically significant level (p<.05). The participants who stated that they did not play games had a lower level of IGD ($\bar{X}$=10.01) than those who preferred other games (referring to games other than Battle Royale, FPS, MOBA, and MMORPG genres)($\bar{X}$=13.80), Battle Royale games ($\bar{X}$=14.85), FPS games ($\bar{X}$=16.12) and MOBA games/MMORPGs ($\bar{X}$=16.23) at a statistically significant level (p<.05). The participants who stated that they preferred other games had a lower level of IGD ($\bar{X}$=13.80) than those who preferred FPS games ($\bar{X}$=16.12) and MOBA games/MMORPGs ($\bar{X}$=16.23) at a statistically significant level (p<.05).

Findings about the Correlations among the Study Variables

As is seen in Table 5, there was a statistically significant low-level positive relationship between university students' level of IGD and internet addiction (r=.27, p<.01), psychological inflexibility (r=.23, p<.01), and hopelessness (r=.28, p<.01). On the other hand, internet addiction was positively related to psychological inflexibility (r=.46, p<.01) and hopelessness (r=.30, p<.01) at a statistically significant medium level. There was a positive relationship between hopelessness and psychological inflexibility at a statistically significant medium level (r=.53, p<.01).

Findings about Predicting Internet Gaming Disorder

As is seen in Table 6, internet addiction, psychological inflexibility, and hopelessness predicted 12% of IGD in university students (R=.346, R^2=.12, p<.01).

Table 3. Result of t-test as to the differences in the scores of the internet gaming disorder scale according to gender

	Variables	Groups	n	$\bar{X}$	Ss	Sd	t	p	d
IGD	Gender	Female	464	10.98	3.30	640	-10.370	.000**	0.99
		Male	178	15.37	5.26				

p<.05*, p<.001**

Table 4. Results of one-way analysis of variance as to the differences in the university students' mean scores of the internet gaming disorder scale according to different variables

	Variable	Groups	N	$\bar{X}$	Ss	F	p	Df	η2	Difference (Tamhane T2)
IGD	Game Playing Time during the Week	I don't play (1)	371	10.07	2.11	134.469	.000**	3-638	.387	1-2, 1-3,1-4, 2-3, 2-4
		Less than an hour (2)	124	13.27	4.47					
		1-3 hours (3)	105	16.46	4.73					
		More than 3 hours (4)	42	17.26	5.32					
	Game Playing Time at the Weekend	I don't play (1)	355	9.90	1.89	153.440	.000**	3-638	.419	1-2, 1-3,1-4, 2-3, 2-4, 3-4
		Less than an hour (2)	116	12.96	4.29					
		1-3 hours (3)	106	15.65	4.66					
		More than 3 hours (4)	65	17.76	4.89					
	Type of the Device Preferred to Play Games	Not playing games (1)	329	9.64	1.52	211.263	.000**	2-639	.398	1-2, 1-3, 2-3
		Desktop/Laptop (2)	136	16.36	5.36					
		Smartphone/Tablet/ Game console (3)	177	13.76	4.00					
	Type of the Preferred Game	Not playing games (1)	376	10.01	2.25	93.415	.000**	4-637	.370	1-2, 1-3,1-4, 1-5, 3-5, 4-5
		Battle Royale (2)	69	14.85	4.88					
		FPS (3)	78	16.12	4.86					
		MOBA/MMORPG (4)	59	16.23	5.16					
		Other (5)	60	13.80	3.98					

p<.05*, p<.001**

Table 5. Results of pearson product-moment correlation coefficient as to the correlations among university students' level of internet gaming disorder, internet addiction, psychological inflexibility and hopelessness

Variables	Internet Gaming Disorder	Internet Addiction	Psychological Inflexibility	Hopelessness
Internet Gaming Disorder	1	.274**	.238**	.283**
Internet Addiction		1	.463**	.305**
Psychological Inflexibility			1	.533**
Hopelessness				1

p<.05*, p<.001**

Table 6. Results of multiple regression analysis as to predicting internet gaming disorder

Variables	B	Standard Error	β	t	r^2	F	R^2
Fixed	8.119	.558		14.546		28.925	.12
Internet Addiction	.100	.022	.193	4.601	.274		
Psychological Inflexibility	.017	.020	.041	.862	.238		
Hopelessness	.179	.039	.202	4.582	.283		

p<.01**, R=.346

Discussion

In this study, male university students had a higher level of IGD than female students. This result is parallel with the literature, and previous studies which concluded that males could be more sensitive to game-related rewards than females, and males could be more willing to play games than females. This is said to have the potential to lead males to have less control over limiting their gaming activities (Dong & Potenza, 2022). There are also studies in the literature which indicate that the competitive nature of games attracts men more than women (Wartberg et al., 2017). According to the literature, some other reasons might be that men are not supervised by the society as much as women are, and so they do not feel pressure, they have easier access to technological devices, and women do not prefer playing games as they are more sociable than men

(Çelik, 2021). In the light of all these factors, it is possible to explain the reason why men have higher levels of IGD than women by biological tendencies, some other risk factors that are a result of sociocultural attitudes, and the fact that men are more familiar with the dynamics of video games.

The current study reveals that the longer university students played games during the week/at the weekend, the higher the level of IGD was. There are many studies in the literature that support the current study finding (Brailovskaia et al., 2022; Rho et al., 2018; Yu et al., 2022) This might be because individuals continue to play games for the feeling of achieving success through internet games as they develop a tolerance towards playing games. According to a study, as the perceived social support decreased, weekly gaming time increased, which in turn increased internet gaming addiction (Yavuz & Erden Çınar, 2022). Considering online games, it is assumed that individuals have the opportunity to socialize in the chatrooms of online games. Therefore, we believe that individuals spare much time to play games in order to receive social support from people they meet through games. Moreover, we also think that the type of game is also a factor that increases the time people spend playing games. For example, some internet games require players to follow the game for a long time. In this case, it is an expected result that individuals spend more time playing games.

University students' level of IGD showed a statistically significant difference according to the type of device preferred to play games. It was found in a study that playing online computer games affected online game addiction more than mobile games, and that the duration of playing computer games increased men's tendency to be addicted, and the duration of mobile games increased women's tendency to be addicted (Lee & Kim, 2017). In the light of the findings in the literature, we believe that the type of device preferred for playing games is an important variable affecting IGD. It is thought that various factors such as computers having the necessary technical equipment to install games more than smartphones/tablets, the increase in the quality and efficiency of games with features such as widescreen and graphics settings, and easier game control on the computer all lead individuals to prefer computers for playing games.

University students' level of IGD showed a statistically significant difference according to the type of preferred games. Various study findings in the literature reveal that individuals who prefer MMORPG and FPS games have increased playing times and that these individuals exhibit problematic gaming behaviors (Dieris-Hirche et al., 2020), and the most preferred game type is FPS games, but MOBA games have more addictive effects (Orak et al., 2021). According to the results of this study, it is thought that FPS games are realistic in nature, usually deal with war themes, and require speed and coordination, requiring the player to pay attention and focus. Thus, the player is expected to increase the time spent in the game in order to improve himself/herself in the game. As a result, it is assumed that FPS games affect IGD.

According to another finding of the current study, there was a significant relationship between IGD, psychological inflexibility, internet addiction, and hopelessness. Internet addiction, hopelessness, and psychological inflexibility predicted 12% of the total variance in IGD. The value-oriented life levels of role-playing game players were lower than others (Kahraman, 2021). Internet addiction had a predictive effect on individuals' psychological inflexibility (Kabakcı & Traş, 2024). Individuals' inability to use stress coping strategies effectively increased the risk of internet addiction, and this was found to be associated with low levels of cognitive dissociation, experiential avoidance, and psychological inflexibility. Based on this result, it was emphasized that individuals may overuse the internet to get away from stressful events and situations (Chou et al., 2018). Furthermore, it was found in another study that depressive symptoms and hopelessness had a mediating role in the relationship between attention deficit and hyperactivity disorder, and IGD (Chen et al., 2021). In a study, it was found that the most prominent purpose for using the internet that predicted problematic internet use was to establish social relationships with people the users did not know (Ceyhan, 2010). In the light of all this information, it can be stated that individuals prefer to use the internet and play games as an alternative way to combat the difficulties they face in their lives and to receive the social support they need. It is thought that this attempt of individuals who try to overcome the difficulties they experience with these behaviors results in having more negative and repetitive thoughts and expectations about the future, which creates a psychological inflexibility by narrowing their behavioral patterns and preventing them from exhibiting value-oriented behaviors. Therefore, internet addiction, psychological inflexibility and hopelessness are thought to be the factors that affect IGD.

Limitations and Suggestions

Limitations of this study include the limited sample size and geographical area, and that it is a correlational study and a self-report assessment. In addition, the fact that the number of female participants is almost three times the number of male participants and that the preferred game genres are limited to the determined categories constitute a limitation for the research. With the development of technology and changes in the gaming industry, games address more masses and a wide range of age groups today. Researchers can carry out studies with larger and various groups. Future studies can focus on participants who have been diagnosed clinically or who only play games. It would also be beneficial to conduct experimental and qualitative studies.

Factors regarding the dynamics of games, time spent on playing games, type of game, and the device used for playing games have an effect on IGD. Psychoeducational training, individual and group psychological counselling, and guidance plans about time management can be conducted in order to help individuals decrease the time they spend playing games and to inform university students about IGD and various dynamics about gaming. Also, it is recommended that psychological counselling and guidance centers and units at universities should be activated so that they can take steps for

IGD. Further research can be conducted focusing on variables such as with whom university students live, whether they stay with their families or far away from them as a university student, whether they have an internet connection at home, their academic success, and different demographic variables such as in-game purchases, healthy life skills, and making friends while playing games.

Acknowledgements

We would like to thank the scholars who granted permission for the use of the assessment instruments included in this study, the participants who contributed data, and the researchers whose valuable feedback helped to refine and strengthen the study.

Author contributions

Conception and design: E.N.İ., Z.T.; Data acquisition: E.N.İ., Z.T.; Data interpretation: E.N.İ., Z.T.; Drafting of the manuscript: E.N.İ., Z.T.; Critical revision of the manuscript: E.N.İ., Z.T. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Necmettin Erbakan Üniversitesi Sosyal ve Beşeri Bilimler Bilimsel Araştırmalar Etik Kurulu (Date: April 16, 2021, Decision/Protocol No: 2021/212). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

André, F., Broman, N., Håkansson, A., & Claesdotter-Knutsson, E. (2020). Gaming addiction, problematic gaming and engaged gaming - Prevalence and associated characteristics. *Addictive Behaviors Reports, 12*, 100324. **[Crossref]**

Arıcak, O. T., Dinç, M., Yay, M., & Griffiths, M. D. (2018). İnternet Oyun Oynama Bozukluğu Ölçeği Kısa Formu'nun (İOOB9-KF) Türkçeye uyarlanması: Geçerlik ve güvenirlik çalışması. *Addicta: The Turkish Journal on Addictions*, *5*(4), 615-636. **[Crossref]**

Avsec, A., Eisenbeck, N., Carreno, D. F., Kocjan, G. Z., & Kavčič, T. (2022). Coping styles mediate the association between psychological inflexibility and psychological functioning during the COVID-19 pandemic: A crucial role of meaning-centered coping. *Journal of Contextual Behavioral Science*, *26*, 201-209. **[Crossref]**

Batmaz, H., & Çelik, E. (2021). Examining the online game addiction level in terms of sensation seeking and loneliness in university students. *Addicta: The Turkish Journal on Addictions*, *8*(2), 126-130. **[Crossref]**

Beck, A. T., Steer, R. A., Kovacs, M., & Garrison, B. (1985). Hopelessness and eventual suicide: A 10-year prospective study of patients hospitalized with suicidal ideation. *The American Journal of Psychiatry*, *142*(5), 559-563. **[Crossref]**

Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The hopelessness scale. *Journal of Consulting and Clinical Psychology, 42*(6), 861-865. **[Crossref]**

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (2011). Preliminary psychometric properties of the acceptance and action questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy*, *42*(4), 676-688. **[Crossref]**

Bonnaire, C., & Baptista, D. (2019). Internet gaming disorder in male and female young adults: The role of alexithymia, depression, anxiety and gaming type. *Psychiatry Research, 272*, 521-530. **[Crossref]**

Brailovskaia, J., Meier-Faust, J., Schillack, H., & Margraf, J. (2022). A two-week gaming abstinence reduces internet gaming disorder and improves mental health: An experimental longitudinal intervention study. *Computers in Human Behavior*, *134*, 107334. **[Crossref]**

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2016). *Bilimsel araştırma yöntemleri* (20th ed.). Pegem Akademi. **[Crossref]**

Ceyhan, E. (2010). Problemli internet kullanım düzeyi üzerinde kimlik statüsünün, internet kullanım amacının ve cinsiyetin yordayıcılığı. *Kuram ve Uygulamada Eğitim Bilimleri*, *10*(3), 1323-1356.

Chen, C., Dai, S., Shi, L., Shen, Y., & Ou, J. (2021). Associations between attention deficit/ hyperactivity disorder and internet gaming disorder symptoms mediated by depressive symptoms and hopelessness among college students. *Neuropsychiatric Disease and Treatment*, *17*, 2775-2782. **[Crossref]**

Chou, W. P., Yen, C. F., & Liu, T. L. (2018). Predicting effects of psychological inflexibility/experiential avoidance and stress coping strategies for internet addiction, significant depression, and suicidality in college students: A prospective study. *International Journal of Environmental Research and Public Health*, *15*(4), 788. **[Crossref]**

Çelik, M. (2021). *Üniversite öğrencilerinde dijital oyun bağımlılığının yalnızlık ve umutsuzluk ile ilişkisinin incelenmesi* (Thesis No. 696665) [Master's thesis, Haliç University]. Council of Higher Education National Thesis Center.

Devine, D., Ogletree, A. M., Shah, P., & Katz, B. (2022). Internet addiction, cognitive, and dispositional factors among US adults. *Computers in Human Behavior Reports*, *6*, 100180. **[Crossref]**

Dieris-Hirche, J., Pape, M., te Wildt, B. T., Kehyayan, A., Esch, M., Aicha, S., Herpertz, S., & Bottel, L. (2020). Problematic gaming behavior and the personality traits of video gamers: A cross-sectional survey. *Computers in Human Behavior*, *106*, 106272. **[Crossref]**

Dilmaç, B. (2017). The relationship between adolescents' levels of hopelessness and cyberbullying: The role of values. *Kuram ve Uygulamada Egitim Bilimleri*, *17*(4), 1119-1133.

Dong, G. H., & Potenza, M. N. (2022). Considering gender differences in the study and treatment of internet gaming disorder. *Journal of Psychiatric Research*, *153*, 25-29. **[Crossref]**

Gong, T., Ren, Y., Wu, J., Jiang, Y., Hu, W., & You, J. (2019). The associations among self-criticism, hopelessness, rumination, and NSSI in adolescents: A moderated mediation model. *Journal of Adolescence*, *72*(1), 1-9. **[Crossref]**

Günüç, S. (2015). Relationships and associations between video game and Internet addictions: Is tolerance a symptom seen in all conditions. *Computers in Human Behavior*, *49*, 517-525. **[Crossref]**

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, *44*(1), 1-25. **[Crossref]**

Huen, J. M. Y., Ip, B. Y. T., Ho, S. M. Y., & Yip, P. S. F. (2015). Hope and hopelessness: The role of hope in buffering the impact of hopelessness on suicidal ideation. *PLoS ONE*, *10*(6), 1-18. **[Crossref]**

İnce, Z. (2020). *Üniversite öğrencilerinde internette oyun oynama türünün kişilik bozuklukları, bilişsel esneklik ve psikolojik esneklikle ilişkisinin incelenmesi* (Thesis No. 648588) [Master's thesis, Sağlık Bilimleri University]. Council of Higher Education National Thesis Center.

Ji, Y., Yin, M. X. C., Zhang, A. Y., & Wong, D. F. K. (2022). Risk and protective factors of internet gaming disorder among Chinese people: A meta-analysis. *Australian & New Zealand Journal of Psychiatry, 56*(4), 332-346. **[Crossref]**

Johnson, M. R. (2021). "Gaming Addiction" and the politics of pathologies. C*ritical Gambling Studies.* **[Crossref]**

Kabakcı, B., & Traş, Z. (2024). The roles of internet addiction and cyberbullying sensitivity for prediction of university students' psychological inflexibility. *Ahmet Keleşoğlu Faculty of Education Journal (AKEF) Journal, 6*(1), 30-42. **[Crossref]**

Kahraman, F. (2021). *Rol yapma oyunu oynayanların psikolojik esneklik, yaşantısal kaçınma ve değer odaklı yaşam düzeyleri arasındaki ilişkiler* (Thesis No. 683550) [Master's thesis, İstanbul Sabahattin Zaim University]. Council of Higher Education National Thesis Center.

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review*, *30*(7), 865-878. **[Crossref]**

Keshoofy, A., Pearl, D. L., Lisnyj, K., Thaivalappil, A., & Papadopoulos, A. (2023). Risk and protective factors associated with hopelessness among Canadian postsecondary students. *International Journal of Mental Health and Addiction, 22,* 3302-3317. **[Crossref]**

Kutlu, M., Savcı, M., Demir, Y., & Aysan, F. (2016). Young İnternet Bağımlılığı Testi kısa formunun Türkçe uyarlaması: Üniversite öğrencileri ve ergenlerde geçerlilik ve güvenilirlik çalışması. *Anadolu Psikiyatri Dergisi*, *17*, 69-76. **[Crossref]**

Lee, C., & Kim, O. (2017). Predictors of online game addiction among Korean adolescents. *Addiction Research and Theory*, *25*(1), 58-66. **[Crossref]**

Lilly, M. M., & Allen, C. E. (2015). Psychological inflexibility and psychopathology in 9-1-1 telecommunicators. *Journal of Traumatic Stress, 28*(3), 262-266. **[Crossref]**

Männikkö, N., Billieux, J., & Kääriäinen, M. (2015). Problematic digital gaming behavior and its relation to the psychological, social and physical health of Finnish adolescents and young adults. *Journal of Behavioral Addictions*, *4*(4), 281-288. **[Crossref]**

Martončik, M. (2015). e-Sports: Playing just for fun or playing to satisfy life goals? *Computers in Human Behavior, 48*, 208-211. **[Crossref]**

Melges, F. T., & Bowlby, J. (1969). Types of hopelessness in psychopathological process. *Archives of General Psychiatry*, *20*(6), 690-699. **[Crossref]**

Mustafaoğlu, R. (2018). e-spor, spor ve fiziksel aktivite. *Ulusal Spor Bilimleri Dergisi, 2*(2), 84-96. **[Crossref]**

Orak, M. E., Üzüm, H., & Yılmaz, E. (2021). Üniversite öğrencilerinin dijital oyun bağımlılığı düzeylerinin belirlenmesi. *Spor Bilimleri Araştırmaları Dergisi*, *6*(2), 279-292. **[Crossref]**

Ostovar, S., Allahyar, N., Aminpoor, H., Moafian, F., Nor, M. B. M., & Griffiths, M. D. (2016). Internet Addiction and its psychosocial risks (depression, anxiety, stress and loneliness) among Iranian adolescents and young adults: A structural equation model in a cross-sectional study. *International Journal of Mental Health and Addiction, 14*(3), 257-267. **[Crossref]**

Parada-Fernández, P., Herrero-Fernández, D., Oliva-Macías, M., & Rohwer, H. (2021). Stressful life events and hopelessness in adults: The mediating role of mentalization and emotional dysregulation. *Brazilian Journal of Psychiatry, 43*(4), 385-392. **[Crossref]**

Pawlikowski, M., Altstötter-Gleich, C., & Brand, M. (2013). Validation and psychometric properties of a short version of Young's Internet Addiction Test. *Computers in Human Behavior, 29*(3), 1212-1223. **[Crossref]**

Pontes, H. M., & Griffiths, M. D. (2015). Measuring DSM-5 Internet gaming disorder: Development and validation of a short psychometric scale. *Computers in Human Behavior, 45*, 137-143. **[Crossref]**

Rho, M. J., Lee, H., Lee, T.-H., Cho, H., Jung, D., Kim, D.-J., & Choi, I. Y. (2018). Risk factors for ınternet gaming disorder; Psychological factors and ınternet gaming characteristics. *Environmental Research and Public Health*, *15*(1), 40. **[Crossref]**

Ropovik, I., Martončik, M., Babinčák, P., Baník, G., Vargová, L., & Adamkovič, M. (2023). Risk and protective factors for (internet) gaming disorder: A meta-analysis of pre-COVID studies. *Addictive Behaviors, 139*, 107590. **[Crossref]**

Savaşan, A., Ayten, M., & Ergene, O. (2013). Koroner arter hastalarında sağlıklı yaşam biçimi davranışları ve umutsuzluk. *Psikiyatri Hemşireliği Dergisi*, *4*(1), 1-6. **[Crossref]**

Seber, G., Dilbaz, N., Kaptanoğlu, C., & Tekin, D. (1993). Umutsuzluk ölçeği geçerlilik ve güvenirliği. *Kriz Dergisi*, *1*(3), 139-142.

Stavropoulos, V., Gomez, R., Steen, E., Beard, C., Liew, L., & Griffiths, M. D. (2017). The longitudinal association between anxiety and Internet addiction in adolescence: The moderating effect of classroom extraversion. *Journal of Behavioral Addictions*, *6*(2), 237-247. **[Crossref]**

Şendurur, P., & Şendurur, E. (2018). Underlying factors of problematic online gaming behavior: Age, intensity, and genre. *Addicta: The Turkish Journal on Addictions*, *5*(4), 747-764. **[Crossref]**

Şimşek, N., Kılıç Akça, N., & Şimşek, M. (2015). Lise öğrencilerinde umutsuzluk ve internet bağımlılığı. *TSK Koruyucu Hekimlik Bülteni, 14*(1), 7-14.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

Toprak, T. B., Arıcak, O. T., & Yavuz, K. F. (2020). Tıp fakültesi öğrencilerinde tükenmişlik derecesi psikolojik esneklik ve değerler arasındaki ilişkinin incelenmesi. *Bilişsel Davranışçı Psikoterapi ve Araştırmalar Dergisi, 9*(1), 16-27. **[Crossref]**

Torez, M. (2019). *An online investigation into internet gaming disorder (IGD), comorbidity, and psychosocial issues: A comparison of American and Chinese gamers-and predictors of meeting criteria for a formal diagnosis og IGD*. Columbia University.

Traş, Z. (2019). Internet addiction and loneliness as predictors of internet gaming disorder in adolescents. *Educational Research and Reviews*, *14*(13), 465-473. **[Crossref]**

Traş, Z., Yakıcı, H. B., Kökçam, B., & Baltacı, U. B. (2020). Yetişkinlerde internet bağımlılığı ile yaşam doyumu arasındaki ilişkinin incelenmesi. *Labyrinths of Reality: Collection of Scientifical Works, 5*(10), 205-215.

Wartberg, L., Kriston, L., Kramer, M., Schwedler, A., Lincoln, T. M., & Kammerl, R. (2017). Internet gaming disorder in early adolescence: Associations with parental and adolescent mental health. *European Psychiatry*, *43*, 14-18. **[Crossref]**

Wittek, C. T., Finserås, T. R., Pallesen, S., Mentzoni, R. A., Hanss, D., Griffiths, M. D., & Molde, H. (2016). Prevalence and predictors of video game addiction: A study based on a national representative sample of gamers. *International Journal of Mental Health and Addiction, 14*(5), 672-686. **[Crossref]**

World Health Organization. (2020). *Addictive behaviours: Gaming disorder*. https://www.who.int/news-room/questions-and-answers/item/addictive-behaviours-gaming-disorder

Yao, X., Xu, X., Chan, K. L., Chen, S., Assink, M., & Gao, S. (2023). Associations between psychological inflexibility and mental health problems during the COVID-19 pandemic: A three-level meta-analytic review. *Journal of Affective Disorders, 320*, 148-160. **[Crossref]**

Yavuz, F., Ulusoy, S., Iskin, M., Esen, F. B., Burhan, H. S., Karadere, M. E., & Yavuz, N. (2016). Turkish version of acceptance and action Questionnaire-II (AAQ-II): A reliability and validity analysis in clinical and non-clinical samples. *Psychiatry and Clinical Psychopharmacology*, *26*(4), 397-408. **[Crossref]**

Yavuz, O., & Erden Çınar, S. (2022). Ergenlerde İnternette oyun bağımlılığı düzeyi ve algılanan sosyal destek arasındaki ilişkide oyun süresinin ve işlevsel olmayan inanışın aracı rolü. *Bağımlılık Dergisi*, *23*(1), 52-60. **[Crossref]**

Yılmaz, B., & Özkan, Y. (2022). The effects of perceived social support, family climate, and adult attachment styles on digital game addiction in esports players. *Addicta: The Turkish Journal on Addictions, 9*(3), 334-342. **[Crossref]**

Young, K. S. (1998). Internet addiction: The emergence of a new clinical disorder. *Cyberpsychology and Behavior*, *1*(3), 237-244. **[Crossref]**

Yu, Y., Mo, P. K. H., Zhang, J., Li, J., & Lau, J. T. F. (2022). Maladaptive cognitions, loneliness, and social anxiety as potential moderators of the association between internet gaming time and internet gaming disorder among adolescent internet gamers in China. *Addictive Behaviors, 129*, 107239. **[Crossref]**

Zhang, M. X., Wang, X., Yu, S. M., & Wu, A. M. S. (2019). Purpose in life, social support, and internet gaming disorder among Chinese university students: A 1-year follow-up study. *Addictive Behaviors, 99*, 106070. **[Crossref]**

Zsila, Á., Orosz, G., Király, O., Urbán, R., Ujhelyi, A., Jármi, É., Griffiths, M. D., Elekes, Z., & Demetrovics, Z. (2018). Psychoactive substance use and problematic internet use as predictors of bullying and cyberbullying victimization. *International Journal of Mental Health and Addiction 16*(2), 466-479. **[Crossref]**

Zuo, B., Yang, K., Yao, Y., Han, S., Nie, S., & Wen, F. (2020). The relationship of perceived social support to feelings of hopelessness under COVID-19 pandemic: The effects of epidemic risk and meaning in life. *Personality and Individual Differences*, *183*, 111110. **[Crossref]**

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.503

The underlying mechanisms between problematic social media use and social anxiety: A cross-sectional study

Şaban Yaltyırk[1], Ece Bekaroğlu[2]

[1]Department of Psychology, Graduate School of Social Sciences, Ankara University, Ankara, Türkiye
[2]Department of Psychology, Faculty of Letters, Ankara Hacı Bayram Veli University, Ankara, Türkiye

Abstract

This study aims to explore the underlying mechanisms in the association between teenage problematic social media usage and social anxiety, specifically emotion regulation difficulties. A total of 188 females and 125 males aged between 10 and 18 years participated in the study. Data were gathered between September 2022 and January 2023 using the convenience sampling method. The Social Media Addiction Scale Short Form for Adolescents (SMAS-SF), the Difficulties in Emotion Regulation Scale (DERS), the Social Anxiety Scale for Adolescents, and a demographic information form were given to the participants. Correlational, Hierarchical Regression, and multiple mediation analyses were conducted. Findings showed that difficulty in emotion regulation plays a significant mediating role in the association between problematic social media use and social anxiety. This link was mediated specifically by difficulties in emotional clarity and goal-directed behavior, as well as non-acceptance of emotional reactions. In addition, there was a significant direct effect of problematic social media use on social anxiety. Problematic social media use may harm emotional regulation, which could lead to a decline in emotional clarity, making it more difficult to accept and manage emotional reactions and cope with unpleasant emotional experiences. This, in turn, may exacerbate social anxiety.

Keywords: addictions to technology, adolescence, social anxiety, problematic social media use, emotion regulation

Main points

- Social media use has exponentially increased among adolescents in Türkiye.
- Excessive use of social media may lead to problematic usage, considering addictive behavior in adolescence.
- Problematic social media use may increase social anxiety through emotion regulation difficulties, specifically difficulty in understanding emotional reactions and accepting them, and acting in a goal-oriented manner in the face of negative emotions, in adolescence.

Introduction

Among adolescents aged between 10 and 14, at least one anxiety disorder is present in 3.6%, while 4.6% of those aged between 15 and 19 also experience at least one anxiety disorder (World Health Organization [WHO], 2020). Social anxiety disorder (SAD) is characterized by fear in one or more social situations, marked discomfort, hypersensitivity to possible negative social evaluations, and avoidance of feared social situations (American Psychiatric Association [APA], 2013). SAD typically develops around the age of 11-15 and can have long-term consequences for psychological well-being (WHO, 2020).

Adolescents who experience SAD are particularly vulnerable due to difficulties in areas including relationships with peers, gender norms, sexual violence, bullying, or economic problems (WHO, 2020). If left untreated, SAD can have long-term adverse effects and severely impact daily functioning. The consequences may include the deterioration of social and personal relationships, school attendance problems, substance abuse or addiction, behavioral problems, reluctance to study, emotion regulation difficulties, or even risk of suicide (Singh et al., 2020).

Across the world, the number of social media users increased to 4.62 billion in 2022 (Kemp, 2022). In Türkiye, the rate of internet use among children aged between 6 and 15 was

Corresponding author: Şaban Yaltyırk • **Email:** psksaban@gmail.com
Received: July 22, 2024 **Accepted:** November 23, 2025 **Published online:** June 22, 2026

Cite as: Yaltyırk, Ş., & Bekaroğlu, E. (2026). The underlying mechanisms between problematic social media use and social anxiety: A cross-sectional study. *Addicta: The Turkish Journal on Addictions*, *13*(2), 234-246. https://doi.org/10.15805/addicta.2026.503

82.7% in 2021 whilst it was 50.8% in 2013. Among these regular users, 31.3% spent almost three hours per day on social media (Turkish Statistical Institute [TSI], 2021). Social media encompasses platforms such as Instagram, Facebook, and YouTube, and it provides an important venue for entertainment, communication, and information sharing (Kaplan & Haenlein, 2010).

Although social media offers benefits such as strengthening social ties, reducing loneliness, and facilitating access to information, it can also pose potential dangers when used in a problematic manner. This pattern of use can negatively impact adolescents' mental health by contributing to emotional regulation difficulties, self-regulation difficulties, or symptoms of social withdrawal. This excessive and maladaptive engagement is characterized as problematic social media use, a concept that has attracted attention in adolescent mental health (She et al., 2023). In this regard, a compelling approach was proposed by van den Eijnden et al. (2016), who applied the DSM-5 criteria for internet game addiction to social media use and described this problematic behavior pattern as "Social Media Disorder." Various other terms have been used for this phenomenon in international publications. In this study, we employed the term "problematic social media use" to describe this behavior pattern (Shensa et al., 2017).

Although problematic social media usage has not been formally recognized as a disorder in diagnostic systems (e.g., DSM-5; APA, 2013), it has increasingly been conceptualized as a potential behavioral addiction within a biopsychosocial framework (Griffiths, 2005). This framework emphasizes that behavioral addictions emerge as a result of the interaction of biological, psychological, and social factors and defines them based on their core addiction components. According to Griffiths (2005), six basic components constitute behavioral addiction: *salience* (preoccupation with social media), *tolerance* (needing to spend more time to achieve the same level of pleasure), *withdrawal* (feeling discomfort due to not using social media), *conflict* (relational or personal issues caused by use), *relapse* (ineffective attempts to reduce or stop use), and *mood modification* (using social media to modify emotions). PSMU is commonly conceptualized using these criteria in research, even in the absence of an official diagnostic classification (Shensa et al., 2017).

According to the Compensatory Internet Use Model (CIUM) (Kardefelt-Winther, 2014), individuals may turn to the internet as a means of coping with problems in their lives or negative emotions. Internet use can help cope with psychosocial difficulties encountered in daily life, such as stress, loneliness, or social anxiety. For example, a person who lacks face-to-face interactions may use social networks to obtain social stimulation. Although this coping strategy may yield positive short-term outcomes, it can lead to negative long-term consequences, such as neglecting responsibilities at school or work, or becoming dependent on online socialization. The model emphasizes the significance of investigating the connection between motivations for internet use and psychological well-being. In this context, PSMU can be viewed as a maladaptive outcome of CIUM, particularly when social media becomes the primary means of coping with emotional or social difficulties.

Unlike general social media use, PSMU is associated explicitly with adverse consequences such as increased anxiety, depression, low academic performance, reduced life satisfaction, and diminished self-confidence (Karim et al., 2020). One factor contributing to negative self-comparison and emotional distress is the idealized or unrealistic portrayals to which adolescents are exposed on social media (Onyeizu et al., 2022). Although social media offers widespread online connectivity, it can also reduce face-to-face interactions and hinder the development of real-life social skills. Excessive use is associated with increased conflict in close relationships and a decrease in the quality of time spent with family (Li et al., 2021).

People with social anxiety who turn to online communication to avoid face-to-face discomfort may find that excessive involvement in social media reversely intensifies their anxiety symptoms, as the discomfort that occurs in face-to-face interactions may be further reinforced by avoidance (Carruthers et al., 2019). Moreover, adolescents who spend more than two hours per day on social media report more psychological distress, poor mental health, and higher rates of suicidal ideation (Sampasa-Kanyinga & Hamilton, 2015). These findings highlight that, although internet use is rapidly increasing among adolescents, the quality and intensity of social media use significantly influence mental health outcomes.

With the variation in types of social media use, adolescents' usage may not always be inherently harmful. Adolescents' social media use may also have positive effects, such as relieving stress, creating excitement, or receiving emotional support. They may also use it to improve their mood or distract themselves from negative emotions such as sadness, anger, or frustration. In some cases, observing positive content or receiving positive feedback may enhance emotional well-being. However, when usage becomes excessive or compulsive, it may lead to negative consequences, specifically in terms of emotion regulation (Lee & Hancock, 2023; Weinstein, 2018). Emotion regulation is the ability to monitor, evaluate, and modify emotional responses to achieve individual goals (Gratz & Roemer, 2004). It includes several dimensions, including emotional awareness, emotional clarity, acceptance of emotional responses, impulse control during negative emotions, and access to effective regulation strategies. When one has problems in one or more of these dimensions, difficulties with emotion regulation occur.

PSMU, characterized by excessive and compulsive usage despite harmful effects, has been linked to difficulties in regulating emotions (Andreassen et al., 2012). These difficulties may include experiential avoidance, difficulty in accepting emotional reactions, or a lack of adaptive emotion regulation strategies (Hormes et al., 2014). In problematic social media use, adolescents struggle to control their impulses

and behave in a goal-oriented manner (Wartberg et al., 2021). Additionally, excessive use of social media, especially in early adolescence, has been associated with elevated physical and relational anger (Hormes et al., 2014).

In addition to its effects on emotion regulation, social media can be a place where anxiety and social pressure occur. Sharing photos, updating statuses, or commenting on others' content can create anxiety in adolescents due to fear of negative evaluation or criticism. In this context, a constant need for social approval, driven by likes or incoming reactions, emerges. When these expectations are not satisfied, it can lead to discomfort, disappointment, or a decrease in self-worth (Weinstein, 2018). Being exposed to emotionally charged or disturbing content in virtual environments can harm emotional well-being. For example, during the COVID-19 pandemic, alarming social media posts shared by others contributed to emotional contagion and collective anxiety in users due to their internalization (Shao et al., 2021). Thus, although social media has social and emotional benefits, problematic usage patterns can make it difficult for adolescents to manage their emotions and result in increased anxiety.

Adolescence is a phase of development characterized by significant changes in cognitive abilities, emotional growth, and social interactions. During this stage, it is common for adolescents to feel some concern regarding their presence in the eyes of others, which is a normal reaction to peer evaluation and social feedback (Casey et al., 2011; Somerville & Casey, 2010). This increased awareness of social dynamics, combined with emotional growth, may expose them to a greater risk of social anxiety, particularly if they do not have effective strategies for coping with negative emotions (Zimmermann & Iwanski, 2014). In adolescents, difficulties in emotion regulation have been associated with various psychological difficulties, notably social anxiety (Young et al., 2019). Adolescents with social anxiety use maladaptive strategies, such as suppressing emotions, excessive self-focus, or avoidance (Golombek et al., 2019; Singh et al., 2020). At the same time, adolescents are also the most frequent users of social media. PSMU may be particularly detrimental for adolescents who already have difficulties with emotion regulation, as when they use social media to cope with distress, they potentially perpetuate a maladaptive pattern of emotion regulation (Sackl-Pammer et al., 2019).

Although a growing body of literature suggests relationships between social media and social anxiety, the underlying mechanisms—notably the mediating role of emotion regulation difficulties—have not been sufficiently investigated (Yang et al., 2023). Since social media engagement and emotion regulation are crucial during adolescence, it is important to explore how their interaction influences social anxiety. Moreover, previous research has highlighted the impact of age and gender on these factors, suggesting that developmental and gender-based differences may further influence these relationships (Neumann et al., 2010).

The present study seeks to examine the connections between problematic social media usage, challenges in emotional regulation, and social anxiety among adolescents. Additionally, we control for gender and age to account for their possible effects (Neumann et al., 2010). To the best of our knowledge, no previous study has concurrently investigated these variables in a non-clinical sample of adolescents, which emphasizes the novelty and relevance of the present research.

By considering the aforementioned literature, we propose the following hypotheses:

H1: *Problematic social media use would positively predict social anxiety.*

H2: *Problematic social media use would positively predict difficulties in emotion regulation.*

H3: Difficulties in emotion regulation would positively predict social anxiety.

H4: Problematic social media use would affect social anxiety through emotion regulation difficulties.

Method

Sample

Participants were recruited via the study announcement on online platforms (email, Instagram, Facebook) and were also reached face-to-face through their parents between September 2022 and January 2023. Participants were selected using the convenience sampling method and according to the following criteria: not having any psychiatric disorder based on self-report (autism, schizophrenia and related disorders, bipolar disorder, depression, disinhibited social engagement disorder, mental retardation, alcohol or substance addiction, and body image disorder), speaking Turkish, living in Türkiye, and being between the ages of 10 and 18.

During the study process, ethical permissions were first obtained. Then, informed consent forms were given to the parents and participants, who were informed about the study's content and ethical sensitivities. Finally, the study was conducted. We examined the correlation among the study variables and, using hierarchical regression, sought to identify the observed variability. Next, a multiple mediation analysis was conducted using the PROCESS macro v4.2 (model 4) for SPSS v.26 with the bootstrapping method (Hayes, 2013).

The participants were 188 girls (60.1%) and 125 boys (39.9%), aged between 10 and 18 (M = 15.54), mostly at the high school education level (52.7%), mostly at middle-income (80.5%), and mostly living in metropolitan cities (69.3%) (see Table 1).

Table 1. Demographic information

Variables	N	%	M (S)
Gender			
Girl	188	60.1	
Boy	125	39.9	
Age			15.54 (2.71)
Educational Level			
Primary School	15	4.8	
Secondary School	78	24.9	
High School	165	52.7	
University	55	17.6	
Income Level			
Low	36	11.5	
Middle	252	80.5	
High	25	8	

Our research focused on exploring patterns of socio-emotional attributes [e.g., social anxiety/emotional regulation] in Turkish adolescents aged 10 to 18, specifically within a community-based sample free of any prior mental health diagnoses. Consequently, the findings are most applicable to the generally developing adolescent population and should be cautiously evaluated in light of the characteristics of our sample.

Measurements

Demographic Information Form

Information was collected from the participants regarding their gender, education, income level, and age.

Social Media Addiction Scale Short Form for Adolescents (SMA-SF)

The scale was first developed by van den Eijnden et al. (2016) and adapted into Turkish by Taş (2017). It was developed as a unidimensional construct based on the diagnostic criteria for Internet Gaming Disorder listed in the DSM-5 section on conditions requiring further research. Initially, it consisted of 27 items, which were later reduced to a 9-item short form (e.g., over the past year, have you consistently found yourself unable to think about anything other than the moment you can get back on social media?) that can be answered as "yes" or "no." It is scored between 0 and 9 with a cutoff score of 5. Since we examined the relationships between the variables in our study, we did not use this measurement tool as a diagnostic instrument and did not work with a cutoff point. An increase in scale scores was associated with an increase in the level of problematic social media use (Wartberg et al., 2020). Cronbach's alpha internal consistency coefficient was found to be 0.82 in the original scale, 0.76 in the Turkish adaptation, and 0.73 in the current study.

The scale was developed using data from 2,198 Dutch adolescents, comprising a total of three samples with 724, 873, and 601 participants aged between 10 and 17 (approximately 49.5% of the participants were boys and 50.5% were girls across the three samples). For convergent validity, strong correlations were found between SMA-SF and the Compulsive Internet Use Scale, with correlations above 0.50. For criterion validity, medium positive correlations were found between the SMA-SF scores and related psychosocial constructs, including depression, attention deficit, frequency of daily social media use, and frequency of posts. For structural validity, confirmatory factor analysis revealed good model fits for the SMA-SF across multiple samples (e.g., in Sample 2: $\chi^2(27) = 62.852$, $p < 0.001$, *CFI* = 0.997, *RMSEA* = 0.041) (van den Eijnden et al., 2016). In the Turkish version, the sample consisted of 376 high school students (60.4% female, 39.6% male) aged between 14 and 18, attending an Anatolian high school in Gaziantep, Türkiye. As a result of the factor analysis, a single-factor structure explaining 35% of the variance was obtained. In the confirmatory factor analysis, it was observed that the one-dimensional structure of the scale provided a good fit: $\chi^2 = 61.29$, *df* = 27, $\chi^2/df = 2.27$, *RMSEA* = .058, *RMR* = .009, *S-RMR* = .045, *GFI* = .96, *AGFI* =.93, *CFI* = .93, *NNFI* = .91, *IFI* = .93 (Taş, 2017).

It is also evident that SMA-SF has been utilized in other studies. For example, Wartberg et al. (2020) measured problematic social media use using the German version of the SMA-SF scale in their study with adolescents aged 12-17. They found significant relationships between the scale and the Internet Gaming Disorder Scale. The scale was also related to other constructs, such as depression and trust. Yam et al. (2024) used this scale in their study with Turkish adolescents aged 11-18. The sample characteristics in this study were similar to those in our study (e.g., gender distribution). They reported that the SMA-SF is significantly related to loneliness and psychological resilience constructs.

Social Anxiety Scale for Adolescents (SAS-A)

The Social Anxiety Scale for Adolescents (SAS-A) (La Greca & Lopez, 1998; La Greca et al., 1988) consists of 18 self-statements and four filler items. In this study, we used the Turkish version of the scale (Aydın & Tekinsav Sütçü, 2007). Fear of negative evaluation (FNE; 7 items, e.g., I worry about what others think of me), distress and social avoidance due to new situations or unfamiliar peers (SAD-New; 6 items; e.g., I feel uneasy when meeting someone new), and generalized distress and social avoidance (SAD-General; 5 items; e.g., I feel shy even when I am around peers I know well) constitute the subscales. The scale is scored between "1" (never) and "5" (always), and higher scores on the scale indicate an increase in the level of social anxiety. Cronbach's alpha internal consistency coefficient was .93 for the original scale and .76-.91 for the subscales (Storch et al., 2004), .88 for the Turkish version, and .92 in this study for the general scale and. For the subscales in this study, Cronbach's alpha internal consistency coefficient was found in the range of .80 -.89.

The SAS-A has been supported in the literature as demonstrating good and adequate psychometric properties.

The association between high SAS-A scores and low sociometric status has confirmed the construct validity of this measure. Test-retest reliability over a 4-month period was found to be adequate, with a correlation of .70 (Cohen & Prinstein, 2006; La Greca, 1999). In the Turkish version of the scale, which was conducted with adolescents aged 12 to 15, it was reported to have good psychometric properties and significant correlations with other measures, such as assessing social anxiety and trait anxiety (Aydın & Tekinsav Sütçü, 2007). Additionally, in another study conducted with adolescents, the SAS-A has been found to have significant correlations with problematic social media usage and self-regulation (Yıldız Durak, 2018).

Difficulties in Emotion Regulation Scale (DERS)

The DERS was developed by Gratz and Roemer (2004) and adapted into Turkish with an adult sample aged between 19 and 31 by Rugancı and Gençöz (2010). The scale has 36 items and six subscales which consist of lack of emotional awareness (awareness; e.g., I pay attention to how I feel), lack of emotional clarity (clarity; e.g., I am clear about how I feel), lack of acceptance of emotional reactions (non-acceptance; e.g., When I feel bad, I get angry at myself for feeling that way), limited access to emotion regulation strategies (strategies; e.g., When I feel bad, I believe it will last for a long time), difficulty in controlling impulses (impulse; e.g., My emotions feel overwhelming and out of control), and difficulty in acting in a goal-oriented manner (goals; e.g., When I feel bad, I have difficulty getting things done). The DERS is scored between "1" (almost never) and "5" (almost always), with higher scores indicating increased difficulty in emotional regulation. Cronbach's alpha internal consistency coefficient was found to be in the range of .72-.87 for the original scale (Neumann et al., 2010), .94 for the Turkish adaptation, and .92 for the general scale in this study, as well as .69-.86 for the subscales, respectively. Only the "awareness" subscale reliability coefficient (.694) remained below .70, which was stated to be less effective than the other subscales in both the original and Turkish versions (Rugancı & Gençöz, 2010). Still, the data regarding this were carefully considered in our study.

The DERS has been supported in the literature as having good and adequate psychometric properties. It demonstrates strong construct and predictive validity through the differential associations of its subscales with various clinical variables (e.g., emotional avoidance) and behaviors (e.g., self-harm and intimate partner abuse) (Gratz & Roemer, 2004). The Turkish version of the DERS also shows strong construct validity (its six-factor structure explains 62.39% of the total variance), criterion validity (based on multivariate and univariate analyses), and good concurrent validity (e.g., strong correlations with the Brief Symptom Inventory). Though throughout these analyses, the awareness subscale was found to have relatively weak validity coefficients (Rugancı & Gençöz, 2010). The psychometric properties of the Turkish version of the DERS have also been examined in adolescents (595 adolescents aged 14-17), confirming the six-factor structure and demonstrating that the scale is reliable and valid for this age group (Sarıtaş-Atalar et al., 2015).

Results

This study aimed to examine the mediating role of difficulties in emotion regulation in the relationship between problematic social media use and social anxiety. We also considered the possible effects of age and gender. In the analyses, a power level of 0.95 and a medium effect size were targeted, and according to the power analysis using G*Power, it was determined that at least 134 participants were required (two-tailed, effect size = 0.3, α = 0.05, 1 – β = 0.95) (Faul et al., 2009).

Fundamental assumptions were tested before the analyses. The normality assumption was supported by finding the skewness and kurtosis values of the variables within the range of -2 to +2. The linearity assumption was supported by observing the linear relationships in the scatter plots created between the dependent and independent variables. For the multicollinearity assumption, VIF values ranged from 1.09 to 3.24, and tolerance values ranged from 0.31 to 0.92. According to these results, the basic assumptions were met, and analyses were conducted using parametric tests (Field, 2013).

Correlation analyses revealed significant positive relationships between PSMU and SAS-A total, as well as the subscales of SAS-A; however, the relationship between PSMU and the awareness subscale of DERS was not significant. At the same time, there were significant and positive relationships between PSMU and the total DERS score, as well as its remaining subscales. For social anxiety, total DERS and all its subscales had significant positive relationships. Further correlation coefficients for our study variables are presented in Table 2.

According to the results of hierarchical regression (see Table 3), the first step showed that gender (β = -.17, t = -3.06, p < .01, 95% CI = -8.21 to -1.79) and age (β = -.18, t = -3.17, p < .01, CI = -1.51 to -.35) accounted for .06% of the variance in social anxiety (F [2, 310] = 9.13, p < .001). In the second step, the inclusion of PSMU (β = .34, t = 6.47, p < .001, CI = 1.5 to 2.8) in the model explained 17% of the variance in social anxiety (F [3, 309] = 20.85, p < .001).

In the last step of the regression analysis, by adding the subscales of DERS (the significant ones were lack of emotional clarity [β = .22, t =3.48, p < .01, 95% CI = .31 to 1.12], non-acceptance of emotional responses [β = .25, t =4.08, p < .001, 95% CI = .36 to 1.04], and difficulty engaging in goal-directed behavior [β = .15, t =2.28, p < .05, 95% CI = .06 to .78]) the model accounted for 37% of the variance in social anxiety (F [9, 303]= 19.6, p < .001).

Table 2. Correlations among the study variables

Variables	1	2	2.1	2.2	2.3	3	3.1	3.2	3.3	3.4	3.5	3.6
1. SMA-SF	-											
2. SAS-A Total	.32**	-										
2.1. FNE	.35**	.90**	-									
2.2. SAD-New	.22**	.87**	.63**	-								
2.3. SAD-General	.27**	.87**	.67**	.71**	-							
3. DERS total	.43**	.52**	.54**	.35**	.47**	-						
3.1. Awareness	.10	.14**	.15**	.13*	.10	.35*	-					
3.2. Clarity	.27**	.39**	.43**	28**	.33**	.68*	.43*	-				
3.3. Non-acceptance	29**	.43**	.45**	.26**	.43**	.72*	.06	.34**	-			
3.4. Strategies	.43**	.45**	.46**	.29**	.44**	.88*	.09	.48**	.65**	-		
3.5. Impulse	.31**	.33**	.39**	.18**	.31**	.81*	.11	.37**	.51**	.70**	-	
3.6. Goals	.43**	.40**	.39**	.33**	.35**	.73*	-.04	.37**	.39**	.64**	.59**	-

*p<.01, **p<.001

Table 3. Hierarchical regression analysis

Predictor variables	*b*	*SE*	B	*t*	*R2*	*%95 CI*	
						LB	*UB*
Step 1					.06		
Constant	63.31	5.31		11.93		52.87	73.75
Gender	-5	1.63	-.17	-3.06**		-8.21	-1.79
Age	-.93	.30	-.18	-3.17**		-1.51	-.35
Step 2					.17		
Constant	59.30	5.03		11.8		49.41	69.19
Gender	-4.04	1.54	-.14	-2.62**		-7.08	-1
Age	-1.16	.28	-.22	-4.15***		-1.71	-.61
PSMU	2.14	.33	.34	6.47***		1.5	2.8
Step 3					.37	12.57	35.5
Constant	34.16	5.8		5.9		22.76	45.6
Gender	-1.14	1.44	-.04	-.79		-4	1.7
Age	-1.29	.25	-.24	-5.03***		-1.78	-.78
PSMU	.86	.33	.14	2.6*		.20	1.50
Clarity	.72	.21	.22	3.48**		.31	1.12
Awareness	.06	.17	.02	.34		-.28	.40
Impulse	-.21	.17	-.09	-1.27		-.53	.12
Non-acceptance	.70	.17	.25	4.08***		.36	1.04
Goals	.42	.19	.15	2.28*		.06	.78
Strategies	.23	.17	.11	1.31		-.11	.57

B= Standardized coefficient, *t*= Statistical significance of regression coefficients, *CI* = Confidence interval, *LB* = Lower bound; *UB* = Upper bound, R^2 = .06 for Step 1; ΔR^2 = .11 for Step 2; ΔR^2 = .20 for Step3 (all ps < 0.001), *p < .05; ** p < .01; *** p < .001, dependent variable: social anxiety.

Mediation Analysis

The mediating role of emotion regulation difficulties was explored according to the bootstrapping indirect paths method (Hayes, 2013; Preacher & Hayes, 2008). In this method, a confidence interval is created by drawing thousands of random samples from the available dataset. The bootstrapping method has the advantages of not being affected by sample size and normal distribution assumptions, not requiring the determination of a significant relationship between variables, and allowing for the control of Type 1 and Type 2 errors by supporting multiple mediator analyses simultaneously. An indirect effect is considered significant if the 95% bootstrap confidence intervals for the variable obtained from 1,000 bootstrap samples do not include zero. In the current study, we employed mediation analysis using the bias-corrected bootstrapping method with 5,000 samples, as provided by SPSS Macros (Preacher & Hayes, 2008).

The mediation analysis was first conducted using the composite scores of the scales employed in our study. Our findings showed that problematic social media use had a significant effect on difficulties in emotion regulation (b = 4.30, t = 8.5, p <0.001); difficulties in emotion regulation, in

Table 4. Mediation analysis summary

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		*t- statistics*	Conclusion
				Lower Bound	Upper Bound		
PSMU-->DER-->SA	2.05	.78	1.3	1.4	2.72	6.1***	Partial Mediation

*** $p < .001$, PSMU = Problematic social media use, DER = Difficulties in emotion regulation, SA= Social anxiety

Table 5. Indirect effects in multiple mediation analysis

		%95 CI		
Indirect effect PSMU-->SA	***Effect (b)***	**Boot SE**	**LLCI**	**ULCI**
Total	1.37	.25	.91	1.9
Clarity	.37	.14	.13	.66
Awareness	.002	.024	-.05	.06
Impulse	-.18	.16	-.50	.13
Non-acceptance	.47	.16	.19	.81
Goals	.44	.21	.06	.90
Strategies	.28	.27	-.26	.80

95% CI = 95% confidence interval, control variable = age; the 95% confidence intervals do not include zero, which shows that the indirect effect is significant

turn, had a significant effect on social anxiety (b = .30, t = 8.7, p <0.001). Finally, in the presence of the mediator, problematic social media use still had a significant effect on social anxiety (b = .78, t = 2.33, p <0.05) (see Table 4). Since the findings were in the expected direction, we conducted additional analyses with the DERS' subscales to determine which ones accounted for the observed relationships.

In the further mediation analysis (see Table 5), we first controlled for gender and age. However, gender did not have a significant effect on social anxiety; hence, we continued with age as a covariate. The mediating model was tested, and the findings showed a significant indirect effect of PSMU on social anxiety through clarity (b = .37, SE = .14, t = 2.64, p <0.001), non-acceptance (b = .47, SE = .16, t = 2.93, p <0.001), and goals (b = .44, SE = .21, t = 2.1, p <0.001). Additionally, the direct effect of PSMU on social anxiety, in the presence of the mediators, was found to be significant (b = .85, t = 2.58, p = .010).

As PSMU scores increase, difficulty in understanding emotional reactions also increases, and this leads to an increase in social anxiety scores (p < .001). As PSMU scores increase, difficulties in accepting emotional reactions also escalate, leading to a rise in social anxiety scores (p < .001). Lastly, as PSMU scores increase, difficulty in acting in a goal-oriented manner in the face of negative emotions exacerbates, and this leads to an increase in social anxiety scores (p = .014). In addition, age was found to be a significant covariate affecting social anxiety (p < .001) but had an insignificant effect on the mediators (p > .05).

Discussion

This study aimed to investigate the mediating role of emotion regulation difficulties in the relationship between problematic social media use and social anxiety in a healthy sample of adolescents in Türkiye. Findings showed that, specifically, difficulty in understanding emotional reactions, acceptance of emotional reactions, and acting in a goal-oriented manner in the face of negative emotions have a positive mediating role between problematic social media use and social anxiety.

According to our findings, first, we found that PSMU affects social anxiety through difficulty in understanding emotional reactions. Using social media to cope with negative emotions may exacerbate emotional discomfort in the long run, diverting adolescents from understanding their emotional reactions and leading to a decrease in social skills related to emotional understanding, as reflected in social interactions and communication. In turn, this chain of reactions can lead to an increase in the level of social anxiety (Michikyan et al., 2023).

Secondly, non-acceptance of emotional reactions had a mediating role between PSMU and social anxiety. Excessive engagement with social media may distract adolescents from experiencing emotions and make it challenging for them to acknowledge their emotional reactions; instead, it may cause them to feel weak, ashamed, or guilty about their emotional responses (Hormes et al., 2014). Adolescents who struggle to accept their emotional reactions may worry about negative emotional responses appearing in social situations and being perceived as unacceptable. Consequently, such behavior can exacerbate social anxiety (Michikyan et al., 2023).

Lastly, spending an excessive amount of time on social media may impair adolescents' ability to use adaptive emotion-regulating strategies, notably goal-oriented behavior (Hormes et al., 2014). When this difficulty applies to social situations in real life, it can evoke intense emotions (e.g., social anxiety) and hinder purposeful action. For instance, an adolescent may feel overwhelmed before a class presentation and be unable to prepare adequately due to an ineffective emotion regulation strategy. In line with this view, our findings showed that difficulty in acting in a goal-oriented manner behavior in the face of negative emotions played a significant mediating role between PSMU and social anxiety in adolescents.

Although there are various motivations for adolescents to use social media, including social interaction, access to information, and excitement, how they react to the content they are exposed to on these platforms is important (Onyeizu et al., 2022). For example, young people are often exposed to unrealistic personalities, characters, or socio-cultural standards on social media platforms. As a result, they may find themselves engaging in upward social comparison without even realizing it. This comparison can have significant

consequences for psychological health, particularly in terms of difficulties regulating emotions (Yang et al., 2023). Thus, adolescents may present more positive aspects of themselves on social media, as they have control over the persona they create online (Onyeizu et al., 2022). However, since these situations have little or no equivalence in real life, one may experience internal emotional conflicts and, further, struggle to accept their feelings and understand their emotional reactions.

At the same time, the problematic use of social media may deter adolescents from engaging in face-to-face interactions and negatively impact the development of emotional regulation skills that occur in such interactions, despite adolescents' social media use aiming to alleviate stress arising from real-life social interactions. If a problematic usage pattern continues frequently and for a prolonged period, maladaptive emotion regulation strategies can be amplified. Due to their difficulties in regulating emotions, their emotional states and regulatory control (excessive use) may be adversely affected, which can have a detrimental impact on their face-to-face social interaction skills (e.g., self-confidence or communication skills) and lead to an increase in social anxiety levels (Yang et al., 2023).

Extending these further, theoretical models for problematic social media use may provide insight into the interpretation of our findings. In this context, the Compensatory Internet Use Model (CIUM) (Kardefelt-Winther, 2014) and the Interaction of Person-Affect-Cognition-Execution (I-PACE) model (Brand et al., 2014, 2019) may offer a more comprehensive understanding of the current findings. For instance in terms of the CIUM approach, adolescents who experience negative affect—social or emotional discomfort—may turn to social media use to cope with these adverse affects. This finding aligns with our previous finding, which suggests that problematic social media use is linked to difficulties in goal-oriented behavior. The I-PACE model further elucidates how individual characteristics (e.g., ineffective emotion regulation strategies) interact with affective states and executive control mechanisms, resulting in problematic use patterns. Adolescents who have difficulty engaging in goal-directed behavior, especially under affective distress, may be more prone to excessive use of social media, which reinforces avoidance behaviors and exacerbates social anxiety. Together, these two models help explain how PSMU influences social anxiety through emotion regulation difficulties in adolescents.

Although our findings align with previous research discussed above, some studies contradict our findings. Research has shown that social anxiety may be a predictor of PSMU, and in this case, lonely people may be at more risk. For example, Zsido et al. (2021) indicated that the relationship between social anxiety and problematic social networking sites (as an addictive behavior) is mediated by difficulties in emotion regulation (e.g., rumination), which are crucial to the development of problematic social networking sites usage. In our study, we found the opposite pathway, whereby PSMU increased social anxiety through specific difficulties in emotion regulation (e.g., difficulty with goal-directed behavior). Adolescents in our sample may be more prone to difficulties with regulating emotions due to their limited coping skills, which may be explained by cultural or developmental differences. Thus, our findings extend the I-PACE model by highlighting the context-specific aspect of the PSMU-social anxiety relationship in adolescence (Brand et al., 2014, 2019).

Additionally, some studies have not found a link between social media usage and social anxiety. For example, Rizvi (2016) found no relationship between social anxiety and excessive Facebook use in adults. Notably, in Rizvi's study, most participants entered Facebook several times a day and spent less than 30 minutes per session. Therefore, the intensity, frequency, and quality of time spent on social media may predict psychological outcomes rather than mere usage (Bednarek et al., 2024). Additionally, age may be an important moderating factor, as adolescents may be more sensitive to the social evaluation mechanisms inherent in social media platforms and more emotionally reactive than adults. Therefore, our findings, based on an adolescent sample with a more intensive usage pattern, offer a nuanced contribution to the literature from a developmental perspective.

Although social anxiety may increase social media use as an avoidance behavior (Carruthers et al., 2019), our findings suggest that social media use, in turn, may exacerbate social anxiety symptoms (e.g., reinforce avoidance behavior). This finding aligns with previous studies, which suggest that online communication cannot fully replace face-to-face communication and may even limit real-life social skills (Yang et al., 2023). This suggests that considering the relationship between PSMU and social anxiety as a potential dyadic relationship would be more explanatory. This perspective is consistent with the I-PACE model (Brand et al., 2019), which posits a dynamic interaction between personality traits, affective responses, and executive functioning. Furthermore, this interplay between PSMU and social anxiety can be understood in terms of Bandura's concept of reciprocal determinism, which posits that cognitive processes, behaviors, and environmental factors continuously influence each other (Bandura & National Institute of Mental Health, 1986).

Young people are active users of social media, and it is challenging to change their habits considering the ever-growing technology. Therefore, it is essential to be informed about the potential psychological risks of PSMU to receive effective preventive mental health interventions (Onyeizu et al., 2022). Our findings emphasize that adolescents with high levels of PSMU use maladaptive emotion regulation strategies—specifically, failure to accept and understand emotional reactions and difficulty in acting in a goal-oriented manner in the face of stress—which might contribute to an increase in their level of social anxiety.

Our findings have several practical implications for mental health professionals working with adolescents. First, it may be beneficial to consider emotion regulation difficulties as a potential mechanism linking social anxiety to PSMU. Interventions to strengthen skills in adaptive emotion regulation strategies, such as acceptance of feelings and

emotional reactions, goal-focused coping, and cognitive reappraisal, could be incorporated into the therapeutic process. Strengthening these skills not only reduces the negative emotional impact of PSMU but may also be beneficial to the psychotherapy process, potentially increasing the client's motivation and self-confidence in therapy (Sackl-Pammer et al., 2019). Consequently, a dual focus on developing adaptive emotion regulation skills and promoting healthy social media use patterns may offer a promising direction for both preventive and therapeutic interventions targeting socially anxious youth (Lai et al., 2023).

Studies regarding the mental health of children and adolescents in Türkiye have primarily focused on children, and adolescence is relatively neglected. The first extensive data on mental disorders in Türkiye were presented in the study of the "Turkey Mental Health Profile" in 1995, and the 12-month prevalence of mental disorders was found to be 17.2% (Kılıç, 2020). In more current studies, mental disorders are prevalent among children (10-20%), while emphasizing the lack of research on adolescence (Dursun et al., 2019).

In the study by Ercan et al. (2019), where data were collected from children aged 6-13 across Türkiye, the prevalence of mental disorders was 37.6% without disability and 17.1% with disability. Anxiety was found to be among the most common disorders (16.7%/5.3%); however, regional differences in Türkiye are evident, and prevalence has been reported to vary between 20.2% and 47.4%. Nonetheless, data for adolescents were not explicitly reported in this study. Similarly, the prevalence of mood disorders in children aged 8 to 10 in Türkiye was found to be 2.5% (if functionality is considered, 1.6%) (Karacetin et al., 2018). According to the Turkey Health Survey conducted by TSI (2023), any mental health problems in the last 6 months were reported as 1.1% in children aged 7-14. This rate is lower than the prevalence reported in other studies and is likely due to differences in the measurement tools, aims, and methods used in the study. In this context, it is clear that there is a lack of current evidence representing the prevalence of mental disorders in adolescence in Türkiye.

According to the Turkish Statistical Institute (TSI, 2024, 2025a), children (0-17 years old) constitute one-fourth of the Turkish population, and 67.2% of Türkiye's population lives in densely populated cities and 15.5% in medium-density cities (TSI, 2025b); within this child population, those aged 10-14 years comprise 45.4%. By 2024, the internet usage rate among the 6-15 age group was 91.3%, and the usage rate of social media was 72.6%. This rate is 79%, especially among adolescents aged 11-15, with 97.9% of users reporting regular social media use, and half of them spending more than two hours on social media on weekends. These digital habits have led to changes in the daily lives of children and adolescents, as 25.5% reported spending less time with their families, 18.6% reported fewer face-to-face meetings with their peers, and 17.2% reported sleeping less. According to the 2023 statistics of the Turkish Ministry of Health, anxiety disorders are one of the highest burdens in years of life lived with disability (YLD) in Türkiye and rank fifth among the top 10 causes of YLD (Ministry of Health, 2025).

Considering the aforementioned studies and research reports above, the female participants in our study outnumbered the male participants (60.1% female, 39.9% male); however, according to TSI (2025a), the ratio in Türkiye is 51.3% male and 48.7% female. This limits the representativeness of our study findings in terms of gender. Since social media use and social anxiety can be sensitive issues in terms of gender, the generalizability of our findings to male adolescents is limited. On the other hand, the age range of our study (10-18) appears to be compatible with the adolescent age ranges of 10–14 years (29.6%) and 15–17 years (17.8%) reported by TSI (2025a), which cover the adolescent age group. In this respect, the representativeness of our findings in terms of age is strong. According to TSI (2025a), the grade completion rate in Türkiye is 81.2% from 9th to 12th grade. The majority of our sample (77.8%) was at the middle and high school level, which is consistent with the general educational level of adolescents in Türkiye. The perceived family income level in our sample was mainly at the middle level (80.5%). Although there is no clear average directly related to the income level for Türkiye in TSI's reports, this level seems to be the most common group in terms of general income distribution in Türkiye (Combarnous et al., 2019). In terms of family income level, our sample appears to be representative of the general picture in Türkiye. The participants in our study primarily reside in urban settlements (95.2%), and according to TSI (2025a), 93.4% of the Turkish population resides in cities. In this context, our sample is quite close to the Turkish average, and in this respect, its generalizability appears to be high.

According to the TSI reports (TSI, 2024, 2025a), internet use is 91.3%, social media use is 79%, and usage of social media for two hours or more per day (especially on weekends) is 49.5% among adolescents in Türkiye. The effects of problematic social media use (alienation from family, sleep, academic decline, etc.) are striking in the 11–15 age group in Türkiye. The TSI reports, which are directly related to the subject of our research, show that investigating problematic social media use in adolescent samples is quite appropriate in the social context and coincides with general trends. When the prevalence of mental disorders is taken into account, studies conducted in Türkiye by Ercan et al. (2019) reported a prevalence of 16.7% for anxiety disorder and 5.3% with disability, while other studies reported a prevalence of 10-20% for mental disorder (Dursun et al., 2019; Kılıç, 2020). It is consistent with the scientific literature that anxiety disorders can be common in adolescence. Studies regarding the mental health of children and adolescents in Türkiye have focused on children aged between 6 and 10, and epidemiological data specific to adolescents have remained limited (Kılıç, 2020). Meanwhile, increased use of problematic social media has the potential to impair adolescents' social life, sleep quality, or academic success (TSI, 2024, 2025a). Accordingly, there is a need for current studies with representative samples specific to adolescence, as well as studies investigating the effects of social media use on mental health. Still, the findings obtained in the context of social anxiety in our study reflect the general mental health profile of the adolescent population in Türkiye.

Limitations and Future Directions

A significant limitation of our study is its cross-sectional design, which hinders the ability to draw firm conclusions about the evolution of social anxiety and emotion regulation strategies among adolescents. It is recommended that future studies consider longitudinal methods when addressing this issue. With this approach, the persistence, escalation, or abatement of initial difficulties can be investigated, and individual differences across age can be identified, as individuals may follow different developmental paths.

A further limitation of our research is the use of self-report measures. Although individuals may provide socially desirable responses, adolescents in particular may prefer anonymity due to their developmental stage, rather than disclosing personal experiences to others and being evaluated. Moreover, since internal experiences (e.g., emotions, thoughts, or motivations) cannot be directly observed, self-report can serve as a proper data collection method (Brener et al., 2003; De Los Reyes & Kazdin, 2005). Especially in mental health problems such as anxiety disorders, it offers individuals the opportunity to directly report their symptoms and perceptions of internal processes (Wehry et al., 2015). This method is also time-efficient and allows for administration to large samples (Paulhus & Vazire, 2007), while self-report-based data collection is quite common in epidemiological and clinical studies involving adolescents (Achenbach & Rescorla, 2004). As our sample did not include individuals with established clinical diagnoses, self-report instruments were employed in the current study. Future studies could incorporate formal diagnostic evaluations conducted by a psychiatrist or a qualified clinical team.

Another limitation of our study is the use of convenience sampling. Although convenience sampling has limitations, such as limited generalization, it was preferred in our study due to time and resource constraints in reaching the target population. Additionally, since we aimed to discover the relationships between specific variables, this method provided flexibility in the data collection process, facilitating the applicability of our study. The suitability of this method is mentioned in the literature, especially in exploratory research (Etikan et al., 2016).

In our study, we did not focus on types of social media use. Treating all types of social media use uniformly as problematic may oversimplify social media engagement (Winstone et al., 2022). Future studies that distinguish between problematic and beneficial types of use (e.g., maintaining social connections or participating in prosocial communities) could provide deeper insights into the nature of social media involvement.

Our research is cross-sectional; conducting a longitudinal RCT clinical study with adolescents diagnosed with SAD in the future may be important to understand causal relationships and possible mediators or moderators (e.g., family environment, academic stress, age, or culture) related to PSMU. Taking together the effective and dysfunctional strategies of emotion regulation in the relationship between PSMU and social anxiety might contribute to the development of effective psychotherapy mechanisms (Golombek et al., 2019).

Acknowledgements

The authors would like to thank all participants for their valuable contribution to this study. We also express our gratitude to the administration and staff of Beyhekim Training and Research Hospital for their support and cooperation during the research process.

Author contributions

Conception and design: S.Y., E.B.; Data acquisition: S.Y.; Data analysis: S.Y.; Data interpretation: S.Y., E.B.; Drafting of the manuscript: S.Y., E.B.; Critical revision of the manuscript: S.Y., E.B.; All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Ankara Hacı Bayram Veli Üniversitesi Etik Komisyonu (Date: September 7, 2022, Decision/Protocol No: 09.09.2022-124873). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that during the preparation of this study, the following AI-assisted technology was used: Grammarly (Grammarly Inc.) and ChatGPT (OpenAI) on 25/08/2025. Extent of Use: Grammarly was used for grammar, spelling, and punctuation checks to improve the overall language quality of the manuscript. ChatGPT was utilized as an assistive tool to interpret and clarify the technical feedback provided by

the reviewers, ensuring a more accurate and comprehensive revision process. The authors confirm that they have critically reviewed and edited any AI-generated content and take full responsibility for the integrity, accuracy, and originality of the publication. The authors certify that the original human contribution is maintained and that AI-assisted tools are not listed or cited as authors.

References

Achenbach, T. M., & Rescorla, L. A. (2004). The Achenbach System of Empirically Based Assessment (ASEBA) for ages 1.5 to 18 years. In M. E. Maruish (Ed.), *The use of psychological testing for treatment planning and outcomes assessment: Instruments for children and adolescents* (3rd ed., pp. 179-213). Lawrence Erlbaum Associates Publishers. **[Crossref]**

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). **[Crossref]**

Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook addiction scale. *Psychological Reports*, *110*(2), 501-517. **[Crossref]**

Aydın, A., & Tekinsav Sütçü, S. (2007). Ergenler için sosyal kaygı ölçeğinin geçerlik ve güvenirliğinin incelenmesi. *Çocuk ve Gençlik Ruh Sağlığı Dergisi*, *14*(2), 79-89. https://toad.halileksi.net/olcek/ergenler-icin-sosyal-kaygi-olcegi-esko

Bandura, A., & National Inst of Mental Health. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall, Inc.

Bednarek, S., Górski, M., Załęska, A., Bychowski, M., Kwaśna, J., Kaźmierczyk, I., Lenart, K., Homza, M., Zakrzewska, N., & Kulicka, J. (2024). The psychological effects of social media use: Insights from combined research on adolescents' mental health. *Quality in Sport*, *35*, 56340. **[Crossref]**

Brand, M., Laier, C., & Young, K. S. (2014). Internet addiction: Coping styles, expectancies, and treatment implications. *Frontiers in Psychology*, *5*, 1256. **[Crossref]**

Brand, M., Wegmann, E., Stark, R., Müller, A., Wölfling, K., Robbins, T. W., & Potenza, M. N. (2019). The Interaction of Person-Affect-Cognition-Execution model for addictive behaviors: Update, generalization to addictive behaviors beyond internet-use disorders, and specification of the process character of addictive behaviors. *Neuroscience and Biobehavioral Reviews*, *104*, 1-10. **[Crossref]**

Brener, N. D., Billy, J. O., & Grady, W. R. (2003). Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: Evidence from the scientific literature. *The Journal of adolescent health: Official publication of the Society for Adolescent Medicine*, *33*(6), 436-457. **[Crossref]**

Carruthers, S. E., Warnock-Parkes, E. L., & Clark, D. M. (2019). Accessing social media: Help or hindrance for people with social anxiety? *Journal of Experimental Psychopathology, 10*(2). **[Crossref]**

Casey, B. J., Jones, R. M., & Somerville, L. H. (2011). Braking and accelerating of the adolescent brain. *Journal of Research on Adolescence, 21*(1), 21-33. **[Crossref]**

Cohen, G. L., & Prinstein, M. J. (2006). Peer contagion of aggression and health risk behavior among adolescent males: An experimental investigation of effects on public conduct and private attitudes. *Child Development*, *77*(4), 967-983. **[Crossref]**

Combarnous, F., Berrou, J. P., Clement, M., Darbon, D., & Rougier, E. (2019). 'We are (the) middle class' the new Turkish middle class: Identification, behaviors and expectations. *Turkish Economic Review*, *6*(3), 158-184. https://journals.econsciences.com/index.php/TER/article/view/1934

De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin*, *131*(4), 483-509. **[Crossref]**

Dursun, O. B., Esin, İ. S., Akıncı, M. A., Karayağmurlu, A., Turan, B., & Özhan Aşıkhasanoğlu, E. (2019). The prevalence of childhood mental disorders in different habitations: Are we underestimating their prevalence in rural areas? *Nordic Journal of Psychiatry*, *74*(3), 201-207. **[Crossref]**

Ercan, E. S., Polanczyk, G., Akyol Ardıc, U., Yuce, D., Karacetın, G., Tufan, A. E., Tural, U., Aksu, H., Aktepe, E., Rodopman Arman, A., Başgül, S., Bılac, O., Coşkun, M., Celık, G. G., Karakoc Demırkaya, S., Dursun, B. O., Durukan, İ., Fidan, T., Perdahlı Fiş, N., ... Yıldız, N. (2019). The prevalence of childhood psychopathology in Turkey: a cross-sectional multicenter nationwide study (EPICPAT-T). *Nordic Journal of Psychiatry, 73*(2), 132-140. **[Crossref]**

Etikan, I., Musa, S. B., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1. **[Crossref]**

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149-1160. **[Crossref]**

Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). SAGE Publications.

Golombek, K., Lidle, L., Tuschen-Caffier, B., Schmitz, J., & Vierrath, V. (2019). The role of emotion regulation in socially anxious children and adolescents: A systematic review. *European Child & Adolescent Psychiatry*, *29*(11), 1479-1501. **[Crossref]**

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment, 26*(1), 41-54. **[Crossref]**

Griffiths, M. (2005). A 'components' model of addiction within a biopsychosocial framework. *Journal of Substance Use*, *10*(4), 191-197. **[Crossref]**

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. The Guilford Press.

Hormes, J. M., Kearns, B., & Timko, C. A. (2014). Craving Facebook? Behavioral addiction to online social networking and its association with emotion regulation deficits. *Addiction, 109*(12), 2079-2088. **[Crossref]**

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons*, *53*(1), 59-68. **[Crossref]**

Karacetin, G., Arman, A. R., Fis, N. P., Demirci, E., Ozmen, S., Hesapcioglu, S. T., Oztop, D., Tufan, A. E., Tural, U., Aktepe, E., Aksu, H., Ardic, U. A., Basgul, S., Bilac, O., Coskun, M., Celik, G. G., Demirkaya, S. K., Dursun, O. B., Durukan, I., ... Ercan, E. S. (2018). Prevalence of Childhood Affective disorders in Turkey: An epidemiological study. *Journal of Affective Disorders, 238*, 513-521. **[Crossref]**

Kardefelt-Winther, D. (2014). A conceptual and methodological critique of internet addiction research: Towards a model of compensatory internet use. *Computers in Human Behavior, 31,* 351-354. **[Crossref]**

Karim, F., Oyewande, A., Abdalla, L. F., Chaudhry Ehsanullah, R., & Khan, S. (2020). Social media use and its connection to mental health: A systematic review. *Cureus, 12*(6), e8627. **[Crossref]**

Kemp, S. (2022). *Digital 2022: Global overview report*. DataReportal - Global Digital Insights. https://datareportal.com/reports/digital-2022-global-overview-report

Kılıç, C. (2020). Türkiye'de ruhsal hastalıkların yaygınlığı ve ruhsal tedavi ihtiyacı konusunda neredeyiz? *Toplum ve Hekim*, *35*(3), 179-187. https://www.belgelik.dr.tr/ToplumHekim/kayit_goster.php?Id=2983

La Greca, A. M. (1999). The social anxiety scales for children and adolescents. *The Behavior Therapist, 22*(7), 133-136.

La Greca, A. M., & Lopez, N. (1998). Social anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology*, *26*(2), 83-94. **[Crossref]**

La Greca, A. M., Dandes, S. K., Wick, P., Shaw, K., & Stone, W. L. (1988). Development of the social anxiety scale for children: Reliability and concurrent validity. *Journal of Clinical Child Psychology, 17*(1), 84-91. **[Crossref]**

Lai, F., Wang, L., Zhang, J., Shan, S., Chen, J., & Tian, L. (2023). Relationship between social media use and social anxiety in college students: Mediation effect of communication capacity. *International Journal of Environmental Research and Public Health*, *20*(4), 3657. **[Crossref]**

Lee, A. Y., & Hancock, J. T. (2023). Social media mindsets: A new approach to understanding social media use and psychological well-being. *Journal of Computer-Mediated Communication*, *29*(1), zmad048. **[Crossref]**

Li, J.-B., Feng, L.-F., Wu, A. M. S., Mai, J.-C., Chen, Y.-X., Mo, P. K. H., & Lau, J. T. F. (2021). Roles of psychosocial factors on the association between online social networking use intensity and depressive symptoms among adolescents: Prospective cohort study. *Journal of Medical Internet Research, 23*(9), e21316. **[Crossref]**

Michikyan, M., Subrahmanyam, K., Regan, P., Castillo, L. G., Ham, L., Harkness, A., & Schwartz, S. J. (2023). Social connectedness and negative emotion modulation: Social media use for coping among college students during the COVID-19 Pandemic. *Emerging Adulthood*, *11*(4), 1039-1054. **[Crossref]**

Ministry of Health. (2025). Küresel hastalık yükü 2021 Türkiye sonuçları. In *Sağlık istatistikleri yıllığı* (pp. 99-122). Türkiye Cumhuriyeti Sağlık Bakanlığı Sağlık Bilgi Sistemleri Genel Müdürlüğü. https://www.saglik.gov.tr/TR-107086/saglik-istatistikleri-yilligi-2023-yayinlanmistir.html

Neumann, A., van Lier, P. A. C., Gratz, K. L., & Koot, H. M. (2010). Multidimensional assessment of emotion regulation difficulties in adolescents using the difficulties in emotion regulation scale. *Assessment, 17*(1), 138-149. **[Crossref]**

Onyeizu, A. O., Nancy, N. O., Samuel, O., Binta, O. D., & Michelle, N. (2022). Social media addiction on mental health of undergraduates. *International Journal of Health Sciences, 6*(S6), 2524-2542. **[Crossref]**

Paulhus, D. L., & Vazire, S. (2007). The self-report method. In R. W. Robins, R. C. Fraley, & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 224-239). The Guilford Press.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891. **[Crossref]**

Rizvi, A. Z. (2016). Personality, social anxiety and excessive use of facebook. *International Journal of Psychology and Behavioral Sciences*, *6*(3), 119-127.

Rugancı, R. N., & Gençöz, T. (2010). Psychometric properties of a Turkish version of the difficulties in emotion regulation scale. *Journal of Clinical Psychology*, *66*(4), 442-455. **[Crossref]**

Sackl-Pammer, P., Jahn, R., Özlü-Erkilic, Z., Pollak, E., Ohmann, S., Schwarzenberg, J., Plener, P., & Akkaya-Kalayci, T. (2019). Social anxiety disorder and emotion regulation problems in adolescents. *Child and Adolescent Psychiatry and Mental Health, 13*(1), 37. **[Crossref]**

Sampasa-Kanyinga, H., & Hamilton, H. (2015). Social networking sites and mental health problems in adolescents: The mediating role of cyberbullying victimization. *European Psychiatry*, *30*(8), 1021-1027. **[Crossref]**

Sarıtaş-Atalar, D., Gençöz, T., & Özen, A. (2015). Confirmatory factor analyses of the Difficulties in Emotion Regulation Scale in a Turkish adolescent sample. *European Journal of Psychological Assessment, 31*(1), 12-19. **[Crossref]**

Shao, R., Shi, Z., & Zhang, D. (2021). Social media and emotional burnout regulation during the COVID-19 pandemic: Multilevel approach. *Journal of Medical Internet Research*, *23*(3), e27015. **[Crossref]**

She, R., Kit han Mo, P., Li, J., Liu, X., Jiang, H., Chen, Y., Ma, L., & Tak fai Lau, J. (2023). The double-edged sword effect of social networking use intensity on problematic social networking use among college students: The role of social skills and social anxiety. *Computers in Human Behavior, 140*, 107555. **[Crossref]**

Shensa, A., Escobar-Viera, C. G., Sidani, J. E., Bowman, N. D., Marshal, M. P., & Primack, B. A. (2017). Problematic social media use and depressive symptoms among US young adults: A nationally-representative study. *Social Science & Medicine, 182*, 150-157. **[Crossref]**

Singh, R., Singh, B., Mahato, S., & Hambour, V. K. (2020). Social support, emotion regulation and mindfulness: A linkage towards social anxiety among adolescents attending secondary schools in Birgunj, Nepal. *PLOS ONE*, *15*(4), e0230991. **[Crossref]**

Somerville, L. H., & Casey, B. J. (2010). Developmental neurobiology of cognitive control and motivational systems. *Current Opinion in Neurobiology*, *20*(2), 236-241. **[Crossref]**

Storch, E. A., Masia-Warner, C., Dent, H. C., Roberti, J. W., & Fisher, P. H. (2004). Psychometric evaluation of the Social Anxiety Scale for Adolescents and the Social Phobia and Anxiety Inventory for Children: Construct validity and normative data. *Journal of Anxiety Disorders, 18*(5), 665-679. **[Crossref]**

Taş, İ. (2017). Ergenler İçin Sosyal Medya Bağımlılığı Ölçeği Kısa Formunun (SMBÖ-KF) geçerlik ve güvenirlik çalışması. *Online Journal of Technology Addiction & Cyberbullying*, *4*(1), 27-40. https://dergipark.org.tr/tr/pub/ojtac/issue/30133/300029

Turkish Statistical Institute. (2021). *Çocuklarda bilişim teknolojileri kullanım araştırması, 2021*. https://veriportali.tuik.gov.tr/tr/press/41132

Turkish Statistical Institute. (2023). *Türkiye sağlık araştırması, 2022*. https://data.tuik.gov.tr/Bulten/Index?p=Turkiye-Saglik-Arastirmasi-2022-49747

Turkish Statistical Institute. (2024). *Çocuklarda bilişim teknolojileri kullanım araştırması, 2024*. https://www.tuik.gov.tr/

Turkish Statistical Institute. (2025a). *İstatistiklerle çocuk, 2024*. https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Cocuk-2024-54197

Turkish Statistical Institute. (2025b). *Adrese dayalı nüfus kayıt sistemi sonuçları, 2024*. https://veriportali.tuik.gov.tr/tr/press/53783

van den Eijnden, R. J. J. M., Lemmens, J. S., & Valkenburg, P. M. (2016). The social media disorder scale: Validity and psychometric properties. *Computers in Human Behavior*, *61*, 478-487.

Wartberg, L., Kriston, L., & Thomasius, R. (2020). Internet gaming disorder and problematic social media use in a representative sample of German adolescents: Prevalence estimates, comorbid depressive symptoms and related psychosocial aspects. *Computers in Human Behavior*, *103*, 31-36. **[Crossref]**

Wartberg, L., Thomasius, R., & Paschke, K. (2021). The relevance of emotion regulation, procrastination, and perceived stress for problematic social media use in a representative sample of children and adolescents. *Computers in Human Behavior, 121*(4), 106788. **[Crossref]**

Wehry, A. M., Beesdo-Baum, K., Hennelly, M. M., Connolly, S. D., & Strawn, J. R. (2015). Assessment and treatment of anxiety disorders in children and adolescents. *Current Psychiatry Reports*, *17*(7), 52. **[Crossref]**

Weinstein, E. (2018). The social media see-saw: Positive and negative influences on adolescents' affective well-being. *New Media & Society*, *20*(10), 3597-3623. **[Crossref]**

Winstone, L., Mars, B., Haworth, C. M. A., Heron, J., & Kidger, J. (2022). Adolescent social media user types and their mental health and well-being: Results from a longitudinal survey of 13–14-year-olds in the United Kingdom. *JCPP Advances, 2*(2), e12071. **[Crossref]**

World Health Organization. (2020). *Adolescent mental health*. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health

Yam, F. C., Yıldırım, O., & Köksal, B. (2024). The mediating and buffering effect of resilience on the relationship between loneliness and social media addiction among adolescent. *Current Psychology*, *43*(28), 24080-24090. **[Crossref]**

Yang, F., Li, M., & Han, Y. (2023). Whether and how will using social media induce social anxiety? The correlational and causal evidence from Chinese society. *Frontiers in Psychology*, *14*. **[Crossref]**

Yıldız Durak, H. (2018). Modeling of variables related to problematic internet usage and problematic social media usage in adolescents. *Current Psychology*, *39*(4), 1375-1387. **[Crossref]**

Young, K. S., Sandman, C. F., & Craske, M. G. (2019). *Positive and negative emotion regulation in adolescence: Links to anxiety and depression*. Center for Open Science. **[Crossref]**

Zimmermann, P., & Iwanski, A. (2014). Emotion regulation from early adolescence to emerging adulthood and middle adulthood. *International Journal of Behavioral Development*, *38*(2), 182-194. **[Crossref]**

Zsido, A. N., Arato, N., Lang, A., Labadi, B., Stecina, D., & Bandi, S. A. (2021). The role of maladaptive cognitive emotion regulation strategies and social anxiety in problematic smartphone and social media use. *Personality and Individual Differences*, *173*, 110647. **[Crossref]**

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.504

The role of experiential avoidance and social emotional learning skills in predicting social media addiction in high school students

Sidar Turan[1], Gökçen Aydın[2]

[1]Department of Educational Sciences, Guidance and Psychological Counseling, Hasan Kalyoncu University, Gaziantep, Türkiye
[2]Department of Educational Sciences, Guidance and Psychological Counseling, TED University, Ankara, Türkiye

Abstract

The main purpose of this study is to examine the role of experiential avoidance and social emotional learning skills in predicting social media addiction in high school students. The participants consist of 721 high school students in Türkiye in the 2023-2024 academic year. 'Demographic Information Form,' 'SMA Scale for Adolescents,' 'Avoidance and Fusion Scale-Youth 8,' and 'SEL Scale for Adolescents' were used to collect data. Hierarchical regression analysis was utilized to analyze the data. The findings indicated that there was a positive moderate-level relationship between social media addiction and experiential avoidance, a negative moderate-level relationship between social media addiction and social emotional learning skills, and a negative low-level significant relationship between experiential avoidance and social emotional learning skills. Finally, experiential avoidance, as the strongest predictor, and social emotional learning skills explained approximately 36% of the variance in social media addiction.

Keywords: social media addiction, experiential avoidance, social emotional learning skills, high school students

Main points

- As students' levels of avoidance of unwanted emotions increase, their levels of social media addiction also increase.
- Students with high SEL skills have lower levels of social media addiction.
- Low experiential avoidance and high SEL skills support healthy use of social media.
- The study emphasizes the importance of EA and SEL skills in preventing social media addiction.

Introduction

Nowadays, as a result of the rapid development of technology, the need to use the internet has increased excessively. One of the most widely used areas of the internet in daily life is social media. Social media enables individuals to create content and comment on social media (Çiftçi, 2018), create individual and public profiles (Kuss & Griffiths, 2011), communicate and interact (Allen et al., 2014), spend free time and have fun (Solmaz et al., 2013), share information with others (Tutgun-Ünal, 2020), and use web-based services (Boyd & Ellison, 2007).

The widespread use of mobile devices and improved internet access have increased social media use significantly. Individuals—particularly adolescents and young adults—spend considerable time on social media platforms (Altınsoy, 2021; Çiftçi, 2018) mainly to build and maintain relationships, cope with loneliness, seek entertainment, reduce stress, socialize, and support identity formation (Akyol-Güner et al., 2022; Allen et al., 2014; Çömlekçi & Başol, 2019; Doğrusever, 2021). Adolescence is a period of rapid emotional, cognitive, and social development, during which individuals are especially sensitive to peer influence and social evaluation. This stage is marked by ongoing maturation of self-regulation and coping skills, making adolescents more vulnerable to impulsive behaviors and difficulties in managing negative emotions. Therefore, it comes as no surprise that adolescents are especially vulnerable to social media addiction (Kuss & Griffiths, 2011).

Corresponding author: Sidar Turan • **Email:** sidarturan1@gmail.com
Received: January 20, 2025 **Accepted:** April 3, 2026 **Published online:** June 22, 2026

Cite as: Turan, S., & Aydın, G. (2026). The role of experiential avoidance and social emotional learning skills in predicting social media addiction in high school students. *Addicta: The Turkish Journal on Addictions*, *13*(2), 247-253. https://doi.org/10.15805/addicta.2026.504

Social media addiction (SMA) is a behavioral addiction characterized by excessive and uncontrollable social media use that negatively affects important life areas, such as academic responsibilities (Ndukwu et al., 2020). Studies have linked SMA to various factors, including social skills, impulsivity, emotion regulation, self-esteem, problem-solving skills, social-emotional learning skills, sense of responsibility, distress avoidance, depression, and attention bias (Altınsoy, 2021; Atın, 2022; Ayyıldız et al., 2023; Candemir, 2022; Ekşi, 2019; Özgür, 2023; Sağar, 2022; Xiao et al., 2022).

Individuals with social media addiction (SMA) often use social media to escape negative emotions and life stressors. Such efforts to escape or avoid distressing internal experiences—referred to as experiential avoidance—paradoxically lead to an increase in these unwanted experiences (Harris, 2022; Hayes et al., 1996). Experiential avoidance (EA) is a core concept of Acceptance and Commitment Therapy, a third-wave cognitive-behavioral therapy approach, and is conceptualized as the individual's reluctance to engage with internal experiences.

The contrary concept of experiential avoidance is psychological flexibility, where individuals accept all emotions and thoughts as they are and open space to experience them all. In the context of Turkish culture, cultural norms emphasizing social desirability can heighten fear of negative evaluation, contributing to tendencies toward avoidance of uncomfortable thoughts and emotions. Taken together, accepting negative emotions may be particularly challenging. Such cultural dynamics can reduce psychological flexibility and promote experiential avoidance, which in turn may contribute to problematic behaviors such as social media addiction.

Although experiential avoidance seems to be a negative method, it may provide a momentary relief for some individuals (Hayes et al., 2004), and avoidance of distressing internal experiences may initially have a relaxing effect. However, excessive avoidance of internal experiences for the purpose of short-term relief can cause an individual's distress to increase in the long term (Hayes et al., 1996). According to Harris (2022), many types of addictions begin with an effort to avoid or get rid of unwanted internal experiences such as boredom, loneliness, guilt, anxiety, anger, and sadness. Likewise, research indicated an association between experiential avoidance and digital addiction and digital tool use (Balcı & Kaya-Güler, 2023), problematic smartphone use and gaming (Çelenk, 2021), depression, anxiety and stress (Ekşi, 2019), and significant depression and suicide risk (Chou et al., 2018).

On the other hand, individuals who possess social emotional learning (SEL) skills are better able to spend their lives in responsible, compassionate, and constructive connections rather than avoiding unpleasant internal experiences. The Collaborative for Academic, Social, and Emotional Learning (CASEL) defines SEL skills as "the process by which all youth and adults acquire and apply knowledge, skills, and attitudes to develop healthy identities, manage emotions, achieve personal and collective goals, empathize, build and maintain positive relationships". SEL skills consist of five basic skills: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2020, p. 1). According to Kabakçı and Korkut (2008), SEL skills can reduce students' risk behaviors and increase protective factors.

Social-emotional learning (SEL) skills are developed through adolescents' interactions and relationships with their peers (Çiftçi, 2018). These skills, which emerge through reciprocal social experiences, enable adolescents to recognize, regulate, and manage their emotions effectively. When SEL skills are insufficiently developed, adolescents may experience a range of difficulties, including decreased academic achievement, lower self-esteem, increased vulnerability to addiction, heightened psychological distress, and a rise in maladaptive behaviors (Ayyıldız et al., 2023; Candemir, 2022). In this context, adolescents with underdeveloped SEL skills may be more prone to problematic social media use, suggesting that inadequate SEL skills constitute a significant risk factor for the development of social media addiction (SMA). Conversely, well-developed SEL skills can be considered a protective factor that helps prevent the emergence of maladaptive and addictive behaviors. Supporting this view, previous research has demonstrated significant associations between SEL skills and various outcomes, including Facebook addiction (Aftab et al., 2015), internet addiction (Ayyıldız et al., 2023), social media addiction (Altınsoy, 2021; Atın, 2022), and problematic internet use (Chen et al., 2021).

Experiential avoidance, or the tendency to evade or suppress negative internal experiences, may contribute to social media addiction by encouraging individuals to seek immediate relief or distraction online. Individuals with lower social and emotional learning (SEL) skills—such as emotional awareness, self-regulation, and social problem-solving—may be less able to cope adaptively with negative emotions and social stressors, making them more vulnerable to excessive social media use. Theoretically, experiential avoidance and deficits in SEL skills can interact as contributing and distractive factors: those who avoid unpleasant emotions and lack effective social-emotional competencies may turn to social media as a maladaptive coping strategy, reinforcing a cycle of dependence. Thus, social media addiction can be seen as both a consequence of emotional avoidance and a reflection of underdeveloped social and emotional skills, highlighting the interrelated nature of these variables.

Drawing on the aforementioned literature, the purpose of this study is to examine the extent to which experiential avoidance and social emotional learning skills predict social media addiction among high school students. Given the importance of preventing social media addiction during adolescence, elucidating the relationships between social media addiction and adolescents' experiential avoidance and social emotional learning skills is expected to make a meaningful contribution to the literature.

Method

This correlational study focuses on examining the predictive role of experiential avoidance and social emotional learning skills in social media addiction among high school students. Therefore, it is hypothesized that higher levels of experiential avoidance will be positively associated with social media addiction, higher social-emotional learning skills will be negatively associated with it, and that together, experiential avoidance and social-emotional learning skills will significantly predict social media addiction among high school students.

Participants

The sample of this study consisted of 721 high school students, including 439 (60.9%) female students and 282 male students (39.1%) studying in Diyarbakır, Türkiye in the 2023-2024 academic year. The study employed a convenience sampling method, with inclusion criteria specifying high school students and exclusion criteria excluding 12th grade students. The latter were not included because the national university entrance exam was approaching, and most were busy with studying, which could have interfered with the study. Of the students, 269 (37.3%) were in 9th grade, 266 (36.9%) were in 10th grade, and 186 (25.8%) were in 11th grade. Also, 281 (39%) of the students were studying in Anatolian high schools, 170 (23.6%) in science high schools, 115 (16%) in vocational high schools, and 155 (21.5%) in religious high schools. Among the students, 39 (5.4%) had low economic income, 625 (86.7%) had medium economic income, and 57 (7.9%) had high economic income.

Data Collection Tools

In the study, the following data collection tools were used: the demographic information form, which included items on gender, grade level, and perceived income; the 'Social Media Addiction Scale for Adolescents'; the 'Social Emotional Learning Scale for Adolescents,' and the 'Fusion and Avoidance Scale-Youth 8'.

Social Media Addiction Scale for Adolescents

Özgenel et al. (2019) developed this scale to measure the social media addiction levels of adolescents in line with the DSM-5 diagnostic criteria for gaming addiction. This 5-point Likert-type scale has a unidimensional structure consisting of nine items. There are no reverse-coded items in the scale. A total score can be obtained from the scale. The Cronbach's alpha coefficient was reported as .90 for the 'Social Media Addiction Scale for Adolescents'. In this study, the Cronbach's alpha coefficient of the scale was found to be .82.

Avoidance and Fusion Scale - Youth 8

This scale was developed by Greco et al. (2008) to assess the levels of experiential avoidance and cognitive fusion of young people. The short form of the scale was adapted into Turkish by Büyüköksüz and Erözkan (2019). The short form structure of the scale makes it practical for use with high school students, and there are a limited number of scales measuring experiential avoidance in adolescents in the Turkish language. This 8-item and a single-dimension scale has a 5-point Likert-type structure. There are no reverse coded items in the scale. In the Turkish adaptation study of the scale, the Cronbach's alpha coefficient was reported to be .78, and the test-retest reliability coefficient was reported to be .79. In the current study, the Cronbach's alpha coefficient was calculated as .80.

Social Emotional Learning Skills Scale for Adolescents

It is a measurement tool developed by Totan (2018) to explore adolescents' SEL skills within the framework of CASEL standards. The scale consists of 23 items and 5 dimensions, namely self-awareness, social awareness, self-management, relationship building skills, and responsible decision-making. There are no reverse-coded items in the scale. A total score can be obtained from the scale. The Cronbach's alpha coefficient for the entire scale was reported as .92, and in this study, it was calculated as .80.

Data Analysis

To analyze the data, descriptive statistics were first computed. Subsequently, Pearson correlation coefficients were calculated to examine the relationships among the variables. In line with the primary objective of the study, hierarchical regression analysis was conducted after the relevant assumptions had been tested. The procedures for assumption testing were based on Büyüköztürk (2022).

Procedure

With the ethics committee decision dated 22.03.2024 and numbered 53911, the necessary approval was obtained from Hasan Kalyoncu University Ethics Committee. Paper-and-pencil-based informed consent was obtained from the participants and the parents of the participants who agreed to take part in the study. All instruments were administered during class hours after obtaining the necessary permissions from the school principal and the classroom teachers. Completing the instruments took participants approximately 15 minutes.

Results

The descriptive findings and Pearson correlation analysis were conducted before the main findings of the hierarchical regression analysis. Firstly, Table 1 showed the standard deviations, skewness, and kurtosis of variables of social media addiction (SMA), experiential avoidance (EA), and social emotional learning (SEL) skills scale total scores. Among 721 participants, SMA scores averaged 20.88 (*SD* = 6.96) with slight positive skewness, EA scores averaged 13.20 (*SD* = 7.28) with a mildly right-skewed distribution, and SEL scores averaged 81.52 (*SD* = 11.46), showing an approximately symmetric distribution close to normal. The skewness and

Table 1. Descriptive statistics of SMA, EA, and SEL

Scale	N	Mode	Mean	Median	SD	Skewness	Kurtosis
SMA	721	20.00	20.88	20.00	6.96	.45	-.33
EA	721	6.00	13.20	12.04	7.28	.28	-.61
SEL	721	84.00	81.52	82.00	11.46	-.03	-.09

SMA: Social Media Addiction, EA: Experiential Avoidance, SEL: Social Emotional Learning skills

kurtosis coefficients were between -1 and +1. Considered together, the variables showed a normal distribution.

Secondly, Pearson correlation analysis was applied to determine the relationship between SMA and EA and SEL skills of high school students, and the findings were presented in Table 2. The findings indicated that there was a positive moderate significant relationship between SMA and EA (r=.55, p<.01); a negative moderate significant relationship between SMA and SEL skills (r=-.33, p<.01); and a negative low significant relationship between EA and SEL skills (r=-.19, p<.01).

Hierarchical regression analysis was performed to assess the predictive role of EA and SEL skills in SMA among high school students. Prior to the analysis, the assumptions of hierarchical regression were evaluated as presented in Table 3. The results indicated no multicollinearity issues: the correlation between variables was below .90 (.55), tolerance values exceeded .20 (.96), VIF values were under 5 (1.04), the largest CI was below 30 (17.93), and the Durbin-Watson statistic was 1.78. All values obtained show that there was no multicollinearity.

After testing the assumptions, hierarchical regression analysis was performed to determine whether experiential avoidance and social emotional learning skills predict social media addiction. The findings revealed that in Model 1, experiential avoidance significantly predicted social media addiction, explaining 31% of the variance (ΔR^2 = .31, p < .01). In Model 2, after adding social emotional learning skills, the model explained an additional 5% of the variance (ΔR^2 = .05, p < .01). In this final model, experiential avoidance remained a significant positive predictor (B = .49, β = .51, p < .01), while social emotional learning skills had a significant negative contribution (B = -.14, β = -.23, p < .01). Overall, the findings revealed that experiential avoidance and social emotional learning skills collectively accounted for 36% of the variance in social media addiction. These results were in line with the hypotheses that both experiential avoidance and social emotional learning skills contributed uniquely to the prediction of social media addiction, with experiential avoidance showing a positive association (B = .49) and social emotional learning skills demonstrating a negative relationship (B = -.14). Specifically, experiential avoidance alone explained 31% of the variance, emerging as the strongest predictor (β = .51). However, although the model explained a statistically significant portion of the variance in social media addiction (R^2 = .36), this value suggests that additional factors beyond those included in the study may contribute to the complexity of social media addiction and should be considered in future research. The detailed results of the hierarchical regression analysis were presented in Table 4.

Table 2. The Pearson correlations between SMA, EA, and SEL

Scale	1	2	3
SMA	1.00	-	-
EA	.55**	1.00	-
SEL	-.33**	-.19**	1.00

*p<.05, **p<.01; SMA: Social Media Addiction, EA: Experiential Avoidance, SEL: Social Emotional Learning

Table 3. Assumptions of hierarchical regression analysis

Scale	Tolerance	VIF	CI	Durbin- Watson
EA	.963	1.039	3.996	1.781
SEL	.963	1.039	17.935	
SMA	-	-	-	

SMA: Social Media Addiction, EA: Experiential Avoidance, SEL: Social Emotional Learning Skills

Table 4. Hierarchical regression analysis results for the prediction of social media addiction

Model	Predictor	B	SHB	β	ΔR^2
1	Intercept	13.88	.45		.31**
	Experiential Avoidance	.53	.03	.55**	
2	Intercept	26.07	1.64		.05**
	Experiential Avoidance	.49	.03	.51**	
	Social Emotional Learning Skills	-.14	.02	-.23**	

*p<.05, **p<.01

Discussion

The main purpose of this study was to examine the role of experiential avoidance and social emotional learning skills in predicting social media addiction in high school students. The findings supported the hypotheses that experiential avoidance and social-emotional learning skills each made a unique contribution to predicting social media addiction. In the following, the implications of these findings will be discussed in relation to previous research, theoretical frameworks, and potential practical applications.

The findings of the present study indicated that experiential avoidance was closely associated with higher levels of social media addiction, a result that aligns with previous research emphasizing the role of avoidance-based coping strategies in maladaptive technology use (Chou et al., 2018; Çelenk, 2021; Sağar, 2022). This pattern suggests that students may turn to social media as a means of distancing themselves from distressing thoughts and emotions. In contrast, social-emotional learning skills appear to function as a protective factor, as students with more developed SEL skills tend to engage with social media in a more regulated and intentional manner. That is, lower SEL competence is associated with more problematic patterns of social media use (Aftab et al., 2015; Agirkan, 2023; Altınsoy, 2021; Atın, 2022; Chen et al.,

2021; Xiao et al., 2022). Moreover, the inverse association between SEL skills and experiential avoidance highlights the interconnected nature of emotional awareness, regulation, and psychological flexibility. This finding is supported by previous research indicating that reduced psychological flexibility is linked to greater difficulties in emotion regulation and higher levels of problematic internet use (Savruk, 2023; Yorulmaz et al., 2020). Taken together, these results suggest that enhancing students' SEL skills, particularly among those prone to experiential avoidance, may contribute to healthier and more balanced social media use.

The observed positive association between experiential avoidance and social media addiction indicated that students who were more inclined to avoid unwanted emotional experiences were also more likely to exhibit problematic patterns of social media use. In contrast, the inverse relationship between social-emotional learning skills and social media addiction underscored the protective role of SEL competencies in mitigating maladaptive engagement with social media platforms. From this perspective, lower levels of experiential avoidance combined with more developed SEL skills may facilitate healthier, more regulated social media use among students. Previous studies have consistently demonstrated that experiential avoidance plays a significant role in the development of social media addiction and related problematic internet behaviors (Çelenk, 2021; Ekşi, 2019; Kurşuncu et al., 2023; Sağar, 2022). These findings indicate that individuals with higher levels of experiential avoidance are more likely to engage in excessive social media use as a way of distancing themselves from distressing thoughts and emotions. Supporting this view, Cao et al. (2024) emphasized that experiential avoidance may contribute to internet addiction indirectly by intensifying depressive symptoms, suggesting that interventions targeting experiential avoidance could reduce maladaptive technology use. This tendency may be particularly pronounced during adolescence, a developmental period in which emotion regulation skills are still maturing. As a result, social media may be used not only for communication or entertainment but also as a means of emotional escape, increasing the risk of addictive patterns over time.

Research examining the association between social-emotional learning skills and social media addiction consistently indicates that stronger SEL competencies are linked to lower levels of problematic social media use (Agirkan, 2023; Candemir, 2022). Prior studies have shown that as students' SEL skills improve, tendencies toward social media addiction diminish (Atın, 2022), a finding that aligns with the results of the present study. In a similar vein, recent empirical evidence indicates that addictions to video content and live streaming are inversely related to social-emotional learning competencies, underscoring the potential impact of these maladaptive digital behaviors on adolescents' emotional and social development (Ye et al., 2025). The capability of increasing mindful use of social media by means of social emotional learning interventions or trainings is a hopeful mechanism to support adolescents' well-being (Setia et al., 2024). Similarly, evidence suggests that well-developed emotional regulation skills play a protective role against addictive patterns of social media use among adolescents and young adults (Aftab et al., 2015; Özgür, 2023).

Although social–emotional learning (SEL) abilities significantly predict social media addiction, the relatively modest explained variation shows that SEL represents only one of several contributing factors. Social media addiction may be more heavily impacted by situational emotional states and context-dependent elements, whereas SEL reflects people's overall emotional and social capacities. Furthermore, even among people with strong SEL skills, the protective function of individual competences may be limited by the addictive design elements of social media sites. Additionally, variance in a particular behavioral outcome, like social media addiction, may not be well captured by the general test of SEL abilities. Lastly, the little variance represented by the direct model may be explained by SEL skills' indirect influence on social media addiction through mediating variables (such as self-regulation or emotional coping).

Collectively, these findings highlight the importance of fostering SEL skills while decreasing experiential avoidance during adolescence, as competencies such as psychological flexibility, emotional awareness, emotion regulation, and effective interpersonal communication may enable students to engage with social media in a more intentional and self-regulated manner. Conversely, insufficient SEL development and excessive avoidance among high school students may constitute a risk factor for social media addiction, as these individuals may increasingly rely on social media platforms to meet emotional and relational needs, thereby heightening the likelihood of addictive use patterns. All in all, the present study makes a novel contribution to the literature by jointly examining experiential avoidance, social-emotional learning skills, and social media addiction within a high school sample, thereby offering a valuable framework to inform future research and guide preventive and intervention-oriented practices.

Limitations and Directions/Suggestions for Future Research

This study cannot be considered without its limitations. Firstly, 12th grade students preparing for university entrance exams were not included in the study. Since the study was conducted with 9th, 10th, and 11th grade students, the findings may not be generalizable to all high school students. In addition to the limitations already acknowledged, the use of self-report measures may have introduced response bias, and the regionally limited sample restricts the generalizability of the findings. Furthermore, the cross-sectional nature of the study prevents the establishment of causal relationships among the variables.

Based on these limitations, several suggestions for future research are presented. Considering that the age of social media use is decreasing, longitudinal studies examining the effect of age on SMA in elementary and middle school students

can be conducted. Furthermore, as EA has been identified as a contributing factor to addiction, future studies could investigate this relationship in the context of other behavioral addictions (e.g., gambling, online gaming, e-sports, shopping, sexuality, and food addiction). Additionally, although this study focused on behavioral addictions, examining substance-related addictions (e.g., tobacco, alcohol, and drug use) in school settings may provide deeper insights into the nature of addiction and its effects on students. It is recommended to investigate the relationship between SEL skills as a protective factor and other types of addiction and to consider SMA together with other protective factors.

Addition, psychoeducation interventions about social media addiction in schools should be carried out by classroom teachers within the scope of in-class guidance activities. Also, through structured, time-limited programs, individual or group counseling services for social media addiction should be provided by school counselors. For instance, classroom-based guidance activities led by counselors could be delivered in weekly sessions over a period of 6–8 weeks, focusing on increasing awareness of social media addiction and promoting healthy digital habits. In order to prevent social media addiction, seminars, workshops, and intervention programs can be implemented to increase the psychological flexibility of students with high levels of EA. In addition, psychoeducation programs can be organized for students with low SEL skills to gain skills such as recognizing their emotions, communicating effectively, and developing positive relationships. Future studies may employ qualitative research methods, such as in-depth interviews, to obtain a deeper understanding of social media addiction among adolescents.

Acknowledgements

This study is based on the master's thesis of the first author, Sidar Turan, at Hasan Kalyoncu University.

Author contributions

Conception and design: S.T., G.A.; Data acquisition: S.T.; Data analysis: S.T.; Data interpretation: S.T., G.A.; Drafting of the manuscript: S.T.; Critical revision of the manuscript: S.T., G.A. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Hasan Kalyoncu University Ethics Committee (Date: March 22, 2024, Decision/ Protocol No: 53911). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Aftab, R., Çelik, İ., & Sarıçam, H. (2015). Facebook addiction and social emotional learning skills. *Ozean Journal of Social Science*, *8*(2), 109-120. **[Crossref]**

Agirkan, M. (2023). The mediating effect of social emotional learning between relationship on basic psychological needs and technology addiction. *Journal of Education in Science Environment and Health*, *9*(4), 268-280. **[Crossref]**

Akyol-Güner, T., Demir, İ., & Erdem, S. (2022). Üniversite öğrencilerinde sosyal medya bağımlılığı ile akademik öz yeterlik ve yalnızlık arasındaki ilişki ve etkileyen faktörler. *Yükseköğretim ve Bilim Dergisi, 12*(3), 508-518. **[Crossref]**

Allen, K. A., Ryan, T., Gray, D. L., McInerney, D. M., & Waters, L. (2014). Social media use and social connectedness in adolescents: The positives and the potential pitfalls. *The Educational and Developmental Psychologist*, *31*(1), 18-31. **[Crossref]**

Altınsoy, M. A. (2021). *Ergenlerin sosyal medya bağımlılığı ve mutluluk düzeylerinin sorumluluk duygusu ve davranışı ile sosyal ve duygusal öğrenmeye göre incelenmesi* (Thesis No. 687555) [Master's thesis, Yıldız Teknik University]. Council of Higher Education National Thesis Center.

Atın, A. (2022). *Sosyal medya bağımlılığı ve arkadaşa bağlanma ile sosyal, duygusal öğrenme becerilerinin incelenmesi: Ergenler üzerinde bir araştırma* (Thesis No. 73640) [Master's thesis, Fatih Sultan Mehmet Foundation University]. Council of Higher Education National Thesis Center.

Ayyıldız, T., Gemicioğlu, Ş. H., Topçu, F., Demir, A., & Kaya, K. N. (2023). Ortaokul düzeyindeki çocuklarda internet bağımlılığının sosyal beceri düzeyi ile ilişkisi. *Bağımlılık Dergisi*, *24*(1), 73-84. **[Crossref]**

Balcı, Ş., & Kaya-Güler, E. (2023). Yaşantısal kaçınma ile dijital bağımlılık ilişkisinde dijital araç kullanımının aracılık rolü. *Türkiye İletişim Araştırmaları Dergisi,* (44), 1-22. **[Crossref]**

Boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-mediated Communication*, *13*(1), 210-230. **[Crossref]**

Büyüköksüz, E., & Erözkan, A. (2019). Kaçınma ve Birleşme Ölçeği-Gençler 8 (KBÖ G8): Türk kültüründe faktör yapısı ve güvenirlik çalışmaları. *Journal of Cognitive Behavioral Psychotherapy and Research, 8*(Supplement 1), 3-7. https://toad.halileksi.net/olcek/kacinma-ve-birlesme-olcegi-gencler-8-kbo-g8/

Büyüköztürk, Ş. (2022). *Sosyal bilimler için veri analizi el kitabı* (30th ed.). Pegem Publishing.

Candemir, G. (2022). *Sosyal medya bağımlılığının yordanmasına yönelik pozitif gençlik gelişimi temelli yapısal modelin sınanması* (Thesis No. 724650) [Master's thesis, Hasan Kalyoncu University]. Council of Higher Education National Thesis Center.

Cao, Y., Liu, Q., Yu, Q., Fan, J., Wang, X., Yao, R., & Zhu, X. (2024). Depression mediates the relationship of experiential avoidance and internet addiction: A cross-lagged mediation analysis. *Current Psychology*, *43*(4), 3727-3737. **[Crossref]**

Chen, C., Yang, C., & Nie, Q. (2021). Social-emotional learning competencies and problematic internet use among Chinese adolescents: A structural equation modeling analysis. *International Journal of Environmental Research and Public Health*, *18*(6), 3091. **[Crossref]**

Chou, W. P., Yen, C. F., & Liu, T. L. (2018). Predicting effects of psychological inflexibility/experiential avoidance and stress coping strategies for internet addiction, significant depression, and suicidality in college students: A prospective study. *International Journal of Environmental Research and Public Health*, *15*(4), 788. **[Crossref]**

Collaborative for Academic, Social, and Emotional Learning. (2020). *Casel's sel framework: What are the core competence areas and where are they promoted?* Retrieved November 23, 2023 from https://casel.org/casel-sel-framework-11-2020/?view=true

Çelenk, S. (2021). *Gençlerde problemli internet kullanımı, akıllı telefon kullanımı ve oyun oynama davranışlarının yaşantısal kaçınma, bilişsel birleşme ve baş etme becerileri açısından incelenmesi* (Thesis No. 697474) [Master's thesis, Maltepe University]. Council of Higher Education National Thesis Center.

Çiftçi, H. (2018). Üniversite öğrencilerinde sosyal medya bağımlılığı. *Manas Sosyal Araştırmalar Dergisi, 7*(4), 417-434. https://dergipark.org.tr/en/pub/mjss/issue/43010/520789#article_cite

Çömlekçi, M. F., & Başol, O. (2019). Gençlerin sosyal medya kullanım amaçları ile sosyal medya bağımlılığı ilişkisinin incelenmesi. *Celal Bayar Üniversitesi Sosyal Bilimler Dergisi, 17*(4), 173-188. **[Crossref]**

Doğrusever, C. (2021). Ergenlerin sosyal medya bağımlılık düzeylerinin bazı sosyo demografik değişkenler açısından incelenmesi. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, *21*(1), 23-42. **[Crossref]**

Ekşi, F. (2019). The mediating role of social media disorder in the relationship of experiential avoidance with psychological symptoms. *ADDICTA: The Turkish Journal on Addictions*, *6*(3), 497-509. **[Crossref]**

Greco, L. A., Lambert, W., & Baer, R. A. (2008). Psychological inflexibility in childhood and adolescence: Development and evaluation of the avoidance and fusion questionnaire for youth. *Psychological Assessment, 20*(2), 93-102. **[Crossref]**

Harris, R. (2022). *ACT'i kolay öğrenmek* (2nd ed.). Litera Publishing.

Hayes, S. C., Masuda, A., Bissett, R., Luoma, J., & Guerrero, L. F. (2004). DBT, FAP, and ACT: How empirically oriented are the new behavior therapy technologies? *Behavior Therapy*, *35*(1), 35-54. **[Crossref]**

Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*(6), 1152-1168. **[Crossref]**

Kabakçı, Ö. F., & Korkut, F. (2008). 6-8. sınıftaki öğrencilerin sosyal-duygusal öğrenme becerilerinin bazı değişkenlere göre incelenmesi. *Eğitim ve Bilim*, *33*(148), 77-86. https://educationandscience.ted.org.tr/article/view/766

Kurşuncu, M. A., Griffiths, M. D., Baştemur, Ş., & Şal, F. (2023). Triangling in family of origin, internet addiction, and social media addiction: what is the role of experiential avoidance in the relationship? *International Journal of Mental Health and Addiction, 23*(3), 2131-2150. **[Crossref]**

Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction-a review of the psychological literature. *International Journal of Environmental Research and Public Health*, *8*(9), 3528-3552. **[Crossref]**

Ndukwu, E. C., Igbo, J. N., & Ndukwu, E. N. (2020). Effect of social media addiction on in-school adolescents' academic achievement and sexual behaviours. *International Academic Journal of Social Sciences and Education, 2*(2), 183-195. http://www.iajournals.org/articles/iajsse_v2_i2_183_195.pdf

Özgenel, M., Canpolat, Ö., & Ekşi, H. (2019). Ergenler için Sosyal Medya Bağımlılığı Ölçeği (ESMBÖ): Geçerlik ve güvenirlik çalışması. *The Turkish Journal on Addictions, 6*(3), 629-662. **[Crossref]**

Özgür, Ö. (2023). *Genç yetişkinlerde sosyal medya bağımlılığı, dürtüsellik ve duygu düzenleme becerisi arasındaki ilişkinin incelenmesi* (Thesis No. 821685) [Master's thesis, İstanbul Aydın University]. Council of Higher Education National Thesis Center.

Sağar, M. E. (2022). Yetişkinlerde sosyal medya bağımlılığının yordayıcısı olarak psikolojik esneklik ve problem çözme becerileri. *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (35), 179-192. **[Crossref]**

Savruk, G. (2023). *Genç yetişkinlik dönemindeki bireylerin psikolojik esneklik ve mizah tarzları ile duygu düzenleme becerileri arasındaki ilişki* (Thesis No. 795469) [Master's thesis, İstanbul Aydın University]. Council of Higher Education National Thesis Center.

Setia, S., Tichy, M., Gilbert, F., & Tichy, M. L. (2024). Innovating social-emotional learning to enhance positive engagement of youth with social media: A comprehensive review of why and how. *Cureus, 16*(9), e70130. **[Crossref]**

Solmaz, B., Tekin, G., Herzem, Z., & Demir, M. (2013). İnternet ve sosyal medya kullanımı üzerine bir uygulama. *Selçuk İletişim*, *7*(4), 23-32. https://dergipark.org.tr/en/pub/josc/issue/19027/200546

Totan, T. (2018). Ergenlerde Sosyal ve Duygusal Öğrenme Ölçeğinin geliştirilmesi. *Marmara Üniversitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi, 48*(48), 41-58. **[Crossref]**

Tutgun-Ünal, A. (2020). Social media addiction of new media and journalism students. *TOJET: The Turkish Online Journal of Educational Technology, 19*(2), 1-12. https://www.proquest.com/openview/ebe719e7b9fd443794f6445b82edc52e/1?cbl=1576361&pq-origsite=gscholar

Xiao, W., Peng, J., & Liao, S. (2022). Exploring the associations between social media addiction and depression: Attentional bias as a mediator and socio-emotional competence as a moderator. *International Journal of Environmental Research and Public Health*, *19*(20), 13496. **[Crossref]**

Ye, J. H., Wang, Y., Nong, W., Ye, J. N., & Cui, Y. (2025). The relationship between TikTok (Douyin) addiction and social and emotional learning: Evidence from a survey of Chinese vocational college students. *International Journal of Mental Health Promotion, 27*(7), 995-1012. **[Crossref]**

Yorulmaz, E., Civgin, U., & Yorulmaz, O. (2020). What is the role of emotional regulation and psychological rigidity in the relationship between stress and pathological internet use? *Dusunen Adam: The Journal of Psychiatry and Neurological Sciences, 33*(1). **[Crossref]**

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.505

Spiritual transcendence, happiness, cognitive and affective mindfulness, and social media addiction among university students: A moderated mediation model study

Abdulselami Sarıgül[1], Alican Kaya[2], Hasan Batmaz[3], Mark D. Griffiths[4]

[1]Department of Sociology, Faculty of Arts and Sciences, Ağrı İbrahim Çeçen University, Ağrı, Türkiye
[2]Department of Guidance and Psychological Counseling, Faculty of Education, Ağrı İbrahim Çeçen University, Ağrı, Türkiye
[3]Department of Psychology, Faculty of Humanities and Social Sciences, Karabük University, Karabük, Türkiye
[4]Department of Psychology, Nottingham Trent University, Nottingham, United Kingdom

Abstract

Social media addiction has become an area of increasing research interest over the past decade. Many factors and variables are associated with the development of social media addiction, as well as others that have remained unexplored. Therefore, the present study examined some of these novel factors. More specifically, the study examined whether happiness mediated the association between spiritual transcendence and social media addiction and whether cognitive and affective mindfulness moderated the mediating effect between these variables. Data were collected from 572 young adults (321 females, 251 males) using convenience sampling. Moderated mediation analysis was conducted using Hayes' PROCESS macro. The results indicated that happiness was a mediator in the relationship between spiritual transcendence and social media addiction. Moderated mediation analysis showed that spiritual transcendence directly predicted social media addiction and also predicted it indirectly through its effect on happiness. Moreover, cognitive and affective mindfulness was a moderator in the relationship between spiritual transcendence and social media addiction, and between spiritual transcendence and happiness. The results also showed that the inverse relationship between spiritual transcendence and social media addiction was partially explained by happiness. The findings suggest that (i) higher levels of spiritual transcendence are associated with greater happiness, and (ii) high cognitive and affective mindfulness, along with increased spiritual transcendence, may be helpful in reducing the adverse effects of social media addiction.

Keywords: spiritual transcendence, happiness, cognitive and affective mindfulness, social media addiction, moderated mediation analysis

Main points

- Happiness mediated the relationship between spiritual transcendence and social media addiction.
- Higher levels of spiritual transcendence were associated with greater happiness.
- High cognitive and affective mindfulness, along with increased spiritual transcendence, may be helpful in reducing the adverse effects of social media addiction.

Introduction

Individuals are in constant communication. Moreover, technological development has changed individuals' communication over time (Kaya, Şata et al., 2025; Türk et al., 2025). For instance, instead of face-to-face communication, increasing numbers of individuals now communicate through social media and share many different aspects of their lives (Choi, 2023). Social media sites comprise a vast sharing network, including news platforms, where individuals communicate and share information (Kaya, Seyrek et al., 2025; Wartberg et al., 2020). In line with technological developments, social media has become an essential part of individuals' daily lives, and individuals in different places can

Corresponding author: Alican Kaya • **Email:** akaya@agri.edu.tr
Received: February 22, 2025 **Accepted:** March 8, 2026 **Published online:** June 22, 2026

Cite as: Sarıgül, A., Kaya, A., Batmaz, H., & Griffiths, M. D. (2026). Spiritual transcendence, happiness, cognitive and affective mindfulness, and social media addiction among university students: A moderated mediation model study. *Addicta: The Turkish Journal on Addictions*, *13*(2), 254-267. https://doi.org/10.15805/addicta.2026.505

communicate more efficiently with the help of technological advances (Khan et al., 2021).

The number of individuals using social network platforms has steadily increased. According to the 2025 Digital report by *We Are Social,* there are currently over 5.76 billion internet users, and over 5.41 billion social media accounts (Kemp, 2025). Moreover, 65.7% of all individuals worldwide are online, and social media use has become an integral part of individuals' daily lives all over the world (Kemp, 2025). Individuals use these platforms for various purposes, including searching for information, sharing interests, thoughts, and activities, establishing social communication, having fun, reducing boredom, escaping from negative emotions, and obtaining positive feedback (Çömlekçi & Başol, 2019). With the increase in the purpose and frequency of use of social media, negative experiences have also begun to emerge (e.g., social media addiction, cyberbullying, etc.) (Khan et al., 2021).

Social Media Addiction

Parallel to technological development, communication and entertainment tools are also diversifying and developing. Social interactions online allow individuals to receive instant feedback. This can increase the time spent on social media and make the platforms attractive, especially among young people (Choi, 2023). Social networking sites are spaces where individuals create personal profiles, communicate with friends, and meet others for their hobbies (Griffiths et al., 2014). Moreover, social networks allow individuals to communicate with each other online at any time, regardless of where they are in the world.

Their widespread use has turned these networks into a critical leisure time activity. This has meant that some individuals want to stay online all the time. However, being online for a long time can lead to various risks (e.g., internet addiction, smartphone addiction, social media addiction, etc.). As a result of increased usage rates and frequency, negative consequences have been reported (Khan et al., 2021). One of the most common adverse effects is problematic social media use, sometimes called 'social media addiction' (Kuss & Griffiths, 2017). Evidence suggests that some social media users may experience mental health problems (Griffiths et al., 2014). Moreover, excessive use of social media is associated with negative behaviors such as substance abuse (Zendle & Bowden-Jones, 2019). Social media addiction can be considered a behavioral addiction (Ergün et al., 2025; Özok et al., 2025). This type of addiction can be similar to substance-related addictions because it incorporates increasing use over time, detrimental emotional and physical reactions, and conflict with interpersonal relationships, occupation, and education (Kuss & Griffiths, 2011).

Spiritual Transcendence

Spiritual transcendence can be defined as a state of being where individuals have overcome the limits of physical existence, which comprises decreasing selfishness and increasing the value of universality (Piedmont & Leach, 2002). As a concept aligned with self-actualization, spiritual transcendence reminds individuals that their bodies and actions are limited. It advises overcoming this limitation with diet, kindness, and worship (İme et al., 2019). Self-actualized individuals who have made transcendence a lifestyle do not act for instant pleasures (Piedmont et al., 2013). Consequently, individuals can live their lives as a harmonious whole with a more extensive and comprehensive perspective and can establish a strong bond with humanity among themselves (İme et al., 2019).

The spiritual transcendence of self-actualized individuals is the unique experience between the things they value and the ability to overcome perceptions, goals, life difficulties, and feelings (İme et al., 2019). Therefore, spiritual transcendence also functions as a coping mechanism. It is also a construct in which individuals associate the state of awareness with a larger paradigm (Piedmont, 1999). Considering the definition and function of spiritual transcendence, it can be posited that the increase in spiritual transcendence among self-actualizing individuals has a protective effect against harmful situations and actions such as addiction (Demiroğlu & Taş, 2021).

Cognitive and Affective Mindfulness

Repeating pleasurable behavior over long periods may cause such behavior to become an addiction for a minority of individuals (Tran et al., 2022). Addicted individuals have problems managing and directing their behaviors if they cannot repeat the behaviors they are addicted to (Sechi et al., 2021). They experience uncomfortable feelings such as restlessness and irritability. Moreover, the repetition of behaviors plays a vital role in addiction-related emotions (Sechi et al., 2021). Emotions such as the desire for the conduct or substance, the feeling of being deprived of the behavior or substance, or the hatred of the behavior or substance play a very active role in the development of addiction and the cessation of the addiction (Chen et al., 2016). This shows a close connection between addiction and cognitive-affective components (Chen et al., 2016). In short, recognizing and regulating them is necessary for a healthy mental state among individuals.

It is thought that mindfulness reduces individuals' interest in internal and external phenomena, helps them avoid attachment, facilitates emotional regulation, and improves well-being (Kumar, 2002). Mindfulness refers to paying attention in a particular way on purpose, in the present moment, and nonjudgmentally (Kabat-Zinn, 1994). Mindfulness of emotions allows individuals to recognize and define emotions that arise in themselves and others (Dizen et al., 2005). Affective mindfulness for spiritual well-being moves in parallel with emotion regulation. Moreover, emotion regulation comprises all abilities, such as controlling attention, controlling impulses, leaving behind or changing extreme reactions, and giving self-calming suggestions (McClelland et al., 2018). Individuals can control their emotions through mindfulness by indirectly increasing affective mindfulness of emotion regulation.

Theoretical explanations have drawn attention to mindfulness's cognitive and affective components (Kabat-Zinn, 2003). Mindfulness's cognitive components can be associated with individuals' mindfulness of their thoughts, planning what to do before the behavior occurs, and arranging their ideas (Demir & Doğanay, 2009). On the other hand, affective mindfulness components can be associated with individuals' mindfulness of their emotions, controlling them, and overcoming adverse effects (Feldman et al., 2007). Cognitive and affective mindfulness contribute to a more systematic and orderly lifestyle for individuals. These effects of mindfulness are often used as a tool to overcome psychological and behavioral problems that affect individuals' lives, such as stress, anxiety, and depression (Johannsen et al., 2022), problem gambling (Shonin et al., 2013), problematic internet use (Sun et al., 2021), and social media addiction (Sriwilai & Charoensukmongkol, 2016).

Happiness

According to Aristotle, happiness is expressed as one of the primary pursuits of individuals (Cashen, 2012). For this reason, it has constantly attracted the attention of researchers. The empirical evaluation of happiness has intensified. Happiness can be defined as the satisfaction of long-term and short-term wishes and the gathering of pleasure, joy, and life satisfaction in the same place (Lyubomirsky, 2007). It can be interpreted as individuals' general satisfaction with their lives and mental well-being (Diener, 2000). Happiness improves life by helping people feel healthy, prolong life expectancy, choose a job, increase income, and interact socially with other benefits (Gencer, 2018). Based on these definitions, happiness is a concept that evokes good feelings and leads to positive mental well-being, productive goals, increased satisfaction, and good quality of life.

Happiness, which is related to the intensity of emotional elements, consists of three essential components (Argyle et al., 1989). These are (i) having a positive mood, (ii) being attached to life, and (iii) having meaning in life. In addition, Diener (2006) associates happiness with a general assessment of life satisfaction and a good life. In this context, happiness is associated with positive emotions and behaviors such as positive well-being, life satisfaction, and high self-efficacy (Mortezabeigi et al., 2022). On the other hand, unhappiness is often associated with negative emotions and behaviors such as dissatisfaction, depression, and chronic health problems (James et al., 2022), as well as detrimental behaviors (e.g., social media addiction; Demir, 2021).

The Present Study

Türkiye's dominant spiritual perspective (where the present study was carried out) has been dramatically influenced by Sufism. The basis of Sufism (i.e., Islamic mysticism) is spiritual training, where individuals protect themselves from the effects of temporary worldly life to get closer to Allah by purifying themselves from their desires, purifying their souls, and attaining happiness by striving for spiritual transcendence throughout their lives (Sa'dudin, 2020). In the context of the present study, it refers to a connection between spiritual transcendence and happiness. Sufism defines the state of spiritual transcendence with the concept of a perfect human being (Doğan, 2014). An ideal human being can be defined as someone who understands the world's transience and has reached happiness (Sa'dudin, 2020). This can enable individuals to control their behavior and emotions by creating a conscious hierarchy of actions and indirectly preventing problems such as addiction. Individuals who develop cognitive and affective mindfulness can be successful and happy if they learn to use their goals and guidance tools (Cruz et al., 2016). In addition, spiritual transcendence may be related to impulse control and delayed gratification and may therefore protect individuals from addiction and make them happy (Herchenroeder et al., 2022).

Broaden-and-build theory (Fredrickson, 2004) suggests that positive emotions can enhance an individual's mindset and improve well-being by increasing personal resources. The theory is based on two essential elements. Firstly, positive emotions expand an individual's thought world and create unique mental bases for them. Consequently, the individual is prevented from displaying other negative emotions or negativities. The second benefit of positive emotions is that they enable the individual to develop new positive social bonds, actions, and thoughts due to their expansion of mental capacity. A significant purpose of these resources is to improve the chances of survival by allowing individuals to cope with problems successfully (Fredrickson, 2004). Moreover, mindfulness-based cognitive therapy posits that mindfulness-based interventions can alleviate addictive behaviors by increasing self-awareness and altering an individual's relationship with thoughts and impulses (Kuyken et al., 2010). Consequently, cognitive and affective mindfulness and happiness contribute to elevating positive emotions and preventing addiction to pleasure-oriented events (e.g., social media use).

In addition to the aforementioned theoretical framework, empirical studies have shown that spirituality and self-transcendence have been used effectively in treating addictions (Er & Buzlu, 2022; Garland et al., 2022; Roy et al., 2021). Several studies have demonstrated that spirituality and spiritual practices are associated with positive emotions (e.g., happiness) (Anli & Bilgin, 2022; Martin et al., 2023). Happiness is negatively related to social media addiction (Baltaci, 2019) and problematic internet use (Yilmaz & Karaoglan Yilmaz, 2023), and it is also positively associated with social media use (Pittman & Reich, 2016). Studies have also demonstrated that mindfulness can contribute to the sense of well-being on a hedonic and eudaimonic level, and significant associations have been found between the use of mindfulness and a variety of cognitive and affective indicators of mental health and happiness (Brown & Cordon, 2009; Coo & Salanova, 2018). In light of theoretical and empirical evidence, the present study examined the mediating role of happiness in the relationship between social media addiction and spiritual transcendence, and in moderating the positions of cognitive and affective

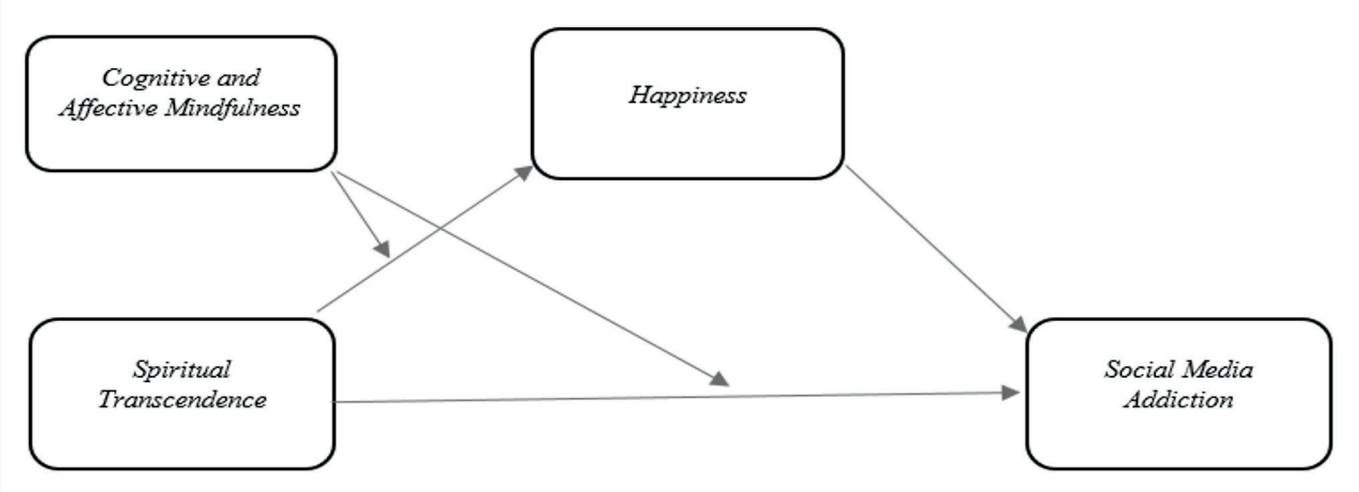

Figure 1. Proposed model of the relationship between spiritual transcendence, cognitive and affective mindfulness, happiness, and social media addiction

mindfulness in this relationship in the same model (see Figure 1).

The present study is beneficial for the advancement of the literature, practical applications, and informed policy development. For example, social media addiction is a phenomenon that becomes increasingly complex due to the increasing opportunities offered by social media. Therefore, studies that examine its complex nature are needed. Among its practical contributions, the study's findings will enable families to access protective and preventive interventions, and practitioners to conduct more effective interventions in addressing social media addiction. Moreover, it will provide policymakers with resources to develop applications that address the academic and psychosocial risks associated with the negative effects of social media.

Consequently, the following hypotheses (H_s) were posited: spiritual transcendence negatively predicts social media addiction (H_1), spiritual transcendence positively predicts happiness (H_2), happiness negatively predicts social media addiction (H_3), happiness has a mediating effect in the relationship between spiritual transcendence and social media addiction (H_4), cognitive and affective mindfulness have a moderating effect on the relationship between spiritual transcendence and happiness (H_5), and cognitive and affective mindfulness have a moderating effect on the relationship between spiritual transcendence and social media addiction (H_6).

Methods

Participants and Procedure

The present study was conducted using a cross-sectional survey. This method was utilized to explain the relationship between spiritual transcendence, happiness, and cognitive and affective mindfulness, which are believed to influence social media addiction. To achieve this objective, a series of mediation and moderation analyses were conducted. The mediating effect of happiness on the relationship between spiritual transcendence and social media addiction, as well as the moderating role of cognitive and affective mindfulness on the pathways from spiritual transcendence to happiness and social media addiction, were examined. Demographic information of the participants is presented in Table 1.

Power analysis was performed to determine the required sample size for the present study. Therefore, alpha was set at the standard level of 0.05, small effect size $r = 0.20$, and power at 0.80 (Cohen, 2013). According to the determined parameters, the minimum sample size was 395 participants. A total of 590 people initially participated in the study. In addition, the Mahalanobis distance coefficient was examined to determine whether the dataset had extreme values. A total of 18 outliers in the dataset were removed. The final sample comprised 572 participants (321 females, 251 males; M_{age} = 22.89 years, SD = 4.84), aged 18-49 years. Convenience sampling was used to recruit the sample because it is cost-efficient regarding time, money, and effort (Şata, 2020).

Participants were recruited from students attending university classes. The researchers made announcements to all participants they could reach via social media platforms (e.g., *Facebook, Instagram, X*). A pre-prepared link was sent to university students who wanted to participate in the study. Participants in the study were from the Eastern provinces of Türkiye (e.g., Ağrı, Kars, and Erzurum). The data were collected online through *Google Forms.* The survey took approximately 20 minutes to complete. The participants provided electronic informed consent before completing the study. They were assured that all information provided was anonymous and confidential and that they could stop answering without penalty. Ethics approval for the present study was obtained

Table 1. Participants' demographic characteristics (N=572)

Variables		Frequency (n)	Percentage (%)
Gender	Female	321	56.1
	Male	251	43.9
Socioeconomic levels	Low	169	29.5
	Medium	358	62.6
	Upper	45	7.9
Daily usage of the internet	0-60 minutes	60	10.5
	61-120 minutes	114	19.9
	121-180 minutes	122	21.3
	181 minutes or more	276	48.3
Grade	1st grade	82	14.3
	2nd grade	122	21.3
	3rd grade	153	26.7
	4th grade	215	37.6
Total		572	100

from the first author's university ethics committee (Reference number: E. 34364). Moreover, the study was carried out according to the Declaration of Helsinki.

Measures

Cognitive and Affective Mindfulness Scale-Revised (CAMS-R)

The CAMS-R (Feldman et al., 2007; Turkish version: Çatak, 2012) was used to assess cognitive and affective mindfulness based on internal experiences. The 10-item Turkish version contains items (e.g., *"I can accept things I cannot change"* and *"It is easy for me to keep track of my thoughts and feelings"*) that are scored on a four-point scale from 1 (*Rarely*) to 4 (*Almost always*). Scores range from 4 to 40, and higher scores indicate higher cognitive and affective mindfulness. The internal consistency in the present study was good (Cronbach's α = 0.70; McDonald's ω = 0.71).

Spiritual Transcendence Scale (STS)

The STS (Piedmont, 1999; Turkish version: İme et al., 2019) was used to assess spiritual transcendence. The 24-item Turkish version contains items (e.g., *"I believe there is a bigger plan for life"* and *"I had a spiritual experience where I forgot where I was or how time passed"*) rated on a five-point scale from 1 (*Rarely*) to 5 (*Almost always*). The scores range from 24 to 120, and higher scores indicate a higher level of transcendence. The internal consistency in the present study was very good (Cronbach's α = 0.80; McDonald's ω = 0.80).

Oxford Happiness Questionnaire Short Form (OHQ-SF)

The OHQ-SF (Hills & Argyle, 2002; Turkish version: Doğan & Çötok, 2011) was used to assess happiness. The seven-item Turkish version contains items (e.g., "*I am quite happy with everything in my life*" and *"I become aware of the beauty around me"*) that are rated on a five-point scale from 1 (*Strongly Disagree*) to 5 (*Completely Agree*). The scores range from 7 to 35, and higher scores indicate greater happiness. The internal consistency in the present study was adequate (Cronbach's α = 0.64; McDonald's ω = 0.64).

Social Media Addiction Scale (SMAS)

The Turkish SMAS (Günüç, 2009; revised by Çömlekçi & Başol, 2019) was used to assess the risk of social media addiction. The seven items (e.g., *"People around me complain about the time I spend on social media"* and *"Even if my friends call me, I can't get away from social media"*) are rated on a five-point scale from 1 (*Never*) to 5 (*Always*). The scores range from 7 to 35, and higher scores indicate a greater risk of social media addiction. The internal consistency in the present study was good (Cronbach's α = 0.75; McDonald's ω = 0.75).

Statistical Analysis

All analyses used SPSS version 26, Hayes' (2017) PROCESS macro (version 3), and G* Power 3.1.9.7 programs. Before the analyses, the skewness and kurtosis values were examined to understand whether the necessary assumptions were met for the parametric tests. The data met the criteria of normality and linearity. A skewness and kurtosis value in the range of |2| indicates a normal distribution of the variables (Field, 2009). In addition, Pearson correlations between the variables were examined, although the correlation values were not very high. Moreover, tolerance, variance inflation factor (VIF), and confidence interval (CI) values were examined to test for multicollinearity. Acceptable values for tolerance and VIF are less than 10, and the CI value is between 10-30 (Çokluk et al., 2012). The values were in the expected range, with no multicollinearity issues. Analyses were therefore carried out with all 572 participants. The bootstrap confidence intervals

(5,000 re-samplings) were used to determine the mediating effect.

Results

Descriptive Statistics

Descriptive statistics and correlations between variables are presented in Table 2. Social media addiction had a moderate negative relationship with spiritual transcendence (r = -.29, p < .001) and a moderate negative relationship with both happiness (r = -.24, p < .001) and cognitive and affective mindfulness (r = -.26, p < .001). Spiritual transcendence had a positive relationship with happiness (r = .31, p < .001) and a non-significant relationship with cognitive and affective mindfulness (r = -.03, p > .05). Cognitive and affective mindfulness also showed a positive and low correlation with happiness (r = .12, p < .001).

Mediation Analysis

Mediation analysis was conducted to determine whether happiness mediated the relationship between spiritual transcendence and social media addiction. Model 4, using the PROCESS macro, was used to determine whether there was a mediation effect (Preacher & Hayes, 2008). As seen in Table 3, spiritual transcendence predicted social media addiction (direct effect, β = -.10, p < .001, 95% CI = [-.06, -.23]), confirming H_1. The results also indicated that spiritual transcendence was a positive predictor of happiness (β = .14, p < .05, 95% CI = [.27, .003]) and happiness was a negative predictor of social media addiction (β = -.22, p < .001, 95% CI = [-.34, -.10]), confirming H_2 and H_3. Spiritual transcendence was a negative predictor of social media addiction (β = -.38, p < .001, 95% CI = [-.60, -.13]), and cognitive and affective mindfulness was a negative predictor of social media addiction (β = -1.08, p < .001, 95% CI = [-1.66, -.35]). In addition, cognitive and affective mindfulness significantly predicted happiness (β = -.53, p < .001, 95% CI = [-.95, -.16]). In the model where happiness was added as a mediator, the coefficient was significant (indirect effect, β = -.023, p < .001, 95% CI = [-.03, -.01], total effect, β = -.12, p < .001, 95% CI = [-.09, -.28]), confirming H_4.

Moderated Mediation Analyses

The moderated mediation model was examined to determine whether happiness mediated the effect of spiritual transcendence on social media addiction. To test H_5 and H_6, Model 8 was used with the PROCESS macro to conduct moderated mediation analysis (Preacher & Hayes, 2008). The moderated mediation model had a mediator (happiness) and a moderator (cognitive and affective mindfulness). As Table 4 shows, cognitive and affective mindfulness significantly moderated the relationship between spiritual transcendence and happiness (β = .0086, p < .001; 95% CI = [.0039, .0132]), confirming H_5. Moreover, cognitive and

Table 2. Descriptive statistics and Pearson correlations among variables

	Social media addiction	Transcendence	Happiness	Mindfulness
Social media addiction	-			
Transcendence	- .29**	-		
Happiness	- .24**	.31**	-	
Mindfulness	-.26**	-.03	.12**	-
Mean	16.95	76.05	21.73	25.94
S.D.	5.63	12.46	3.73	3.93
Skewness	-.19	-.20	-.06	.61
Kurtosis	-.72	.55	-.12	-.34

p<.001; Correlations among all variables in the present study are shown (social media addiction, spiritual transcendence, happiness, cognitive, and affective mindfulness). It was observed that the correlation variables were at medium and low levels.

Table 3. Mediation analysis results

Path	Coefficient	95% CI	
		LL	UL
Spiritual transcendence Happiness	.14	.30	.003
Happiness → Social media addiction	-.22	-.34	-.10
Spiritual transcendence Social media addiction	-.38	-.60	-.13
Cognitive and affective mindfulness → Social media addiction	-1.08	-1.66	-.35
Cognitive and affective mindfulness → Happiness	-.53	-.95	-.16
Indirect effect	-.02	-.03	-.01
Direct effect	-.10	-.14	-.07

CI: confidence interval; Bootstrap sample size: 5,000; LL: lower limit; UL: upper limit.

Table 4. Moderated mediation analyses

Antecedent	M (Happiness)			Y (Social media addiction)		
	Coeff.	SE	p	Coeff.	SE	p
X (Spiritual transcendence)	-.1469	.0674	<.05	-.3812	.0993	<.001
M (Happiness)				-.2247	.0616	<.001
W (Cognitive and affective mindfulness)	-.5334	.1833	<.05	-1.0831	.2711	<.001
X * W	.0086	.0024	<.001	.0096	.0035	<.05
Constant	29.8103	5.2129	<.001	60.0166	7.8698	<.001
	R=.36; R^2=.13 F=28.67; p<.001			R=.42; R^2=.18 F=30.97; p<.001		

Conditional indirect effect(s) of spiritual transcendence (X=> M)				
	Bootstrapped indirect effect	Boot SE	Boot LLCI	Boot ULCI
-1 *SD*	.0420	.0185	.0057	.0738
M	.0678	.0138	.0408	.0948
+1 *SD*	.1107	.0126	.0860	.1355

Conditional indirect effect(s) of spiritual transcendence (X=> Y)				
	Bootstrapped indirect effect	Boot SE	Boot LLCI	Boot ULCI
-1 SD	-.1702	.0273	-.2237	-.1166
M	-.1414	.0206	-.1819	-.1009
+1 SD	-.0934	.0197	-.1321	-.0547

Index of moderated mediation				
	Index	Boot SE	Boot LLCI	Boot ULCI
Cognitive and affective mindfulness	-.0019	.0009	-.0039	-.0005

Coeff: coefficient; CI: confidence interval; LL: lower limit; UL: upper limit; Boot: boostrapped; SE: standard error.

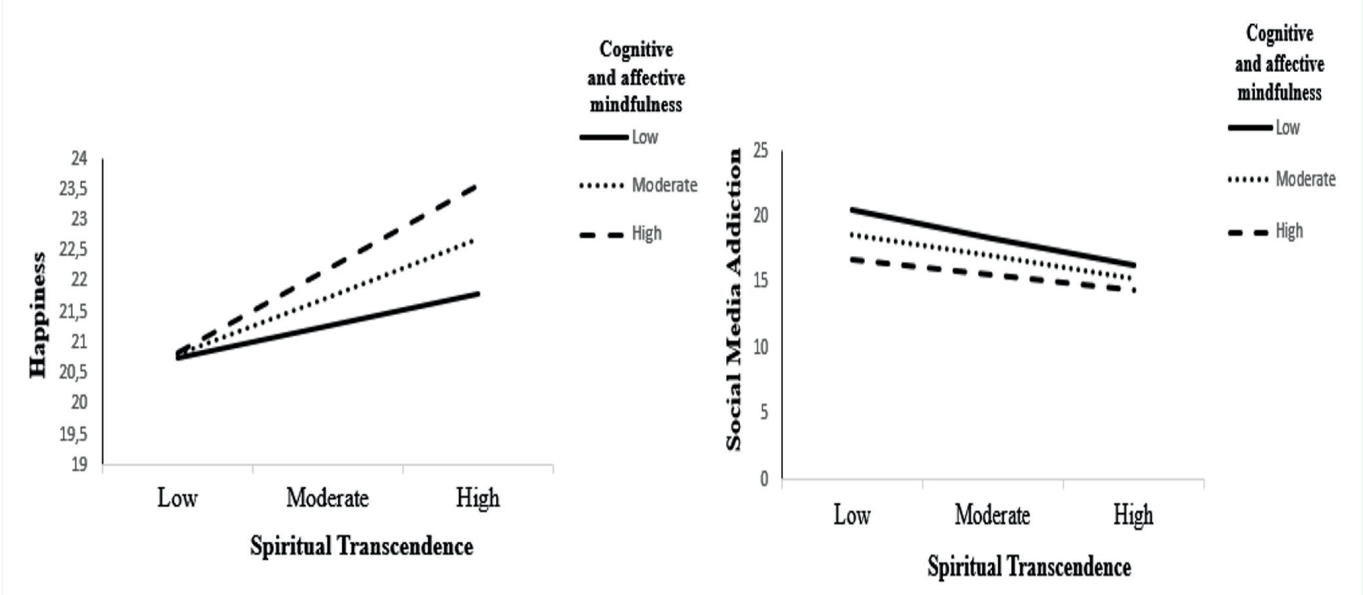

Figure 2. Cognitive and affective mindfulness moderator effect

affective mindfulness significantly moderated the relationship between spiritual transcendence and social media addiction (β = .0096, p < .001; 95% CI = [.0027, .0165]), confirming H_6 (see Figure 2).

Lastly, the present study investigated the interaction between spiritual transcendence and cognitive affective mindfulness in predicting happiness, at 1 SD below the mean, at the mean, and 1 SD above, respectively. As can be seen in Table 4, the conditional effect of spiritual transcendence on happiness was significant across all levels of cognitive and affective mindfulness, indicating that it was significant at low levels (β = .0420, 95% CI = [.0057, .0738]), moderate levels (β = .0678, 95% CI = [.0408, .0948]), and high levels

(β = .1107, 95% CI = [.0860, .1355]). Moreover, the conditional effect of spiritual transcendence on social media addiction was significant across all levels of cognitive and affective mindfulness, indicating that it was significant at low levels (β = -.1702, 95% CI = [-.2237, -.1166]), moderate levels (β = -.1414, 95% CI = [-.1819, -.1009]), and high levels (β = -.0934, 95% CI = [-.1321, .0547]). These results indicated that spiritual transcendence (via happiness) had a mediating effect on social media addiction, while cognitive and affective mindfulness had a moderating effect.

Discussion

The present study examined the (i) mediating effect of happiness in the relationship between spiritual transcendence and social media addiction and (ii) the moderating effect of cognitive and affective mindfulness in the relationship between transcendence and social media addiction. It also proposed a moderated mediation model to examine the moderating effect of cognitive and affective mindfulness between spiritual transcendence and happiness. The findings supported all six hypotheses (with the support for H_1 to H_3 being stronger than H_4 to H_6). The results showed a significant association between spiritual transcendence and happiness. However, due to the cross-sectional study design, the findings do not support a direct causal relationship in which spiritual transcendence significantly influenced happiness. Rather, the findings indicate that the variables showed significant relationships in the expected directions. Also, happiness had a significant negative association with social media addiction. The findings also showed that individuals who reported high levels of spiritual transcendence had higher levels of happiness and lower levels of social media addiction.

The study's first key finding was that spiritual transcendence negatively predicted social media addiction. Spiritual transcendence is expressed as the ability of individuals to overcome their perceptions, goals, life difficulties, and feelings (İme et al., 2019). Previous studies have supported H_1 (i.e., spiritual transcendence predicts social media addiction) (Almenayes, 2015). Foley et al. (2015) emphasized that the relationship between spirituality and social media use is an area that needs to be investigated. A few studies have found a significant negative relationship between social media addiction and spiritual transcendence (Demiroğlu & Taş, 2021). Another study reported that individuals with high spiritual well-being levels had low social media addiction scores (Wood et al., 2016). Wood et al. posited that those addicted to social media might have decreased specific aspects of their spirituality or that spirituality might enhance self-efficacy, resulting in less reliance on social media for meeting their psychological needs.

The study's second hypothesis (H_2: spiritual transcendence predicts happiness level) has been supported by many studies showing that spiritual transcendence is positively associated with happiness (e.g., Abdel-Khalek, 2007). More specifically, research conducted in Arab countries in the Middle East, Asia, and Africa have found that spiritual transcendence was significantly and positively correlated with happiness (Abdel-Khalek et al., 2019). Because the independent variable in the present study was spiritual transcendence, it is necessary to mention self-actualization because Maslow (2013) emphasized that there is self-actualization in the spiritual identity of individuals. Maslow (1969) also modified his model to place self-transcendence as a motivating step beyond self-actualization. Maslow later divided the top tier of the hierarchy of self-actualization needs to add self-transcendence and spiritual needs (Koltko-Rivera, 2006). Towards the end of his life, Maslow began to view spirituality as a higher level of self-actualization and an essential component of humanity (Maslow, 1969). As the humanistic approach emphasizes, how individuals achieve real happiness depends on how they progress in the hierarchy of needs. In a study conducted with individuals residing in different parts of the world (50% in the United States, 20% in Europe, and 15% in Türkiye), happiness levels were observed among those with high levels of self-actualization (Esat et al., 2021). These findings support those hypothesized in the present study (H_2).

With the development of technology, many convenient and time-consuming platforms have entered people's lives (e.g., social media platforms). Studies have reported a negative association between happiness and social media addiction (Erduran Tekin, 2025; Kozan et al., 2019). To explain the positive effect of happiness in reducing social media addiction, the characteristics that a happy individual must be known. For example, according to Myers and Diener (1995), the main features distinguishing happy individuals from unhappy individuals are high self-esteem, optimism, and extroversion. A previous study reported that extroversion negatively affected *Facebook's* higher problematic use (Marino et al., 2016). In contrast, introversion has been positively associated with the problematic use of *Twitter* (Kircaburun, 2016). In addition, it has been reported that high self-esteem, another characteristic of happy individuals, is negatively associated with social media addiction (Koçak et al., 2021). Therefore, unhappy individuals may be at risk of becoming more addicted to social media than happy individuals. These studies support those of the present study (H_3 – happiness predicts social media addiction).

Another finding in the present study was that the partial mediating effect of happiness was significant in the relationship between spiritual transcendence and social media addiction. Demiroğlu and Taş (2021) showed that individuals with high spiritual transcendence are less dependent on social media. However, it should be noted that the beta values obtained in the present study were small. Small beta values do not mean that the results necessarily contain strong or significant relationships, and therefore, caution should be exercised in interpreting the findings. In the present study, it was observed that happiness had a partial mediating effect on social media addiction. When individuals with high spiritual transcendence feel happy, their social media addiction is likely to decrease. However, the low effect size in this relationship indicates that the generalizability of the findings is limited.

One of the factors contributing to the partial mediating effect of happiness on social media addiction may be individuals' sense of psychological superiority. Psychological superiority refers to the feeling of being better or more successful than others (Twenge & Campbell, 2009). Previous research suggests that individuals are happier when their self-actualization needs are fulfilled and that this increased happiness may reduce excessive social media use (Andreassen et al., 2017; Neubaum & Krämer, 2015; Ryff & Keyes, 1995; Satici, 2019). When individuals with a high spiritual transcendence feel happy, this is likely to reduce social media addiction. One study found that self-transcendence significantly predicted happiness (Dhillon, 2020), and another found that social anxiety, loneliness, and unhappiness were together predictors of social media addiction (Baltaci, 2019). Although there is no consensus in the literature, this finding supports the idea that lonely, socially anxious, and unhappy individuals are at greater risk of negative social media use.

Although spiritual transcendence is associated with happiness, the indirect pathway from spiritual transcendence to social media addiction via happiness may not be explained adequately due to a relatively small coefficient. The weak indirect pathway can be explained by focusing on the different relationships that individuals with high spiritual transcendence have with social media compared to those with low spiritual transcendence. Happiness may have an inhibiting effect on social media addiction, and the variable that appears to lead to this inhibiting effect is the spiritual transcendence of individuals. It is thought that individuals are happier when they fulfill self-actualization requirements. Individuals who feel happy are less likely to use social media problematically. Individuals seeking spiritual transcendence can engage in experiences such as prayer, connecting with nature, and participating in rituals that promote mental well-being, including finding meaning, purpose, and inner peace. It may help individuals with high spiritual transcendence use social media less and prevent the risk of addiction.

On the other hand, individuals with low spiritual transcendence may participate less in rituals that promote mental well-being and happiness, which may lead them to use social media problematically. Overall, increased spiritual transcendence promotes happiness, resulting in decreased social media addiction. These spiritual practices can help individuals reduce their time spent on social media and mitigate addiction. In this relationship, the mediating effect of the individual's life satisfaction, contentment, joy, and generally positive emotions (i.e., happiness) may be the factors that prevent the path to social media addiction. Consequently, H_4 was confirmed (i.e., that happiness would have a mediating effect on the relationship between spiritual transcendence and social media addiction).

The present study also found that cognitive and affective mindfulness moderated the relationship between spiritual transcendence and happiness. Here, mindfulness may have reinforced the positive effect of spiritual transcendence. It likely lowers the risk of social media addiction by facilitating happiness among individuals with medium and high levels of cognitive and affective mindfulness. This finding indicates that cognitive and affective mindfulness is a characteristic of personality that is associated with the happiness level of individuals. This finding suggests that cognitive and affective mindfulness are personality traits that are associated with individuals' happiness levels. Individuals with moderate to high levels of cognitive and emotional mindfulness reported higher levels of happiness, suggesting that it is a protective factor in preventing social media addiction. Such individuals are likely to feel greater satisfaction with spiritual transcendence, which fulfills individual requirements. A study that supports these findings found positive relationships between cognitive mindfulness and subjective happiness (Dilmaç & Yılmaz, 2019). In the present study, it was found that the level of spiritual transcendence of individuals was directly associated with happiness and that cognitive and affective mindfulness had a moderating effect on the relationship. Consequently, H_5 was confirmed (cognitive and affective mindfulness moderates spiritual transcendence and happiness).

The last important finding of the study was that cognitive and affective mindfulness moderated the relationship between spiritual transcendence and social media addiction. The identified relationship may be spurious because the beta values obtained were again low. It was found that the risk of social media addiction was higher when spiritual transcendence was lower among individuals with low cognitive and emotional awareness. This finding suggests that individuals' high levels of spiritual transcendence and cognitive and affective mindfulness may facilitate less dependence on social media use due to its moderating effect. Additionally, the present study's findings showed a statistically non-significant correlation between cognitive and emotional awareness and spiritual transcendence.

A previous study reported that individuals with social media addiction have low mindfulness levels (Charoensukmongkol, 2016). Another study observed that individuals with high cognitive and affective mindfulness also had high levels of spiritual transcendence (Verhaeghen, 2019). These findings suggest that cognitive and affective mindfulness play an important role in the relationship between spiritual transcendence and social media addiction. Cognitive mindfulness is used by cognitive behavioral therapists as an intervention to overcome addiction (Şenormancı et al., 2010). However, the low beta values obtained in the present study indicate that caution should be exercised regarding the strength of the relationship between cognitive and affective mindfulness and spiritual transcendence.

It is expected that individuals with high cognitive and affective mindfulness are less likely to spend excessive time on social media platforms. Mindfulness reflects individuals' ability to focus on any activity they do and not be easily distracted by other things (Kabat-Zinn, 1990). Individuals addicted to social media have difficulty focusing on the present because they cannot control their impulses to access social media platforms. It has been reported that individuals with social media addiction have low mindfulness levels (Sriwilai & Charoensukmongkol, 2016). Individuals addicted to

social media will be anxious if they cannot constantly check or update their status on social media sites (Andreassen et al., 2012). This situation can cause distraction and, therefore, decrease mindfulness. A study with Turkish participants reported that *Facebook* addiction was negatively related to mindfulness (Eşkisu et al., 2020).

Moreover, a different study reported the beneficial effect of mindfulness on stress caused by compulsive mobile social media use (Apaolaza et al., 2019). Other studies have reported that problematic social media use is negatively associated with mindfulness (Kircaburun et al., 2019). These findings are also associated with studies showing the positive effect of mindfulness on spirituality (Verhaeghen, 2019). Therefore, high levels of mindfulness and spiritual transcendence appear to positively reduce social media addiction among individuals. Consequently, H_6 was confirmed (cognitive and affective mindfulness has a moderating effect on the relationship between spiritual transcendence and social media addiction).

Limitations, Strengths, and Future Research

As in all studies, the present study has some limitations. First, the study was cross-sectional, meaning causality between the study variables could not be determined. Therefore, longitudinal research studies are needed to provide insight into the causal relationships of the variables in the present study. In addition, data were collected from several universities using a non-probability sampling technique. Consequently, the generalizability of the present study's findings to other age groups in and outside Türkiye is likely to be limited. A further limitation of this study is that it relied on self-report data, which can be subject to biases (e.g., social desirability and memory recall). Further research using a larger and more nationally representative sample would overcome these limitations. The online data were also collected during the COVID-19 pandemic. Individuals living in isolated communities may have naturally spent more time using social media than usual, which may have affected the findings. Also, during the pandemic, individuals' happiness levels may have been lower than expected, and more time may have been spent on spiritual activities.

Despite these limitations, the data obtained from the structural model are valuable. Cognitive and affective mindfulness moderated the relationships between spiritual transcendence and happiness and between spiritual transcendence and social media addiction. This shows that the relationship between spiritual transcendence and social media addiction appears to be partially explained by happiness. Consequently, individuals with high levels of social media addiction have low levels of happiness, while individuals with spiritual transcendence have high levels of happiness. Moreover, evaluating social media addiction in terms of spiritual transcendence is another novel aspect of the research.

To further understand the relationship between applied spiritual development and happiness, future research could comprise larger-scale studies to comprehend the impact of spiritual practices on individuals' happiness. When considering the role of mindfulness, more emphasis could be placed on varying levels of mindfulness among individuals highlighted in the present study. Research with individuals who have low levels of mindfulness may help to understand how these individuals perceive the relationship between spiritual development and happiness. Studies reviewing strategies for reducing social media addiction suggest a need for a better understanding of the positive impact of spiritual growth on decreasing social media addiction. In this context, meditation and mindfulness practices can boost individuals' self-awareness, aiding and leading them to adopt a more conscious approach to their use of social media.

Such practices can lessen impulsive reactions during social media use, promoting healthier usage habits. Organizing programs that allow individuals to detach from social media by engaging in spiritual practices (such as prayer, chanting, meditation, yoga, spiritual counseling, connecting with nature, rituals, and celebrations) during specific intervals could be beneficial. Spiritual groups or communities provide opportunities for individuals to share the effects of social media usage collectively and offer mutual support. These environments facilitate opportunities for information exchange, sharing experiences, and learning strategies for healthy use. Spiritual practices can help individuals find inner peace and contentment, reducing the need for excessive social media use. Therefore, by promoting real-world relationships and engaging in social interactions, these practices may help individuals reduce their dependency levels on social media.

Regarding the combined use of mindfulness and spiritual development, studies could investigate how mindfulness and spiritual development can be used together and their joint role in reducing adverse effects, such as social media addiction. This could focus on developing approaches beneficial for both mental and spiritual well-being. Research on the relationship between practice and internal change could focus on practical applications of spiritual practices to better understand the relationship between individuals' internal changes and increased happiness. This might involve investigating the impact of small changes made in daily life on individuals' happiness.

Theoretical Implications and Practical Implications

The present study emphasizes the complex interaction between spiritual transcendence, cognitive and affective mindfulness, happiness, and their impact on social media addiction. According to the studies by Howard (2018) and Utomo and Marianta (2023), individuals with high levels of spiritual transcendence have lower levels of social media addiction than individuals with low levels of spiritual transcendence. While research exists on the relationship between social media addiction and spiritual transcendence,

the absence of studies on the role of happiness and cognitive and affective mindfulness is a novel addition to the field. Consequently, using the findings of the study could help in the development of interventions promoting individuals' attainment of spiritual transcendence, which may help reduce the adverse effects of social media addiction. Moreover, a significant negative relationship was found between happiness and social media addiction.

The negative association between happiness and social media addiction strengthens the broader discourse on the psychological consequences of excessive social media use (Kross et al., 2013). The present study adds further evidence that spiritual transcendence may have a significant effect on social media addiction. Moreover, happiness had a mediating role in this relationship. This finding highlights that the effectiveness of spiritual transcendence in promoting positive emotions may also contribute to reducing social media addiction. Additionally, mindfulness has different levels of effectiveness (i.e., moderation effects) in these relationships.

The moderating effect of cognitive and affective mindfulness in the relationship between spiritual transcendence and social media addiction is a novel addition to the extant literature, reflecting the importance of mindfulness-based interventions in preventing problematic social media use (Demiroğlu & Taş, 2021). Nevertheless, when happiness is included in the relationship between spiritual transcendence and social media addiction, the direct effect of core spiritual transcendence decreases. Furthermore, the moderating effect of cognitive and affective mindfulness in the relationship between spiritual transcendence and social media addiction was significant. Both the moderating role of cognitive and affective mindfulness and the mediating role of happiness address essential gaps in the literature regarding the impact of spiritual transcendence on social media addiction.

Even if an individual has a high level of spiritual transcendence, the impact of their spiritual experiences on pursuits in happiness might be limited if they lack affective and mental mindfulness. However, the presence of cognitive and affective mindfulness may assist in a more positive influence on the spiritual pursuit of happiness. The present study's findings emphasize the need for a nuanced understanding of factors influencing social media addiction. Merely encouraging spiritual transcendence may not sufficiently address the complexity of excessive social media use. Instead, a comprehensive approach integrating cognitive and affective mindfulness strategies is crucial (Moqbel et al., 2023; Sriwilai & Charoensukmongkol, 2016). The findings indicate that spiritual transcendence alone may not adequately impact individuals' problematic social media use and highlight the necessity of cognitive and affective mindfulness to prevent social media addiction.

Therefore, interventions to reduce social media addiction should promote spiritual transcendence and consider developing mindfulness strategies to achieve this goal. For example, psychoeducation programs can be used to foster spiritual transcendence, focusing on values, meaning, and nature. Additionally, practices such as digital detox and breathing exercises can be employed to cultivate mindfulness. This can increase individuals' connection to the moment and distance them from the virtual reality offered by social media.

Acknowledgements

We sincerely thank all participants who dedicated their valuable time to this research and contributed to the data collection.

Author contributions

Conception and design: A.S., A.K., H.B.; Data acquisition: A.S., A.K., H.B., M.D.G.; Data analysis: A.S., A.K., H.B., M.D.G.; Data interpretation: A.S., A.K., H.B., M.D.G.; Drafting of this study: A.S., A.K., H.B.; Critical revision of this study: A.K., M.D.G. All authors reviewed the results, approved the final version of this study, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Ağrı İbrahim Çeçen University Scientific Research Ethics Committee (Date: February 22, 2023, Decision/Protocol No: E.34364). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Abdel-Khalek, A. M. (2007). Religiosity, happiness, health, and psychopathology in a probability sample of Muslim adolescents. *Mental Health, Religion & Culture, 10*(6), 571-583. **[Crossref]**

Abdel-Khalek, A. M., Abdallah, T., & Al-Arja, N. (2019). Happiness and its relationship with well-being and religiosity among a sample of college students from Palestine. *Arab Journal of Psychology, 4*(1), 32-45. https://www.researchgate.net/publication/334194187

Almenayes, J. J. (2015). Empirical analysis of religiosity as predictor of social media addiction. *Journal of Arts and Humanities*, *4*(10), 44-52. **[Crossref]**

Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behaviors*, *64*, 287-293. **[Crossref]**

Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook addiction scale. *Psychological Reports, 110*(2), 501-517. **[Crossref]**

Anli, G., & Bilgin, O. (2022). Serial multiple mediation of self-transcendence and psychological resilience in the relationship between fear of Covid-19 and subjective happiness in university students. *Online Submission, 9*(7), 84-99. **[Crossref]**

Apaolaza, V., Hartmann, P., D'Souza, C., & Gilsanz, A. (2019). Mindfulness, compulsive mobile social media use, and derived stress: The mediating roles of self-esteem and social anxiety. *Cyberpsychology, Behavior, and Social Networking*, *22*(6), 388-396. **[Crossref]**

Argyle, M., Martin, M., & Crossland, J. (1989). Happiness as a function of personality and social encounters. In P. Forgas & J. M. Innes (Eds.), *Recent advances in social psychology: An international perspective* (pp. 189-203). Elsevier.

Baltaci, Ö. (2019). The predictive relationships between the social media addiction and social anxiety, loneliness, and happiness. *International Journal of Progressive Education, 15*(4), 73-82. **[Crossref]**

Brown, K. W., & Cordon, S. (2009). Toward a phenomenology of mindfulness: Subjective experience and emotional correlates. In F. Didonna (Ed.), *Clinical handbook of mindfulness* (pp. 59-81). Springer.

Cashen, M. (2012). The ugly, the lonely, and the lowly: Aristotle on happiness and the external goods. *History of Philosophy Quarterly, 29*(1), 1-19.

Çatak, P. D. (2012). The Turkish version of the Cognitive and Affective Mindfulness Scale-Revised. *Europe's Journal of Psychology, 8*(4), 603-619. **[Crossref]**

Charoensukmongkol, P. (2016). Mindful Facebooking: The moderating role of mindfulness on the relationship between social media use intensity at work and burnout. *Journal of Health Psychology*, *21*(9), 1966-1980. **[Crossref]**

Chen, L., Yan, Z., Tang, W., Yang, F., Xie, X., & He, J. (2016). Mobile phone addiction levels and negative emotions among Chinese young adults: The mediating role of interpersonal problems. *Computers in Human Behavior, 55*, 856-866. **[Crossref]**

Choi, H. (2023). Effectuation processes of social media and student entrepreneurs in South Korea. *Journal of Small Business Management, 61*, 3077-3120. **[Crossref]**

Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Routledge. **[Crossref]**

Çokluk, Ö., Şekercioğlu, G., & Büyüköztürk, Ş. (2012). *Sosyal bilimler için çok değişkenli istatistik: SPSS ve LISREL uygulamaları*. Pegem.

Çömlekçi, M. F., & Başol, O. (2019). Gençlerin sosyal medya kullanım amaçları ile sosyal medya bağımlılığı ilişkisinin incelenmesi. *Celal Bayar Üniversitesi Sosyal Bilimler Dergisi, 17*(4), 173-188. **[Crossref]**

Coo, C., & Salanova, M. (2018). Mindfulness can make you happy-and-productive: A mindfulness controlled trial and its effects on happiness, work engagement and performance. *Journal of Happiness Studies, 19*, 1691-1711. **[Crossref]**

Cruz, C., Navarro, E., Pocinho, R., & Ferreira, A. (2016, November). Happiness in advanced adulthood and the elderly: the role of positive emotions, flourishing and mindfulness as well-being factors for successful aging. *Proceedings of the Fourth International Conference on Technological Ecosystems for Enhancing Multiculturality* (pp. 411-417). University of Salamanca. **[Crossref]**

Demir, Ö., & Doğanay, A. (2009). Bilişsel farkındalık becerilerinin geliştirilmesinde bilişsel koçluk yaklaşımı. *Kuram ve Uygulamada Eğitim Yönetimi, 60*(60), 601-624. https://dergipark.org.tr/en/pub/kuey/issue/10337/126670

Demir, Y. (2021). Relationships among childhood experiences, happiness and social media addictions in adolescents. *Educational Process: International Journal, 10*(1), 13-27. **[Crossref]**

Demiroğlu, B., & Taş, B. (2021). Relationship between spirituality and social media addiction among adults. *Research on Education and Psychology*, *5*(2), 368-396. **[Crossref]**

Dhillon, S. K. (2020). Empirical support of Wong's self-transcendence spiral: Meaning in life, virtues and happiness. *Wesleyan Journal of Research*, *13*(56), 17-28.

Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*, *55*(1), 34-43. https://psycnet.apa.org/buy/2000-13324-004

Diener, E. (2006). Happiness, life satisfaction, and fulfillment: The social psychology of subjective well-being. In P. A. M. Van Lange (Ed.), *Bridging social psychology: Benefits of transdisciplinary approaches* (pp. 313-318). Psychology Press.

Dilmaç, B., & Yılmaz, M. (2019). Öğretmen adaylarında bilişsel farkındalık düzeyleri, öznel mutluluk ve sıkıntıyı tolere etme arasındaki yordayıcı ilişkiler. *OPUS Uluslararası Toplum Araştırmaları Dergisi*, *10*(17), 1125-1155. **[Crossref]**

Dizen, M., Berenbaum, H., & Kerns, J. G. (2005). Emotional awareness and psychological needs. *Cognition and Emotion, 19*(8), 1140-1157. **[Crossref]**

Doğan, M. (2014). Dinlerde ve islam kültüründe sabır. *Recep Tayyip Erdoğan Üniversitesi İlahiyat Fakültesi Dergisi, 3*(5), 93-130. https://dergipark.org.tr/en/pub/rteuifd/issue/28236/299771

Doğan, T., & Çötok, N. A. (2011). Adaptation of the short form of the oxford happiness questionnaire into turkish: a validity and reliability study. *Türk Psikolojik Danışma ve Rehberlik Dergisi, 4*(36), 165-172. https://dergipark.org.tr/tr/download/article-file/200117

Er, S., & Buzlu, S. (2022). The relationships between self-transcendence and depressive symptoms, self-esteem, and locus of control in individuals diagnosed with substance addiction. *Perspectives in Psychiatric Care, 58*(4), 2137-2144. **[Crossref]**

Erduran Tekin, Ö. (2025). Rumination and social media addiction relationship: The role of loneliness and happiness. *Journal of Social Service Research*, *51*, 1044-1056.

Ergün, N., Özkan, Z., & Griffiths, M. D. (2025). Social media addiction and poor mental health: Examining the mediating roles of internet addiction and phubbing. *Psychological Reports*, *128*(2), 723-743.

Esat, G., Day, S., & Smith, B. H. (2021). Religiosity and happiness of Turkish-speaking Muslims: Does country happiness make a difference? *Mental Health, Religion & Culture*, *24*(7), 713-727. **[Crossref]**

Eşkisu, M., Çam, Z., Gelibolu, S., & Rasmussen, K. R. (2020). Trait mindfulness as a protective factor in connections between psychological issues and Facebook addiction among Turkish university students. *Studia Psychologica*, *62*(3), 213-231. **[Crossref]**

Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J. P. (2007). Mindfulness and emotion regulation: The development and initial validation of the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). *Journal of Psychopathology and Behavioral Assessment, 29*(3), 177-190. **[Crossref]**

Field, A. (2009). *Discovering statistics using SPSS*. Sage.

Foley, N. M., O'Mahony, M., Lehane, E. A., Cil, T., & Corrigan, M. A. (2015). A qualitative content analysis of breast cancer narratives hosted through the medium of social media. *British Journal of Medicine and Medical Research, 6*(5), 474. **[Crossref]**

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. Philosophical transactions of the royal society of London. *Series B: Biological Sciences, 359*(1449), 1367-1377. **[Crossref]**

Garland, E. L., Hanley, A. W., Hudak, J., Nakamura, Y., & Froeliger, B. (2022). Mindfulness-induced endogenous theta stimulation occasions self-transcendence and inhibits addictive behavior. *Science Advances, 8*(41), eabo4455. **[Crossref]**

Gencer, N. (2018). Subjective well-being: A general overview. *Hitit University Journal of Social Sciences Institute, 11*(3), 2621-2638. **[Crossref]**

Griffiths, M. D., Kuss, D. J., & Demetrovics, Z. (2014).Social networking addiction: An overview of preliminary findings. In K. P. Rosenberg, & L. C. Feder (Eds.), *Behavioral addictions: Criteria, evidence, and treatment* (pp. 119-1141). Academic Press. **[Crossref]**

Günüç, S. (2009). *İnternet bağımlılık ölçeğinin geliştirilmesi ve bazı demografik değişkenler ile internet bağımlılığı arasındaki ilişkilerin incelenmesi* (Thesis No. 234300) [Master's thesis, Yüzüncü Yıl University]. Council of Higher Education National Thesis Center.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.

Herchenroeder, L., Norton, E. O., Hetelekides, E. M., Raeder, C. A., Henson, J. M., Bravo, A. J., & Norms, S. (2022). Delaying gratification's role in the relationship between facets of mindfulness and substance use outcomes. *Addictive Behaviors*, *125*, 107163. **[Crossref]**

Hills, P., & Argyle, M. (2002). The Oxford Happiness Questionnaire: A compact scale for the measurement of psychological well-being. *Personality and Individual Differences, 33*(7), 1073-1082. **[Crossref]**

Howard, K. B. (2018). *Mindfulness of emptiness: A paradoxical perspective on working with social networking site addiction* (Publication No. 10937008) [Doctoral dissertation, Saybrook University]. ProQuest Dissertations & Theses Global.

İme, Y., Ekşi, H., & Ekşi, F. (2019). Manevi aşkınlık ölçeği'nin türkçeye uyarlanması: Geçerlik ve güvenirlik çalışması. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, *20*(3), 1008-1020. **[Crossref]**

James, C., Corman, H., Noonan, K., Reichman, N. E., & Jimenez, M. E. (2022). Adolescent chronic health conditions and school disconnectedness. *Journal of Developmental & Behavioral Pediatrics, 43*(2), 87-95. **[Crossref]**

Johannsen, M., Nissen, E. R., Lundorff, M., & O'Toole, M. S. (2022). Mediators of acceptance and mindfulness-based therapies for anxiety and depression: A systematic review and meta-analysis. *Clinical Psychology Review, 94*, 102156. **[Crossref]**

Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Dell Publishing.

Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. Hachette UK.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science & Practice, 10*(2), 144-156. **[Crossref]**

Kaya, A., Şata, M., Türk, N., Özok, H. I., & Yıldırım, M. (2025). Reliability and validity of short-form generic scale of being phubbed and phubbing among Turkish adolescents and young adults. *Journal of Technology in Behavioral Science*, *10*(1), 180-187. **[Crossref]**

Kaya, A., Seyrek, E., Sarıgül, A., Sata, M., Gómez-Salgado, J., & Yıldırım, M. (2025). Social media addiction, perceived social support, sleep disorder, and job performance in healthcare professionals: Testing a moderated mediation model. *International Journal of Mental Health Promotion*, *27*(8), 1149-1163. **[Crossref]**

Kemp, S. (2025). *Digital 2025 July global statshot report*. We Are Social. Retrieved September 11, 2025, from https://wearesocial.com/uk/blog/2025/07/digital-2025-july-global-statshot-report/

Khan, N. A., Khan, A. N., & Moin, M. F. (2021). Self-regulation and social media addiction: A multi-wave data analysis in China. *Technology in Society, 64*, 101527. **[Crossref]**

Kircaburun, K. (2016). Effects of gender and personality differences on Twitter addiction among Turkish undergraduates. *Journal of Education and Practice*, *7*(24), 33-42.

Kircaburun, K., Griffiths, M. D., & Billieux, J. (2019). Trait emotional intelligence and problematic online behaviors among adolescents: The mediating role of mindfulness, rumination, and depression. *Personality and Individual Differences*, *139*, 208-213. **[Crossref]**

Koçak, O., İlme, E., & Younis, M. Z. (2021). Mediating role of satisfaction with life in the effect of self-esteem and education on social media addiction in Turkey. *Sustainability*, *13*(16), 9097-10011. **[Crossref]**

Koltko-Rivera, M. E. (2006). Rediscovering the later version of Maslow's hierarchy of needs: Self-transcendence and opportunities for theory, research, and unification. *Review of General Psychology, 10*(4), 302-317. **[Crossref]**

Kozan, H. İ. Ö., Kavaklı, M., Ak, M., & Kesici, Ş. (2019). Akıllı telefon bağımlılığı, genel aidiyet ve mutluluk arasındaki ilişkilerin yapısal eşitlik modellemesi ile incelenmesi. *Klinik Psikiyatri Dergisi*, *22*(4), 2152-2159. **[Crossref]**

Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., & Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PloS One, 8*(8), e69841. **[Crossref]**

Kumar, S. M. (2002). An introduction to Buddhism for the cognitive-behavioral therapist. *Cognitive and Behavioral Practice, 9*(1), 40-43. **[Crossref]**

Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction - a review of the psychological literature. *International Journal of Environmental Research and Public Health, 8*(9), 3528-3552. **[Crossref]**

Kuss, D. J., & Griffiths, M. D. (2017). Social networking sites and addiction: Ten lessons learned. *International Journal of Environmental Research and Public Health, 14*(3), 311. **[Crossref]**

Kuyken, W., Watkins, E., Holden, E., White, K., Taylor, R. S., Byford, S., & Dalgleish, T. (2010). How does mindfulness-based cognitive therapy work? *Behaviour Research and Therapy, 48*(11), 1105-1112. **[Crossref]**

Lyubomirsky, S. (2007). *The how of happiness, A scientific approach to getting the life you want*. The Penguin Press.

Marino, C., Vieno, A., Pastore, M., Albery, I. P., Frings, D., & Spada, M. M. (2016). Modeling the contribution of personality, social identity and social norms to problematic Facebook use in adolescents. *Addictive Behaviors*, *63*, 51-56. **[Crossref]**

Martin, J. A., Ericson, M., Berwaldt, A., Stephens, E. D., & Briner, L. (2023). Effects of two online positive psychology and meditation programs on persistent self-transcendence. *Psychology of Consciousness: Theory, Research, and Practice, 10*(3), 225. **[Crossref]**

Maslow, A. H. (1969). The farther reaches of human nature. *Journal of Transpersonal Psychology, 1*(1), 1-9.

Maslow, A. H. (2013). *Toward a psychology of being*. Simon and Schuster.

McClelland, M., Geldhof, J., Morrison, F., Gestsdóttir, S., Cameron, C., Bowers, E., Duckworth, A., Little, T., Grammer, J. (2018). Self-regulation. In N. Halfon, C. B. Forrest, R. M. Lerner, & E. M. Faustman (Eds.), *Handbook of life course health development*. Springer. **[Crossref]**

Moqbel, M., Alshare, K., Erskine, M. A., & Bartelt, V. (2023). WhatsApp social media addiction and mental health: mindfulness and healing use interventions. *Behaviour & Information Technology, 43*(11), 2511-2524. **[Crossref]**

Mortezabeigi, Z., Safari, A., Bozorgkhoo, Z., & Farid, A. A. (2022). Predicting the happiness based on self-efficacy and quality of life by mediating of psychological well-being. *Journal of the Iranian Institute for Health Sciences Research, 21*(1), 47-57. **[Crossref]**

Myers, D., & Diener, E. (1995). Who is happy. *American Psychological Society, 1,* 1-19. **[Crossref]**

Neubaum, G., & Krämer, N. C. (2015). My friends right next to me: A laboratory investigation on predictors and consequences of experiencing social closeness on social networking sites. *Cyberpsychology, Behavior, and Social Networking*, *18*(8), 443-449. **[Crossref]**

Özok, H. I., Kaya, A., Dinçer, R. E., & Yıldırım, M. (2025). Associations between social appearance anxiety, problematic social media use, selfitis behavior, and adaptable self: A moderated-mediation model. *Psihologija, 59*(1), 93-109. **[Crossref]**

Piedmont, R. L. (1999). Does spirituality represent the sixth factor of personality? Spiritual transcendence and the five-factor model. *Journal of Personality, 67*(6), 985-1013. **[Crossref]**

Piedmont, R. L., & Leach, M. M. (2002). Cross-cultural generalizability of the Spiritual Transcendence Scale in India: Spirituality as a universal aspect of human experience. *American Behavioral Scientist, 45*(12), 1888-1901. **[Crossref]**

Piedmont, R. L., Wilkins, T. A., & Hollowitz, J. (2013). The relevance of spiritual transcendence in a consumer economy: The dollars and sense of it. *Journal of Social Research & Policy, 4*(2), 59-77.

Pittman, M., & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior, 62*, 155-167. **[Crossref]**

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891. **[Crossref]**

Roy, A. K., Bowirrat, A., Smith, D. E., Braverman, E. R., Jalali, R., Badgaiyan, R. D., Baron, D., Llanos-Gomez, L., Barh, D., & Blum, K. (2021). Neurobiology and spirituality in addiction recovery. *Acta Scientific Neurology, 4*(9), 64-71.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, *69*(4), 719-727. **[Crossref]**

Sa'dudin, I. (2020), Tuhfetü'l-mürsele'deki bireysel-aşkın tasavvufi değerlerin sosyo-ampirik değere göre yeniden uyumlanması (S. Yıldız, Trans.). *Academic Platform Journal of Islamic Researches 4*(1), 93-98. https://dergipark.org.tr/en/pub/apjir/issue/53718/707085

Şata, M. (2020). Nicel araştırma yaklaşımları. In E. Oğuz (Ed.), *Eğitimde araştırma yöntemleri* (pp. 77-97). Eğiten Kitap.

Satici, S. A. (2019). Facebook addiction and subjective well-being: A study of the mediating role of shyness and loneliness. *International Journal of Mental Health and Addiction*, *17*(1), 41-55. **[Crossref]**

Sechi, C., Loi, G., & Cabras, C. (2021). Addictive internet behaviors: The role of trait emotional intelligence, self-esteem, age, and gender. *Scandinavian Journal of Psychology*, *62*(3), 409-417. **[Crossref]**

Şenormancı, Ö., Konkan, R., & Sungur, M. Z. (2010). İnternet bağımlılığı ve bilişsel davranışçı terapisi. *Psychiatry, 11,* 261-268.

Shonin, E., Van Gordon, W., & Griffiths, M. D. (2013). Buddhist philosophy for the treatment of problem gambling. *Journal of Behavioral Addictions, 2*(2), 63-71. **[Crossref]**

Sriwilai, K., & Charoensukmongkol, P. (2016). Face it, don't Facebook it: Impacts of social media addiction on mindfulness, coping strategies and the consequence on emotional exhaustion. *Stress and Health, 32*(4), 427-434. **[Crossref]**

Sun, X., Duan, C., Niu, G., Tian, Y., & Zhang, Y. (2021). Mindfulness buffers the influence of stress on cue-induced craving for internet among Chinese colleges with problematic internet use. *Journal of Behavioral Addictions, 10*(4), 983-989. **[Crossref]**

Tran, K., Gunturu, S., & Korenis, P. (2022). Neurobiological process of addiction. In E. Akerele (Ed.), *Substance and non-substance related addictions* (pp. 125-128). Springer. **[Crossref]**

Türk, N., Batmaz, H., Kaya, A., & Yıldırım, M. (2025). Mediating role of loneliness in the relationship between digital game addiction and phubbing in adolescents. *Psihologija*, 1-18. **[Crossref]**

Twenge, J. M., & Campbell, W. K. (2009). *The narcissism epidemic: Living in the age of entitlement*. Simon and Schuster.

Utomo, K. D. M., & Marianta, Y. I. W. (2023). The role of social support and spiritual well-being in predicting internet addiction among indonesian seminarians. *Pastoral Psychology*, 1-16. **[Crossref]**

Verhaeghen, P. (2019). The mindfulness manifold: Exploring how self-preoccupation, self-compassion, and self-transcendence translate mindfulness into positive psychological outcomes. *Mindfulness*, *10*(1), 131-145. **[Crossref]**

Wartberg, L., Kriston, L., & Thomasius, R. (2020). Internet gaming disorder and problematic social media use in a representative sample of German adolescents: Prevalence estimates, comorbid depressive symptoms, and related psychosocial aspects. *Computers in Human Behavior, 103*, 31-36. **[Crossref]**

Wood, M., Center, H., & Parenteau, S. C. (2016). Social media addiction and psychological adjustment: Religiosity and spirituality in the age of social media. *Mental Health, Religion & Culture, 19*(9), 972-983. **[Crossref]**

Yilmaz, R., & Karaoglan Yilmaz, F. G. (2023). Problematic internet use in adults: The role of happiness, psychological resilience, dispositional hope, and self-control and self-management. *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 41*(3), 727-745. **[Crossref]**

Zendle, D., & Bowden-Jones, H. (2019). Is excessive use of social media an addiction? *BMJ, 365,* l2171. **[Crossref]**

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.506

The mediator role of social media addiction in the relationship between perceived social support and depression

Bahtım Kütük[1], Muazzez Aytemür[2]

[1]Department of Psychology, Faculty of Humanities and Social Sciences, İzmir Katip Çelebi University, İzmir, Türkiye
[2]Department of Psychology, Faculty of Humanities and Social Sciences, Manisa Celal Bayar University, Manisa, Türkiye

Abstract

Social media use is widespread, spanning the daily lives of all age groups, from children to older adults. In this study, we aimed to explore the variables associated with social media addiction and to examine the potential mediating role of social media addiction in the relationship between perceived social support and depression. The study recruited 213 adults, with females comprising 77.9% of participants. The Multidimensional Scale of Perceived Social Support, the Beck Depression Inventory, and the Social Media Addiction Scale were used as measurement instruments. The results revealed significant associations between social media addiction and level of education, perceived social support, and depression. Furthermore, structural equation modeling indicated that social media addiction played a mediating role in the relationship between perceived social support and depression. The findings of the current study add to previous research by revealing the relationship pattern between perceived social support, social media addiction, and depression. In sum, social media addiction appears to reduce perceived social support and increases the level of depression. For this reason, individuals should be careful and avoid excessive use of social media.

Keywords: depression, perceived social support, social media addiction, structural equation modeling

Main points

- Social media addiction is significantly associated with education level, perceived social support, and depression.
- Social media addiction plays a mediating role in the relationship between perceived social support and depression.
- Excessive social media use can diminish perceived social support and contribute to higher levels of depression.

Introduction

In its most general sense, social media can be understood as a platform that facilitates existing connections, fosters new relationships, enables content creation and sharing, and allows users to cultivate a public online presence (Treem et al., 2016). Social media use has become increasingly pervasive, playing a central role in the lives of many individuals. Millions of people interact with content they usually like or admire every day on social media. The increasing use of social media platforms is widespread among people (Anderson & Perrin, 2018). Although social media usage is accepted as a normative part of life, previous findings have shown that excessive use of social media can lead to behavioral addiction (Marino et al., 2018). Social media activities, such as sharing personal information, interacting with other users, and receiving feedback on online actions, appear to fulfill these needs (Marengo et al., 2020). Montag et al. (2017) reported that fulfillment of these needs via social media platforms activates the reward system, thereby promoting increased social media use and potentially culminating in social media addiction.

Social media addiction has emerged as a noteworthy public health concern in recent years (Hassan et al., 2020). The upward trend of social media addiction is most likely to persist due to the rapid advancements in internet and smartphone technologies (Leung et al., 2020). Social media reinforcements, such as "likes," have been implicated in the

Corresponding author: Bahtım Kütük • **Email:** bahtimkutuk.ege@gmail.com
Received: July 6, 2025 **Accepted:** December 3, 2025 **Published online:** June 22, 2026

Cite as: Kütük, B., & Aytemür, M. (2026). The mediator role of social media addiction in the relationship between perceived social support and depression. *Addicta: The Turkish Journal on Addictions*, *13*(2), 268-276. https://doi.org/10.15805/addicta.2026.506

development of maladaptive social media use and potential addiction, mirroring mechanisms observed in substance use disorders (Meshi & Ellithorpe, 2021). For example, Kross et al. (2013) found that long-term social media use correlated with increased negative mood and decreased life satisfaction. In addition, some researchers have suggested that being addicted to social media often leads to depression onset and reoccurrence because it triggers negative emotions (Davila et al., 2012). Keles et al. (2020) conducted a systematic review examining the relationship between social media use and three key mental health outcomes in adolescents: depression, anxiety, and psychological distress. The review included 16 studies, most of which demonstrated significant positive associations between various dimensions of social media use and adverse psychological outcomes. The most consistent finding across these studies was that increased time spent on social media platforms was associated with higher levels of depression and anxiety symptoms. Specifically, adolescents who reported spending more hours per day on social networking sites were more likely to exhibit elevated depressive symptoms and psychological distress. In addition to time spent, the nature and quality of social media engagement were also influential. For instance, using social media for passive consumption (such as scrolling without interaction), social comparison, seeking approval, or experiencing online harassment were all linked to poorer mental health outcomes. These types of usage were especially associated with internalizing symptoms, such as low self-esteem, depressed mood, and heightened anxiety. Moreover, problematic or addictive patterns of use, characterized by compulsive checking and withdrawal-like symptoms, were also shown to correlate positively with depression and anxiety.

Perceived social support refers to an individual's belief that their social network comprises significant others available to provide various resources, including financial, psychological, and general assistance when needed (Ioannou et al., 2019). It can also encompass subjective support, which refers to an individual's sense of satisfaction derived from feeling valued, supported, and acknowledged within their social network (Tariq et al., 2020). Higher perceived social support positively correlates with improved mental health outcomes, notably lower depression levels (Tariq et al., 2020). Some empirical studies have demonstrated a negative association between perceived social support and depressive symptoms (Wang et al., 2019). Perceived social support is linked to well-being as it provides individuals with feelings of affection and care (Siedlecki et al., 2014). Consistent with this, Bilgin and Taş (2018) found that perceived social support, particularly from friends, was negatively associated with social media addiction, suggesting that individuals with stronger offline friendships may be less likely to develop problematic patterns of social media use.

Depression, characterized by severe symptoms impacting mood and cognitive functioning (Hankin et al., 1998), has been increasingly linked to social media use. Emerging research suggests a positive association between social media addiction and depressive symptomatology (Brailovskaia & Margraf, 2020). Studies support this connection, with evidence demonstrating that higher social media use frequency correlates with increased depression risk (Lin et al., 2016). In addition, while Kircaburun (2016) suggests a potential indirect effect of social media addiction on depression through daily internet use, the overall trend points toward a direct association between excessive social media engagement and depressive symptoms.

Social media's seemingly constant and convenient communication channels necessitate a nuanced examination of their impact on social support networks. Traditional social support relied on designated physical spaces and time commitments, fostering deeper connections (Myrick et al., 2016). In contrast, online communication through social media transcends these limitations, facilitating interaction with a broader network of individuals (Myrick et al., 2016; Oh & Syn, 2015). This ease of access positions social media as a potential alternative for building social support (Oh & Syn, 2015). However, further research is necessary to determine the quality and effectiveness of online support networks compared to traditional forms. Although previous research has examined perceived social support, social media use, and depression individually, the mechanisms underlying their interplay remain insufficiently explored. Existing studies have predominantly relied on bivariate associations, offering limited insight into how diminished offline support may contribute to maladaptive digital engagement, particularly within digitalized social contexts. Given that individuals with low perceived social support may seek compensatory interactions online, resulting in patterns of excessive or problematic use, investigating social media addiction as a mediating mechanism addresses an important conceptual gap and provides a theoretically grounded basis for the present study.

In summary, previous research has demonstrated associations between perceived social support, social media addiction, and depression; however, these variables have mostly been examined through bivariate and direct relationships. Existing studies suggest that individuals with low levels of perceived social support may increasingly turn to online environments, potentially developing social media addiction, which in turn may exacerbate depressive symptoms. Individuals with low perceived social support may compensate for unmet interpersonal needs by turning to online environments to regulate negative affect and seek relatedness, consistent with the compensatory internet use perspective (Kardefelt-Winther, 2014). An individual might start using social media to compensate for low perceived social support. The design of the platforms (such as likes, notifications, and constant accessibility) might repeatedly reinforce this behavior. As a result, usage that was initially goal-directed might gradually turn into uncontrolled and compulsive patterns, eventually leading to addiction. Moreover, the way in which individuals engage with social media plays a critical role. Passive, comparison-oriented browsing, such as observing others' posts without interaction, tends to foster upward social comparisons and feelings of envy, which are more consistently associated with reduced well-being compared to active, socially connective use (Verduyn et al., 2021). Both cross-sectional and longitudinal converging evidence

shows that heavier or more problematic social media use predicts subsequent increases in depressive symptoms (Lin et al., 2016; Samra et al., 2022). Taken together, these mechanisms suggest a pathway in which low perceived social support increases reliance on social media, heightening the risk of addictive use, which in turn exacerbates depressive symptomatology. In this context, social media addiction can be considered a key mediating mechanism in explaining the link between perceived social support and depression. The present study aims to test whether social media addiction mediates the relationship between perceived social support and depression using structural equation modeling, and to identify variables associated with social media addiction by examining these factors within a multivariate and integrative framework.

Finally, by outlining how a potential association between deficits in perceived social support and depression may operate through digital behaviors, the present study may provide a preliminary conceptual basis that can guide future research. Future studies could develop more comprehensive models by employing a broader range of methodological approaches, such as longitudinal, developmental, sociodemographic, and cross-cultural research designs, to examine the time-related structure of these relationships, explore how they emerge across different stages of life, and identify individual and contextual factors that may influence their strength or direction.

Method

Participants and Procedure

A total of 245 participants aged 19-54 years (M = 27.91, *SD* = 7.06) were recruited for this study. Twenty-one participants (8.57%) reported having no social media accounts. An additional 11 participants (4.49%) were excluded due to identification as outliers based on extreme values. Subsequent analyses were conducted on the remaining sample of 213 participants. The sociodemographic characteristics of the participants are shown in Table 1.

The study employed a cross-sectional design, utilizing an online questionnaire administered via Google Forms. Prior to data collection, ethical approval was obtained from the Ege University Scientific Research and Publication Ethics Committee (Approval Date: 22.02.2021; Protocol Number: 833). Data were collected between July and September 2021, a period when COVID-19 restrictions in Turkey were relatively relaxed compared to the earlier strict lockdown in February 2021.

Participants were recruited using a combination of convenience and snowball sampling methods. The survey link was initially distributed through the researchers' personal social media accounts to reach a broader and more diverse population. Individuals who encountered the post were

Table 1. Sociodemographic characteristics of the participants

	n	%	Mean±SD	Median (Min.-Max.)
Gender				
Female	166	77.9		
Male	47	22.1		
Marital Status*				
Single	146	69.2		
Married	65	30.8		
Education				
Literate	4	1.9		
Highschool	52	24.4		
University	111	52.1		
Master	46	21.6		
Living space				
Village or town	15	7.0		
County	46	21.6		
Province	152	71.4		
The most preferred social media program**				
Instagram	75	36.4		
Whatsapp	101	49.0		
Youtube	15	7.3		
Other***	15	7.3		
Age	213	100	27.91±7.06	26 (19-54)
Socio-economical status	213	100	4.62±2.11	5 (1-10)
Time spent on social media per day (hour)	213	100	3.15±1.99	3 (.25-10)
Social media usage time (year)	213	100	9.39±3.37	10 (1-20)

*2 (0.9%) participants did not indicate their marital status; **7 (3.3%) participants did not answer.***Includes programs such as Twitter, Facebook, SnapChat, LinkedIn.

invited to participate voluntarily and were encouraged to share the link with others, facilitating a chain-referral process characteristic of snowball sampling. This approach enabled the inclusion of accessible and willing participants from various demographic backgrounds.

Several measures were taken throughout the data collection process to ensure data quality and compliance with ethical standards. At the beginning of the survey, participants were presented with an online informed consent form outlining the study's purpose, the voluntary nature of participation, and their rights. Only those who provided consent and confirmed having an active social media account were allowed to proceed. To minimize duplicate responses, participants were instructed to complete the survey only once. Accordingly, the "Limit to 1 response" feature in Google Forms was enabled, requiring participants to sign in with a Google account. The most effective built-in method to prevent multiple submissions in Google Forms is enabling the "Limit to 1 response" option, which requires participants to sign in with a Google account and ensures that each account can submit the form only once; however, it should be noted that individuals with access to multiple Google accounts may still submit more than one response.

Personally identifiable information was not collected unless explicitly required by the research design, ensuring participants' anonymity and privacy. The survey was open for a predetermined period, and only responses submitted during this time frame were included in the final analysis. As part of the exclusion criteria, individuals under the age of 18, over the age of 65, and those without an active social media account were excluded from the study.

Measurements

Sociodemographic Information Form: Demographic data, including age, gender, marital status, educational attainment, place of residence, and socioeconomic status, were collected using a sociodemographic information form.

The Multidimensional Scale of Perceived Social Support: Perceived social support was assessed using the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). This well-established 12-item instrument measures an individual's subjective experience of social support from various sources. The MSPSS comprises three subscales: family support, friend support, and significant others (e.g., romantic partner). Each subscale consists of four items. Participants responded to the 12 items using a 7-point Likert scale ranging from 1 (Absolutely no) to 7 (Absolutely yes). Total scores range from 12 (lowest perceived social support) to 84 (highest perceived social support). The Turkish version of the MSPSS demonstrates good psychometric properties (Eker et al., 2001), with internal consistency reliability (Cronbach's alpha) reported between .77 and .92 across diverse samples (patients and healthy individuals). In the present study, the subscales exhibited strong internal consistency (α = .95 for significant others, α = .90 for family, and α = .91 for friends).

Beck Depression Inventory: Depressive symptomatology was assessed using the Beck Depression Inventory (BDI; Beck et al., 1961). This well-established 21-item inventory measures the severity of depression symptoms using a Likert-scale format (0-3). Total scores range from 0 (minimal depression) to 63 (severe depression), with higher scores indicating more significant depressive symptomatology. The Turkish version of the BDI has demonstrated good psychometric properties (Hisli, 1989), with split-half reliability coefficients reported between .74 and .80. Internal consistency in the present study was high (α = .91).

Social Media Addiction Scale: Social media addiction was assessed using the Social Media Addiction Scale (SMAS; Şahin & Yağci, 2017). This 20-item instrument measures social media addiction through two subscales: virtual tolerance and virtual communication. Participants responded using a 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). Total scores range from 20 (low addiction) to 100 (high addiction), with higher scores indicating more significant social media addiction. The SMAS demonstrates good internal consistency, with Şahin and Yağci (2017) reporting subscale reliability coefficients of α = .92 for virtual tolerance and α = .91 for virtual communication. In the present study, the subscale reliabilities were α = .77 for virtual tolerance and α = .75 for virtual communication.

Statistical Analysis

Data screening procedures were employed to assess normality assumptions for continuous variables. This included an examination of skewness and kurtosis coefficients, the Kolmogorov-Smirnov test, and a visual inspection of histograms (Tabachnick, 2014). Independent samples *t*-tests were used to compare social media addiction scores between two groups. A one-way analysis of variance (ANOVA) was conducted to compare three or more groups. Pearson's correlation coefficients were calculated to determine relationships between continuous variables. A two-step approach based on Anderson and Gerbing's (1988) work was implemented to test the hypothesized model. First, a confirmatory factor analysis (CFA) was conducted to evaluate the measurement model, which defines the latent variables in the model (Kline, 2015). Subsequently, the structural model was tested. Bootstrapping with 5,000 resamples and a 90% confidence interval was employed to assess the significance of mediation effects. All statistical analyses were performed using SPSS 25 and Mplus 8.3 software.

Results

Descriptive and Preliminary Analysis

Independent samples *t*-tests indicated no significant difference in social media addiction scores between men (M = 49.97, *SD* = 11.58) and women (M = 49.14, *SD* = 11.58), *t*(211)

Table 2. Correlation coefficients among variables

Variables	1	2	3	4	5	6	7	8	9	10
1. MSPSS-Family	-									
2. MSPSS-Significant Other	0.32***	-								
3. MSPSS-Friends	0.61***	0.42***	-							
4. MSPSS-Total	0.75***	0.82***	0.79***	-						
5. SMAS-Virtual tolerance	-0.27***	-0.19**	-0.19**	-0.27***	-					
6. SMAS-Virtual communication	-0.18*	-0.14*	-0.18**	-0.20**	0.53***	-				
7. SMAS-Total	-0.26***	-0.19**	-0.21**	-0.27***	0.91***	0.84***	-			
8. BDI	-0.11	-0.01	-0.04	-0.06	0.14*	0.13	0.16*	-		
9. Years of usage SM	-0.07	0.00	-0.06	-0.04	0.07	0.01	0.05	-.19**	-	
10. Socio-economical status	-0.02	-0.10	-0.01	-0.06	-0.04	0.06	0.00	-0.01	0.05	-

*p < 0.05, **p < 0.01, ***p < 0.001; MSPSS: The Multidimensional Scale of Perceived Social Support; SMAS: Social Media Addiction Scale; BDI; Beck's Depression Inventory; SM: Social Media.

= 0.443, p = .658. Similarly, there was no significant difference in social media addiction scores between single individuals (M = 49.52, *SD* = 10.85) and married individuals (M = 50.23, *SD* = 12.48), t(209) = -0.420, p = .675.

Analysis of variance (ANOVA) revealed significant differences in social media addiction scores based on educational status, F(3, 209) = 4.153, p = .007. Post-hoc Tukey's HSD test indicated that high school graduates (M = 53.78, SD = 11.39) reported significantly higher social media addiction scores than university graduates (M = 47.49, *SD* = 11.34), p = .005. In contrast, place of residence, F(2, 210) = 0.260, p = .771, and most frequently preferred social media type, F(3, 202) = 0.740, p = .529, were not associated with social media addiction scores.

Pearson's correlation coefficients were computed to examine the relationships between continuous variables (see Table 2). Significant negative correlations were observed between the sub-dimensions and total score of the Multidimensional Scale of Perceived Social Support and their Social Media Addiction Scale counterparts. Additionally, a significant positive correlation emerged between depression scores and both the virtual tolerance subscale and the total score of the Social Media Addiction Scale.

Structural Equation Model Results

Goodness of fit values were found to be acceptable when the measurement model was tested: χ^2 (4) = 5.608, p = 0.230, CFI = 0.993, TLI = 0.982, SRMR = .023 and RMSEA = 0.043 (90% CI [0.000 - 0.119]). The standardized factor loads obtained for the measurement model are shown in Figure 1.

In the next step, the structural model was tested, and the goodness of fit values were found to be acceptable: χ^2 (7) = 7.616, p = 0.368, CFI = 0.997, TLI = 0.994, SRMR = .024, and RMSEA = 0.020 (90% CI [0.000 - 0.088)]). As shown in Figure 2, multidimensional perceived social support significantly predicted social media addiction negatively (β = -0.35, p < .001), while social media addiction predicted depression significantly (β = 0.18, p). = 0.045). The mediating

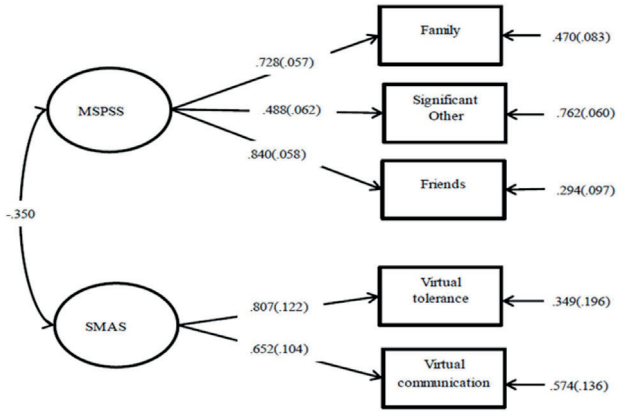

Figure 1. Factor loads obtained for the measurement model

MSPSS: The Multidimensional Scale of Perceived Social Support; SMAS: Social Media Addiction Scale.

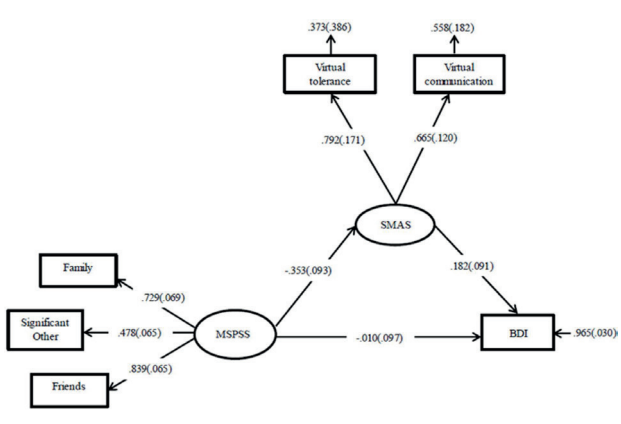

Figure 2. Conducted SEM in the study

MSPSS: The Multidimensional Scale of Perceived Social Support; SMAS: Social Media Addiction Scale; BDI: Beck Depression Inventory.

effect of social media addiction was investigated, and the direct path from multidimensional perceived social support to depression was not significant (β = -0.010, SE = 0.097, (90% CI [(-0.173) – (-0.149)]). On the other hand, when social media addiction was added to the path from multidimensional perceived social support to depression, the indirect path from multidimensional perceived social support to depression was found to be significant (β = -0.064, SE = 0.040, (90% CI [(-0.136) – (-0.007)]). In other words, social media addiction was a fully mediating variable between multidimensional perceived social support and depression.

Discussion

This study examined the mediating role of social media addiction in the relationship between perceived social support and depression. The findings revealed that social media addiction fully mediated this relationship. In other words, individuals with low levels of perceived social support tend to engage in problematic social media use, which in turn increases depressive symptoms. These results are consistent with an increasing number of studies highlighting the impact of digital behaviors on contemporary mental health (Andreassen et al., 2016; Holt-Lunstad et al., 2010; Meshi & Ellithorpe, 2021).

Previous research has demonstrated that both low perceived social support and excessive social media use are significantly associated with depression. The level of perceived social support is critically important for psychological resilience and mental health; lack of support has been linked to increased symptoms of depression and anxiety (Brailovskaia, & Margraf, 2020; Wang et al., 2019). On the other hand, intensive and problematic use of social media has been associated with adverse psychological outcomes such as depressive symptoms, social isolation, and low self-esteem (Marino et al., 2018; Meshi & Ellithorpe, 2021; Keles et al., 2020). When these two factors co-occur, especially among young adults, they may reinforce each other and significantly undermine mental well-being (Chen & Wang, 2021). However, how these variables interact and influence one another has been less frequently examined, particularly within mediation models. The results of this study support the idea that social media addiction serves as a psychological mechanism linking deficits in social support to increased depression risk. Simply put, individuals who do not receive sufficient support from family, friends, or romantic partners may turn to social media to fill this emotional void. Over time, this behavior may become addictive and exacerbate psychological distress. Recent longitudinal studies support this interpretation. For instance, Chen and Wang (2021) showed a reciprocal and reinforcing relationship between social media addiction and depressive symptoms, while Fumagalli et al. (2023) found that excessive social media use weakens the quality of face-to-face relationships, thereby reducing perceived support and increasing depressive symptoms.

These findings are also consistent with self-regulation and compensatory internet use theories. According to the compensatory internet use theory, individuals engage in excessive online activities to regulate negative emotions or fulfill unmet psychological needs (Kardefelt-Winther, 2014). Applied to our study, this theory suggests that low perceived social support may lead individuals to seek emotional closeness, approval, or attention through social media, thereby increasing their vulnerability to addiction.

It should be taken into consideration that this research was conducted during the COVID-19 pandemic, specifically between July and September 2021, a period when restrictions in Turkey had eased considerably compared to the strict lockdown of early 2021. During this time, vaccination campaigns were widespread, mobility had increased, and opportunities for face-to-face interactions had become more accessible, although some precautionary measures remained in place. This unique context may have influenced the dynamics among social support, social media use, and depressive symptoms. On one hand, relatively relaxed restrictions may have allowed participants to regain some access to in-person social networks. On the other hand, the residual effects of prolonged isolation and uncertainty might have amplified individuals' reliance on digital platforms for emotional support. Prior evidence suggests that perceived social support played a protective role during the pandemic, buffering against mental health difficulties (Kaya et al., 2021). Other studies indicated that excessive social media use was linked to heightened depressive symptoms, particularly when offline support was limited (Çiçek et al., 2024; Güldal et al., 2022). International findings further reveal that patterns of social media consumption and depressive symptoms changed significantly between pre- and post-lockdown periods (Kim et al., 2023). Therefore, the timing of data collection constitutes a critical contextual factor when interpreting the present findings, suggesting that the interplay between social support and digital behavior may be particularly sensitive to broader social and environmental conditions.

In addition to perceived social support, personality traits, particularly neuroticism, have been shown to play a role in the development of social media addiction and depression. Highly neurotic individuals are more prone to negative social media use patterns, such as approval seeking, social comparison, and passive browsing, which have been found to increase depressive symptoms (Marino et al., 2021; Sindermann et al., 2020; Tang et al., 2016). Although such personality variables were not assessed in our study, future research should examine their mediating or moderating roles.

Sociodemographic factors may also shape these relationships. While previous studies have reported that women tend to score higher on social media addiction scales (Andreassen et al., 2016), our study did not find a significant gender difference, possibly due to the high proportion of female participants (approximately 78%) in the sample. However, educational level showed a significant difference: high school graduates scored higher on social media addiction compared

to university graduates. This difference may be associated with digital literacy levels, critical thinking skills, or a greater tendency to fulfill social interaction and self-expression needs via social media among those with lower education (Aydin et al., 2021; Gökçek Özbek & Karaş, 2022). Some studies have also suggested that social media addiction may be higher among single individuals or those experiencing loneliness, as social media may serve as a means to fulfill social needs such as meeting potential partners (Andreassen et al., 2016; Gökçek Özbek & Karaş, 2022). However, our study did not find a significant relationship between marital status and social media addiction. This may be due to married individuals fulfilling their need for offline social support through their partners or preferring to spend time together rather than engaging with social media. Not only the amount, but also the source and quality of social support are important. Although social media increases the frequency of interactions, these interactions are often superficial and emotionally weak (Brailovskaia, & Margraf, 2020). Individuals may have hundreds of "friends" or "followers," but these relationships often lack key elements of genuine social support, such as intimacy, empathy, and trust. Some studies have even suggested that seeking support online may replace face-to-face relationships, thereby reducing perceived overall support over time (Meshi & Ellithorpe, 2021; Oh & Syn, 2015).

At a neurocognitive level, social media platforms are designed to target the brain's reward systems. Intermittent reinforcements such as likes, comments, and notifications may trigger addiction cycles similar to those seen in substance use or gambling disorders (Turel et al., 2014). For individuals with low perceived support or emotional vulnerability, such digital interactions may exacerbate addictive behaviors and emotional instability.

The findings of this study underscore the importance of incorporating strategies that enhance offline social support into interventions targeting individuals vulnerable to depression. Programs that promote face-to-face social connections, strengthen digital literacy, and offer psychoeducation to increase awareness of psychological needs underlying social media use may help reduce problematic online behaviors and prevent depressive symptoms. In this context, the development of integrative approaches that combine social support–based strategies with interventions targeting digital habits may provide an effective framework in clinical practice. Beyond its clinical relevance, the present study also makes important theoretical contributions by identifying social media addiction as a full mediator between perceived social support and depression. This advances the literature beyond simple bivariate associations and clarifies a key mechanism linking social and digital domains to mental health outcomes. These insights highlight the value of considering both social and technological contexts when explaining depressive symptomatology. Furthermore, the findings point to future directions, including longitudinal and cross-cultural studies and examinations of potential moderators, such as personality traits, loneliness, or cultural norms, that may shape these relationships. Such work may refine theoretical models and guide more targeted prevention and intervention strategies.

This study has certain limitations. Its cross-sectional design limits the ability to make causal inferences. The use of self-report scales may introduce social desirability bias and may not fully reflect actual behaviors. Although the sample size was sufficient for the analyses, the dominance of female participants may limit the generalizability of the findings. Furthermore, important variables such as the quality of online and offline support sources, loneliness, social comparison, and fear of missing out (FoMO) were not included in the study. Contextual factors such as personality traits and cultural norms were also not analyzed. Another limitation of this study is that the participants comprised a wide age range (19–54 years), covering early and middle adulthood. Although this age range was selected to achieve broader generalizability, the inability to control for age-related differences may hinder the interpretation of the findings. Therefore, future studies may benefit from examining a more homogeneous age group (e.g., only university students), which would contribute to more consistent and meaningful interpretations of the results.

In conclusion, the present study identifies social media addiction as a mediating pathway between low perceived social support and depressive symptoms, and this finding may open several avenues for future research. Subsequent studies may move beyond cross-sectional designs and employ longitudinal or experimental approaches to clarify the causal direction of these relationships. It might also be valuable to examine potential moderating variables such as personality traits, loneliness, fear of missing out, or social comparison orientation, as well as sociodemographic factors like age, gender, and educational background. Future research may additionally benefit from incorporating objective measures of digital behavior (e.g., usage logs, screen time data) alongside self-reports to capture a more accurate picture of online engagement. Furthermore, cross-cultural and cross-contextual replications may be needed to test the universality of the mediation model and to identify how cultural norms and social structures shape the interplay between support, digital use, and mental health. Taken together, these directions may refine theoretical models and generate more targeted strategies for prevention and intervention.

Acknowledgements

The authors would like to thank all the participants for their time and contribution to this study.

Author contributions

Conception: B.K.; Design: B.K., M.A.; Data acquisition: B.K.; Data analysis: B.K.; Data interpretation: B.K.; Drafting of this study: B.K., M.A.; Critical revision of this study: B.K., M.A. All authors reviewed the results, approved the final version of this study, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Sosyal ve Beşeri Bilimler Bilimsel Araştırma ve Yayın Etiği Kurulu (Date: February 22.2021, Decision/Protocol No: 833). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411-423. **[Crossref]**

Anderson, M., & Perrin, A. (2018). *Nearly one-in-five teens can't always finish their homework because of the digital divide*. Pew Research Center. https://internet.psych.wisc.edu/wp-content/uploads/532-Master/532-UnitPages/Unit-11/Anderson_Pew_2018.pdf

Andreassen, C. S., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of Addictive Behaviors, 30*(2), 252-262. **[Crossref]**

Aydin, S., Koçak, O., Shaw, T. A., Buber, B., Akpinar, E. Z., & Younis, M. Z. (2021). Investigation of the effect of social media addiction on adults with depression. *Healthcare, 9*(4), 450. **[Crossref]**

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An Inventory for Measuring Depression. *Archives of General Psychiatry, 4*(6), 561-571. **[Crossref]**

Bilgin, O., & Taş, İ. (2018). Effects of perceived social support and psychological resilience on social media addiction among university students. *Universal Journal of Educational Research, 6*(4), 751-758. **[Crossref]**

Brailovskaia, J., & Margraf, J. (2020). Relationship between depression symptoms, physical activity, and addictive social media use. *Cyberpsychology, Behavior, and Social Networking, 23*(12), 818-822. **[Crossref]**

Chen, J., & Wang, Y. (2021). Social media use for health purposes: Systematic review. *Journal of Medical Internet Research, 23*(5), e17917. **[Crossref]**

Çiçek, I., Emin, Ş. M., Arslan, G., & Yıldırım, M. (2024). Problematic social media use, satisfaction with life, and levels of depressive symptoms in university students during the COVID-19 pandemic: Mediation role of social support. *Psihologija*, *57*(2), 177-197. **[Crossref]**

Davila, J., Hershenberg, R., Feinstein, B. A., Gorman, K., Bhatia, V., & Starr, L. R. (2012). Frequency and quality of social networking among young adults: Associations with depressive symptoms, rumination, and corumination. *Psychology of Popular Media Culture, 1*(2), 72-86. **[Crossref]**

Eker, D., Arkar, H., & Yaldız, H. (2001). Çok Boyutlu Algılanan Sosyal Destek Ölçeği'nin gözden geçirilmiş formunun faktör yapısı, geçerlik ve güvenirliği. *Türk Psikiyatri Dergisi, 12*(1), 17-25. https://www.turkpsikiyatri.com/PDF/C12S1/cokBoyutluAlgilanan.pdf

Fumagalli, F., Muschalik, M., Kolpaczki, P., Hüllermeier, E., & Hammer, B. (2023). SHAP-IQ: Unified approximation of any-order shapley interactions. *Advances in Neural Information Processing Systems, 36*, 11515-11551. **[Crossref]**

Gökçek Özbek, M., & Karaş, H. (2022). Associations of depressive symptoms and perceived social support with addictive use of social media among elderly people in Turkey. *Psychogeriatrics, 22*(1), 29-37. **[Crossref]**

Güldal, Ş., Kılıçoğlu, N. A., & Kasapoğlu, F. (2022). Psychological flexibility, coronavirus anxiety, humor and social media addiction during COVID-19 pandemic in Turkey. *International Journal for the Advancement of Counselling*, *44*(2), 220-242. **[Crossref]**

Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., & Angell, K. E. (1998). Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology, 107*(1), 128-140. **[Crossref]**

Hassan, T., Alam, M. M., Wahab, A., & Hawlader, M. D. (2020). Prevalence and associated factors of internet addiction among young adults in Bangladesh. *Journal of the Egyptian Public Health Association, 95*(3), 1-8. **[Crossref]**

Hisli, N. (1989). Beck Depresyon Envanterinin üniversite ögrencileri için geçerliliği. *Psikoloji Dergisi, 7*(23), 3-13. https://psikolog.org.tr/tr/yayinlar/dergiler/1031828/tpd1300443319890000m000366.pdf?v=1703753150

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine, 7*(7), e1000316. **[Crossref]**

Ioannou, M., Kassianos, A. P., & Symeou, M. (2019). Coping with depressive symptoms in young adults: Perceived social support protects against depressive symptoms only under moderate levels of stress. *Frontiers in Psychology, 19*, 2780. **[Crossref]**

Kardefelt-Winther, D. (2014). A conceptual and methodological critique of internet addiction research: Towards a model of compensatory internet use. *Computers in Human Behavior, 31*, 351-354. **[Crossref]**

Kaya, H., Ayık, B., Tasdelen, R., Ercis, M., & Ertekin, E. (2021). Social support promotes mental health during the COVID-19 outbreak: A cross-sectional study from Turkey. *Psychiatria Danubina*, *33*(2), 217-224. **[Crossref]**

Keles, B., McCrae, N., & Grealish, A. (2020). A systematic review: The influence of social media on depression, anxiety and psychological distress in adolescents. *International Journal of Adolescence and Youth, 25*(1), 79-93. **[Crossref]**

Kim, A. C. H., Du, J., & Andrew, D. P. (2023). Social media consumption and depressive symptoms during the COVID-19 lockdown: The mediating effect of physical activity. *Frontiers in Psychiatry, 14*, 1120230. **[Crossref]**

Kircaburun, K. (2016). Self-esteem, daily internet use and social media addiction as predictors of depression among Turkish adolescents. *Journal of Education and Practice, 7*(24), 64-72.

Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford publications.

Kross, E., Verduyn, P., Demiralp, E., Park, J., & Lee, D. S. (2013). Facebook use predicts declines in subjective well-being in young adults. *PLoS ONE, 8*(8), e69841. **[Crossref]**

Leung, H., Pakpour, A. H., Strong, C., Lin, Y. C., Tsai, M. C., Griffiths, M. D., Lin, C. Y., & Chen, I. H. (2020). Measurement invariance across young adults from Hong Kong and Taiwan among three internet-related addiction scales: Bergen Social Media Addiction Scale (BSMAS), Smartphone Application-Based Addiction Scale (SABAS), and Internet Gaming Disorder Scale-Short Form (IGDS-SF9) (Study Part A). *Addictive Behaviors, 101*, 105969. **[Crossref]**

Lin, Y. L., Sidani, J. E., Shensa, A., Radovic, A., Miller, E., Colditz, J. B., Hoffman, B. L., Giles, L. M., & Primack, B. A. (2016). Association between social media use and depression among US young adults. *Wiley Online Library, 33*(4), 323-331. **[Crossref]**

Marengo, D., Poletti, I., & Settanni, M. (2020). The interplay between neuroticism, extraversion, and social media addiction in young adult Facebook users: Testing the mediating role of online activity using objective data. *Addictive Behaviors, 102,* 106150. **[Crossref]**

Marino, C., Canale, N., Melodia, F., Spada, M. M., & Vieno, A. (2021). The overlap between problematic smartphone use and problematic social media use: A systematic review. *Current Addiction Reports, 8*, 469-480. **[Crossref]**

Marino, C., Gini, G., Vieno, A., & Spada, M. M. (2018). A comprehensive meta-analysis on Problematic Facebook Use. *Computers in Human Behavior, 83*, 262-277. **[Crossref]**

Meshi, D., & Ellithorpe, M. E. (2021). Problematic social media use and social support received in real-life versus on social media: Associations with depression, anxiety and social isolation. *Addictive Behaviors, 119*, 106949. **[Crossref]**

Montag, C., Markowetz, A., Blaszkiewicz, K., Andone, I., Lachmann, B., Sariyska, R., Trendafilov, B., Eibes, M., Kolb, J., Reuter, M., Weber, B., & Markett, S. (2017). Facebook usage on smartphones and gray matter volume of the nucleus accumbens. *Behavioural Brain Research, 329*, 221-228. **[Crossref]**

Myrick, J. G., Holton, A. E., Himelboim, I., & Love, B. (2016). Stupidcancer: Exploring a typology of social support and the role of emotional expression in a social media community. *Health Communication, 31*(5), 596-605. **[Crossref]**

Oh, S., & Syn, S. Y. (2015). Motivations for sharing information and social support in social media: A comparative analysis of Facebook, Twitter, Delicious, YouTube, and Flickr. *Journal of the Association for Information Science and Technology, 66*(10), 2045-2060. **[Crossref]**

Samra, A., Warburton, W. A., & Collins, A. M. (2022). Social comparisons: A potential mechanism linking problematic social media use with depression. *Journal of Behavioral Addictions, 11*(2), 607-614. **[Crossref]**

Siedlecki, K. L., Salthouse, T. A., Oishi, S., & Jeswani, S. (2014). The relationship between social support and subjective well-being across age. S*ocial Indicators Research, 117*(2), 561-576. **[Crossref]**

Sindermann, C., Elhai, J. D., & Montag, C. (2020). Predicting tendencies towards the disordered use of Facebook's social media platforms: On the role of personality, impulsivity, and social anxiety. *Psychiatry Research, 285*, 112793. **[Crossref]**

Şahin, C., & Yağci, M. (2017). Sosyal Medya Bağımlılığı Ölçeği-yetişkin formu: Geçerlilik ve güvenirlik çalışması. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi, 18*(1), 523-538. https://izlik.org/JA87TW45UC

Tabachnick, B. G. (2014). *Using multivariate statistics*. Pearson New International Edition.

Tang, J. H., Chen, M. C., Yang, C. Y., Chung, T. Y., & Lee, Y. A. (2016). Personality traits, interpersonal relationships, online social support, and Facebook addiction. *Telematics and Informatics, 33*(1), 102-108. **[Crossref]**

Tariq, A., Beihai, T., Abbas, N., Ali, S., Yao, W., & Imran, M. (2020). Role of perceived social support on the association between physical disability and symptoms of depression in senior citizens of Pakistan. *International Journal of Environmental Research and Public Health, 17*(5), 1485. **[Crossref]**

Treem, J. W., Dailey, S. L., Pierce, C. S., & Biffl, D. (2016). What we are talking about when we talk about social media: A framework for study. *Sociology Compass, 10*(9), 768-784. **[Crossref]**

Turel, O., He, Q., Xue, G., Xiao, L., & Bechara, A. (2014). Examination of neural systems sub-serving Facebook "addiction". *Psychological Reports, 115*(3), 675-695. **[Crossref]**

Verduyn, P., Gugushvili, N., & Kross, E. (2021). The impact of social network sites on mental health: Distinguishing active from passive use. *World Psychiatry*, *20*(1), 133-134. **[Crossref]**

Wang, P., Wang, X., Zhao, M., Wu, Y., Wang, Y., & Lei, L. (2019). Can social networking sites alleviate depression? The Relation between authentic online self-presentation and adolescent depression: A mediation model of perceived social support and rumination. *Current Psychology, 38*, 1512-1521. **[Crossref]**

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*(1), 30-41. **[Crossref]**

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Research Article
DOI: 10.15805/addicta.2026.508

Disordered eating behaviors in internet gaming disorder: Clinical and treatment correlates of a naturalistically treated youth sample

Celal Yeşilkaya[1], Çağatay Ermiş[2], Mustafa Tunçtürk[3], Sezen Alarslan[1], Merve Can[4], Eren Halaç[5], Nilay Ağaç[6], Berrin Bilgiç[7], Ayça Atay[8], Gökçe Elif Alkaş[9], Gözde Yazkan Akgül[10], Serkan Turan[6], Gül Karaçetin[11]

[1]Department of Child and Adolescent Psychiatry, Ereğli Public Hospital, Konya, Türkiye
[2]Department of Child Psychiatry, Queen Silvia Children's Hospital, Gothenburg, Sweden
[3]Department of Child and Adolescent Psychiatry, Bilkent City Hospital, Ankara, Türkiye
[4]Department of Child and Adolescent Psychiatry, Siverek Public Hospital, Şanlıurfa, Türkiye
[5]Department of Child and Adolescent Psychiatry, Mardin Training and Research Hospital, Mardin, Türkiye
[6]Department of Child and Adolescent Psychiatry, School of Medicine, Uludağ University, Bursa, Türkiye
[7]Department of Child and Adolescent Psychiatry, Adnan Menderes University, Aydın, Türkiye
[8]Department of Child and Adolescent Psychiatry, Helios Klinikum Berlin-Buch, Berlin, Germany
[9]Department of Child and Adolescent Psychiatry, Bağcılar Training and Research Hospital, İstanbul, Türkiye
[10]Department of Child and Adolescent Psychiatry, School of Medicine, Marmara University, İstanbul, Türkiye
[11]Department of Child and Adolescent Psychiatry, University of Health Sciences, Bakırköy Prof. Dr. Mazhar Osman Research and Training Hospital for Psychiatry, Neurology and Neurosurgery, İstanbul, Türkiye

Abstract

This study aimed to evaluate the clinical correlates of disordered eating behaviors among adolescents diagnosed with Internet Gaming Disorder (IGD) in a clinical setting. Participants were evaluated using a semi-structured clinical interview to assess psychiatric comorbidities. The severity of IGD was measured using the Internet Gaming Disorder Scale–Short Form. Disordered eating behaviors were assessed with the Eating Disorder Examination Questionnaire (EDE-Q) and the Eating Attitudes Test (EAT). Associations between clinical characteristics and disordered eating were analyzed using multiple linear regression models. The study included 80 male patients diagnosed with IGD and 36 healthy male adolescents. Generalized Anxiety Disorder (GAD) emerged as a significant predictor of elevated EDE-Q total scores in the IGD group (β = 0.41, 95% CI = 0.19–0.62, $p < 0.001$). GAD was also significantly associated with the EDE-Q subscales of restrictive eating, eating concern, shape concern, and weight concern, but not with the binge eating subscale ($p = 0.117$). Other psychiatric diagnoses did not show significant associations with disordered eating behaviors. Among pharmacological treatments, antipsychotic medication use was significantly associated with higher EAT scores (β = 0.24, 95% CI = 0.02–0.46, $p = 0.035$), whereas antidepressants and stimulants were not. These findings indicate that GAD and antipsychotic medication use are significant correlates of disordered eating behaviors in male adolescents with IGD. The results underscore the importance of screening for anxiety symptoms and monitoring eating behaviors in this clinical population.

Keywords: internet gaming disorder, adolescent, eating disorder, eating behaviors

Main points

- Antipsychotics were related to dysfunctional eating habits.
- Generalized Anxiety Disorder is associated with disordered eating behaviors.
- There were similar levels of disordered eating behaviors between male patients with IGD and the comparison group.

Corresponding author: Serkan Turan • **Email:** drserkanturan@icloud.com
Received: May 16, 2025 **Accepted:** April 1, 2026 **Published online:** June 22, 2026

Cite as: Yeşilkaya, C., Ermiş, Ç., Tunçtürk, M., Alarslan, S., Can, M., Halaç, E., Ağaç, N., Bilgiç, B., Atay, A., Alkaş, G. E., Akgül, G. Y., Turan, S., & Karaçetin, G. (2026). Disordered eating behaviors in internet gaming disorder: Clinical and treatment correlates of a naturalistically treated youth sample. *Addicta: The Turkish Journal on Addictions*, *13*(2), 277-286. https://doi.org/10.15805/addicta.2026.507

Introduction

Internet Gaming Disorder (IGD) is characterized by excessive engagement in online gaming for a period of at least one year, resulting in significant social and functional impairments. IGD is included in Section III of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) as a condition warranting further clinical research before it can be considered a formal disorder (American Psychiatric Association, 2013). Although IGD can be diagnosed across the lifespan, it is most frequently observed in adolescents and young adults (American Psychiatric Association, 2013). Individuals with IGD often exhibit a range of psychosocial difficulties, including antisocial behaviors, heightened irritability or anger, emotional dysregulation, and diminished self-esteem (Wartberg et al., 2019).

Individuals with eating disorders typically exhibit significant concerns related to body weight, shape, and eating behaviors (Duncan et al., 2007). These disorders are often accompanied by a range of maladaptive eating behaviors, including binge eating, self-induced vomiting, and food restriction (Duncan et al., 2007). Such patterns of disordered eating are associated with a spectrum of adverse psychosocial outcomes, including impairments in family functioning, emotional and behavioral dysregulation, and detrimental physical health consequences (Micali et al., 2014). Similarly, excessive engagement in internet gaming has been linked to weight fluctuations (both gain and loss), musculoskeletal discomfort due to poor posture, and disturbances in sleep patterns (Fernández-Villa et al., 2015; King & Delfabbro, 2018). In line with these findings, symptoms indicative of disordered eating have been reported at higher rates among individuals with Internet Gaming Disorder (IGD) (Hinojo-Lucena et al., 2019). Moreover, both online gaming and disordered eating behaviors appear to share common neurobiological substrates, particularly within neural circuits involved in reward processing (Harrison et al., 2010; Raiha et al., 2020; Turan et al., 2021). For instance, behaviors such as binge eating and self-starvation have been associated with alterations in reward sensitivity (Harrison et al., 2010). Correspondingly, neuroimaging studies have demonstrated disruptions in reward circuitry among individuals diagnosed with IGD (Hwang et al., 2020; Raiha et al., 2020).

The existing literature has consistently demonstrated a relationship between symptoms of internet addiction and disordered eating behaviors (Alpaslan et al., 2015; Fernández-Villa et al., 2015; Rodgers et al., 2013; Tao, 2013). A recent meta-analysis substantiated these findings, reporting significantly increased odds of disordered eating among individuals exhibiting problematic internet use (Hinojo-Lucena et al., 2019). However, the majority of these studies have been conducted in community-based samples, primarily comprising adults, university students, and adolescents from high school settings. Consequently, research examining this association within clinically diagnosed populations remains limited. In particular, disordered eating among individuals formally diagnosed with IGD according to DSM-5 criteria is notably underexplored, as the overwhelming majority of existing studies rely on self-report screening tools rather than structured clinical interviews. Furthermore, individuals with IGD are known to have elevated rates of psychiatric comorbidities, including Major Depressive Disorder (MDD), Social Anxiety Disorder (SAD), Generalized Anxiety Disorder (GAD), and Attention-Deficit/Hyperactivity Disorder (ADHD) (Ho et al., 2014; Ko et al., 2012; Wang et al., 2017). Despite this, the potential associations between disordered eating behaviors and these comorbid psychiatric conditions in clinically diagnosed IGD populations have not been systematically investigated, representing a significant gap in the literature.

Recent studies have continued to demonstrate associations between problematic internet use and disordered eating behaviors across adolescent and young adult populations (Hsieh et al., 2018; Yu et al., 2021). Moreover, emerging evidence suggests that alterations in reward processing and inhibitory control may represent shared mechanisms underlying both IGD and disordered eating (Li et al., 2020; Raiha et al., 2020). In addition, more recent findings have emphasized the role of psychiatric comorbidities, particularly anxiety disorders, in exacerbating maladaptive eating patterns among adolescents with IGD (Wang et al., 2017; Yu et al., 2021). These studies highlight the necessity of examining these variables in clinically diagnosed populations, which remains limited in the current literature.

Considering there is a lack of knowledge to explicate the relationship between disordered eating attitudes and IGD in the clinical population, further efforts are needed to extend previous findings to clinical settings. Additionally, given the paucity of knowledge regarding the clinical correlates of dysfunctional eating attitudes in the clinical population, the effects of comorbid psychiatric disorder and medications on eating behaviors are still unresolved research questions in this population.

The present study addresses these critical gaps by examining disordered eating behaviors in a clinically diagnosed adolescent IGD sample. Unlike previous research that has predominantly relied on community-based samples using self-report measures of problematic internet use, we recruited adolescents who received formal IGD diagnoses through structured clinical interviews based on DSM-5 criteria in a specialized outpatient clinic in Türkiye. This clinical sample provides a unique opportunity to investigate disordered eating behaviors in adolescents experiencing clinically significant impairment from IGD, rather than subclinical or self-reported gaming problems. Furthermore, by systematically examining how specific psychiatric comorbidities (MDD, SAD, GAD, ADHD, and disruptive behavior disorders) and their pharmacological treatments relate to eating behaviors, this study provides the first comprehensive clinical characterization of factors associated with disordered eating in adolescents formally diagnosed with IGD.

In the present study, we aimed to examine several clinical and treatment-related variables as potential correlates of disordered eating behaviors among adolescents with IGD. These variables included the severity and duration of IGD

symptoms, common psychiatric comorbidities (e.g., Major Depressive Disorder, Social Anxiety Disorder, Generalized Anxiety Disorder, Attention-Deficit/Hyperactivity Disorder, and disruptive behavior disorders), and current psychotropic medication use (antidepressants, stimulants, and antipsychotics). By systematically investigating these factors, we sought to clarify which clinical characteristics are most strongly associated with disordered eating in this clinical population. Accordingly, we formulated the following hypotheses:

1. Adolescents with IGD would demonstrate higher levels of dysfunctional eating behaviors compared to healthy controls.
2. Disordered eating behaviors would be significantly associated with psychiatric comorbidities, particularly MDD, SAD, OCD, and GAD.
3. Psychotropic medications, especially stimulant and antipsychotic treatments, would influence disordered eating behaviors in the IGD group.

Method

Participants

This cross-sectional study was conducted at a tertiary-care, university-affiliated psychiatry hospital between January and April 2021. Participants in the Internet Gaming Disorder (IGD) group consisted of male children and adolescents who consecutively presented to a specialized outpatient clinic for the assessment and treatment of IGD. Each participant was evaluated by a trained clinician, and diagnoses were made according to the DSM-5 criteria for IGD. All diagnostic procedures were supervised by board-certified child and adolescent psychiatry consultants. In addition to diagnostic assessments, sociodemographic and clinical characteristics, as well as current pharmacological treatments, were recorded using a standardized data collection form. Psychiatric comorbidities were assessed using the semi-structured *Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children – Present and Lifetime Version* (K-SADS-PL, DSM-5).

The inclusion criteria for the case group were: i) aged between 10-18 years, ii) a clinical diagnosis of IGD per DSM-5. Severe and chronic psychiatric disorders that could confound hypothesis tests were excluded. Thus, the exclusion criteria of the study were clinical diagnoses of: i) psychotic disorder, ii) bipolar disorder, iii) autism spectrum disorder, iv) intellectual disability, and v) severe neurologic conditions that could impair the clinical interview and/or data collection. Since all patients in the IGD unit were male, we only included male subjects between 10-18 years of age.

The healthy control group was recruited from the same geographic and sociodemographic area as the IGD group to ensure comparability. Participants were recruited via hospital bulletin board advertisements and community announcements. All controls were systematically screened with the K-SADS-PL to confirm the absence of current or past psychiatric diagnoses. In addition, controls were matched to the IGD group on age and educational background, and group equivalence was statistically verified (see Table 1). Since the IGD group consisted of male participants, we only included male youth in the comparison group. Disordered eating behaviors and attitudes were assessed using two standardized instruments: the 40-item *Eating Attitudes Test* (EAT-40) and the *Eating Disorder Examination Questionnaire* (EDE-Q). Written informed consent was obtained from all participants and their legal guardians. Participation was voluntary, and no financial incentives were provided. The Local Ethics Committee reviewed and approved the study protocol (Protocol Code: 2021.10.01.10).

Measures

Sociodemographic Data Form

Sociodemographic data and IGD characteristics (e.g. age, sex, education, weekly game hours, internet access, preferred game types, etc.) were collected using a sociodemographic data form. The total duration of IGD (years), total duration of education (years), current educational status, and current medications were also recorded. A detailed Table 1 is included to present the sociodemographic and clinical characteristics of both groups for clarity.

The Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS-PL)

The K-SADS-PL is a semi-structured diagnostic interview developed by Kaufman and colleagues (1997) (Kaufman et al., 1997). The interview evaluates any past or present psychiatric disorders in children and adolescents. Information obtained from families, children, and teachers is also recorded in the K-SADS-PL. The Turkish validity and reliability study of the DSM-5 version was performed by Unal and colleagues, in which there was no structural equation modeling or confirmatory factor analysis; therefore, no fit indices were calculated (Unal et al., 2019).

Eating Attitudes Test (EAT-40)

The EAT-40 was developed to assess dysfunctional eating behaviors, particularly those observed in subjects with anorexia nervosa (Garner & Garfinkel, 1979). The questionnaire includes 40 items scored on a 6-point Likert-type scale (never=6, rarely=5, sometimes=4, often=3, very often=2, always=1). The EAT-40 was translated into Turkish by Savasir and Erol (Savasir & Erol, 1989). Cronbach's alpha value of the scale was 0.70 and the test-retest reliability was found as r=0.65 in the Turkish validation study (Savasir & Erol, 1989). Cronbach's alpha for internal consistency was 0.84 in the present study. However, no confirmatory factor analysis or fit indices were reported in the original validation study.

Table 1. Sociodemographic, clinical characteristics and eating attitudes of study participants

Variables, mean ± SD	IGD, n=80	HC, n=36	Statistics	p
Age, years	14.9 ± 2.1	15.5 ± 1.5	*t=1.5*	0.143
Education, years	8.4 ± 1.9	9.5 ± 1.6	*t=3.0*	**0.003**
Duration of IGD, years	3.2 ± 1.6	-	-	-
IGDS9-SF	32.0 ± 8.1	13.4 ± 2.4	*t=18.8*	**<0.001**
Psychiatric Comorbidities, n (%)				
ADHD	64 (80.0)	-	-	-
MDD	22 (27.5)	-	-	-
SAD	23 (28.8)	-	-	-
GAD	10 (12.5)	-	-	-
OCD	6 (7.5)	-	-	-
ODD	33 (41.3)	-	-	-
CD	7 (8.8)	-	-	-
Separation anxiety disorder	9 (11.3)	-	-	-
Tic disorders	6 (7.5)	-	-	-
PTSD	0 (0.0)	-	-	-
Medications, n (%)				
Antipsychotics	9 (11.3)	-	-	-
Antidepressants	13 (16.3)	-	-	-
Stimulants	25 (31.3)	-	-	-
Mood Stabilizers	0 (0.0)	-	-	-
Benzodiazepines	0 (0.0)	-	-	-
Eating pathology				
Disordered eating symptoms, n (%)[a]	11 (13.8)	3 (8.3)	$\chi 2 = 0.7$	0.407
The total score of EDE-Q [b]	0.89 ± 0.50	0.96 ± 0.39	F=0.3 [b]	0.618
The total score of EAT [b]	3.58 ± 1.21	3.37 ± 0.71	F= 1.1 [b]	0.292

ADHD=attention-deficit hyperactivity disorder, CD=conduct disorder, CI=confidence interval, IGD=internet gaming disorder, IGDS9-SF=Internet Gaming Disorder Scale - Short Form, GAD=generalized anxiety disorder, HC=healthy controls, MDD=major depressive disorder, OCD= obsessive-compulsive disorder, ODD=oppositional defiant disorder, SAD= social anxiety disorder; SD=standard deviation; [a]EDE-Q scores ≥ 2.3 based on the previous literature (24, 25).; [b] The mean scale scores were converted to the normal distribution using square root transformation.; [b] Adjusted for age, and education using ANCOVA models.

Eating Disorder Examination Questionnaire (EDE-Q)

The EDE-Q was developed as an interview-based or self-report inventory to evaluate symptoms associated with eating disorders (Fairburn & Beglin, 1994). The EDE-Q includes 33 items and five subscales: eating concern, weight concern, shape concern, binge eating, and restraint. The frequency of dysfunctional eating behaviors is measured using a Likert-type scale (0=No days, 1=1-5 days, 2=6-12 days, 3=13-15 days, 4=16-22 days, 5=23-27 days, 6=every day). Subscale scores are calculated by dividing the sum of item scores by the number of items in each subscale; thus, the sum scores range from 0 to 6. Higher scores indicate more problematic eating behaviors. The total score of EDE-Q was also the average score of eating concern, weight concern, shape concern subscales (except for binge eating). The Turkish version of the EDE-Q demonstrated high internal consistency (α = 0.93) and excellent test-retest reliability (r = .91). However, no confirmatory factor analysis or fit indices were reported (Yucel et al., 2011). Cronbach's alpha calculated in this study was also 0.91. Previous studies used ≥ 2.3 as a cut-off score for disordered eating symptoms (Hilbert et al., 2012; Quesnel et al., 2018).

Internet Gaming Disorder Scale–Short Form (IGDS9-SF)

The Internet Gaming Disorder Scale–Short Form (IGDS9-SF) was developed by Pontes and Griffiths (2015) to assess IGD-related symptoms in accordance with the diagnostic criteria of DSM-5 (Pontes & Griffiths, 2015). The IGDS9-SF includes nine items rated on a 5-point Likert scale from never to very often (1=never, 2=rarely, 3=sometimes, 4=often, 5=very often). The Turkish version of the scale demonstrated high internal consistency in the reference study (Cronbach's alpha = 0.89) (Evren et al., 2018). Cronbach's alpha calculated in this study was 0.94. The Turkish version of the IGDS9-SF demonstrated good model fit indices in confirmatory factor analysis: χ^2/df = 4.32, The Goodness of Fit = 0.982, Comparative Fit Index = 0.985, Tucker Lewis Index = 0.976, and The Root Mean Square Error of Approximation = 0.052.

Data Analysis

Continuous variables were summarized using means and standard deviations, while categorical variables were presented as frequencies and percentages. Group comparisons of categorical variables were conducted using the chi-

square test. To compare sociodemographic characteristics between the IGD and healthy control groups, independent samples *t*-tests were used. Given that the distribution of disordered eating scale scores was non-normal, a square root transformation was applied to approximate normality.

To examine group differences in the severity of disordered eating behaviors, analysis of covariance (ANCOVA) models were utilized, adjusting for age and years of education. To test the study's second and third hypotheses—namely, the associations between disordered eating behaviors and clinical psychiatric diagnoses or psychotropic medication use—univariate and multivariate linear regression analyses were conducted within the IGD group. Predictor variables in the regression models included age, IGD severity and duration, and the presence of psychiatric comorbidities or medication use.

A significance level of $p < 0.05$ was considered statistically significant for all analyses. Data analyses were performed using the Statistical Package for the Social Sciences (SPSS), Version 24.0 (IBM Corp., Armonk, NY, USA)

Results

Of the 132 patients initially screened, 30 individuals who did not meet the DSM-5 diagnostic criteria for Internet Gaming Disorder (IGD) and 22 individuals who declined to provide informed consent were excluded. Consequently, the final study sample comprised 80 male adolescents with IGD and 36 age-matched healthy controls. Table 1 presents the sociodemographic and clinical characteristics of the study participants, along with measures of disordered eating. There were no significant differences between the IGD and control groups in terms of age. However, a significant group difference was observed in years of education, with the IGD group demonstrating a lower mean level of educational attainment compared to the control group (IGD=8.4 ± 1.9 years vs. healthy controls=9.5 ± 1.6, p=0.003).

The IGD group demonstrated higher levels of online gaming-related symptoms compared to the comparison group (32.0 ± 8.1 vs. 13.4 ± 2.4, p<0.001). The most common psychiatric comorbidity was ADHD (80.0%), followed by oppositional defiant disorder (ODD) (41.3%), SAD (28.8%), and MDD (27.5%). Also, the most commonly used medications were stimulants (31.3%), followed by antidepressants (16.3%) and antipsychotics (11.3%). No patient received mood stabilizers or benzodiazepines. The frequency of disordered eating symptoms was similar in both groups. (IGD=13.8% vs. healthy controls=8.3%, p=0.407). Additionally, the severity of dysfunctional eating behaviors did not differ between the groups.

The influence of psychiatric comorbidities on eating behaviors is summarized in Table 2. Multiple linear regression analyses indicated that, among anxiety and mood disorders, only Generalized Anxiety Disorder (GAD) was significantly associated with higher total scores on the Eating Disorder Examination Questionnaire (EDE-Q) within the IGD group (β = 0.41, 95% CI = 0.19–0.62, p < 0.001), after controlling for age, IGD severity, and duration. Other psychiatric diagnoses did not have significant associations with disordered eating. No association was found between EAT scores and the presence of GAD. Specifically, the diagnosis of GAD was associated with restrictive eating (β= 0.40, 95%CI=0.18 – 0.61, p<0.001), eating concern (β=0.40, 95%CI=0.18 – 0.61, p<0.001), shape concern (β=0.34, 95%CI=0.12-0.56, p=0.003), and weight concern (β=0.35, 95%CI=0.13-0.57, p =0.002) subscales, but not with the binge eating subscale (p=0.117). Likewise, ADHD, separation anxiety disorder, tic disorders and disruptive behavior-related diagnoses (e.g. ODD, and conduct disorder) did not have any significant effect on eating attitudes. These findings suggest that anxiety may contribute to increased preoccupation with body shape and control over eating, even in the absence of overt binge behaviors.

Table 2. Multiple linear regression analyses to investigate the association between clinical diagnoses and eating attitudes within the IGD group

Diagnoses	EDE-Q Total [a]		EAT Total [a]	
	β	95%CI	β	95%CI
MDD	0.17	- 0.08 to 0.41	0.02	- 0.22 to 0.26
OCD	0.12	- 0.11 to 0.36	0.08	- 0.15 to 0.32
GAD	0.41***	0.19 to 0.62	- 0.06	- 0.29 to 0.17
SAD	0.12	- 0.12 to 0.36	- 0.18	- 0.41 to 0.06
ADHD	0.08	- 0.15 to 0.31	0.10	- 0.13 to 0.33
ODD	0.02	- 0.23 to 0.26	- 0.12	- 0.35 to 0.12
CD	0.01	- 0.23 to 0.25	0.12	- 0.12 to 0.35
Separation anxiety disorder	- 0.14	- 0.37 to 0.09	0.12	-0.10 to 0.34
Tic disorders	0.03	-0.21 to 0.26	0.17	-0.06 to 0.39

ADHD=attention-deficit hyperactivity disorder, CD=conduct disorder, CI=confidence interval, EAT= Eating Attitudes Test, EDE-Q=Eating Disorder Examination Questionnaire, GAD=generalized anxiety disorder, MDD=major depressive disorder, OCD= obsessive-compulsive disorder, ODD=oppositional defiant disorder, SAD=social anxiety disorder.; * Significant at <0.05 level.; *** Significant at <0.001 level.; [a] Mean scale scores were converted to the normal distribution using square root transformation. Other independent variables were age, the severity of IGD, and the duration of IGD.

Table 3. The association between medications and eating attitudes within the IGD group

Medications	EDE-Q total [a]		EAT [a]	
	β	95%CI	β	95%CI
Antipsychotic	0.15	-0.08 to 0.39	0.24*	0.02 - 0.46
Antidepressants	0.02	-0.22 to 0.26	-0.16	- 0.39 to 0.08
Stimulants	0.04	-0.19 to 0.27	0.08	- 0.15 to 0.31

CI=confidence interval, EAT= Eating Attitudes Test, EDE-Q=Eating Disorder Examination Questionnaire; * Significant at <0.05 level.; [a] The mean scale scores were converted to the normal distribution using square root transformation. Other independent variables were age, the severity of IGD, and the duration of IGD.

Similarly, Table 3 presents the regression outcomes regarding psychotropic medication use. Antipsychotic medication remained significantly associated with higher EAT scores (β = 0.24, 95% CI = 0.02–0.46, p = 0.035) even after adjusting for ADHD, whereas antidepressants and stimulants showed no significant effects. The relationship between antipsychotic treatment and EAT scores also remained significant after adjusting for the presence of ADHD (β=0.23, 95%CI=0.01-0.46, p=0.041). In univariate regression analyses, antipsychotic treatment was also significantly associated with eating concern (β=0.23, 95%CI=0.01-0.45, p=0.041) and shape concern (β=0.23, 95%CI=0.01-0.45, p=0.041). However, these findings remained at the trend level and did not reach statistical significance after adjusting for sociodemographic and clinical covariates, and ADHD (p=0.062 and p=0.069, respectively). Neither antidepressant medications nor stimulant use showed a significant relationship with disordered eating behaviors. These results indicate that antipsychotic use may contribute modestly to disturbed eating attitudes, possibly reflecting medication-related appetite or weight changes, whereas antidepressants and stimulants do not appear to exert a similar effect.

Discussion

This study aimed to investigate the clinical correlates of disordered eating attitudes among individuals diagnosed with IGD, a topic that remains relatively unexplored in clinical populations. The findings indicate that male adolescents with IGD exhibit comparable levels of disordered eating behaviors to those observed in a community-based control group. Notably, the presence of GAD was significantly associated with heightened disordered eating attitudes, whereas no such associations were identified for other psychiatric comorbidities. Among pharmacological treatments, the use of antipsychotic medication was associated with elevated levels of dysfunctional eating behaviors, while antidepressant and stimulant use showed no significant associations. Importantly, neither GAD nor antipsychotic treatment was linked to increased binge eating behaviors specifically.

Previous research conducted in different regions has yielded variable findings regarding the association between IGD and disordered eating, and the prevalence of IGD, suggesting higher rates in Asia and the Middle East (Pike et al., 2014; Thomas et al., 2024). Findings from a Turkish study with children and adolescents aged between 9–15 indicated an association between screen time and risky eating behaviors (Kayhan Tetik et al., 2018). Another recent study in Jordan suggested weak but positive correlations between gaming addiction and disordered eating (Alnaimi et al., 2025). Similar associations have been reported in research from Russia and Kazakhstan (Konstantinov et al., 2024), and United States of America (Ellithorpe et al., 2023). Additionally, findings from German adults showed correlations between disordered eating behaviors and gaming in men but not women (Müller et al., 2015).

IGD commonly presents with various psychiatric comorbidities including depression, anxiety, and ADHD (Ho et al., 2014; Ko et al., 2012; Wang et al., 2017). Notably, in our study, GAD was the only comorbid condition found to have a significant association with disordered eating behaviors. This finding suggests that trait anxiety may serve as a vulnerability factor, predisposing individuals with IGD to maladaptive eating patterns. Prior research has similarly highlighted the role of social media use and body image avoidance in contributing to disordered eating (Mabe et al., 2014; Rodgers et al., 2013). In line with our results, a recently published study demonstrated a significant link between GAD and IGD (Wang et al., 2017). In that same study, it was also suggested that this link was partially mediated by behavioral inhibition, leading to avoidance of the real world and negative feelings (Wang et al., 2017). The current findings extend previous research by suggesting that GAD and disordered eating may share common underlying mechanisms. Individuals with GAD often exhibit impaired interpersonal functioning and are prone to chronic worry as a maladaptive coping strategy for regulating negative affect (Newman et al., 2013). This shared vulnerability—characterized by poor coping strategies—may manifest as various forms of escapism, including both disordered eating and problematic gaming. Consequently, the co-occurrence of these conditions may reflect broader deficits in emotional regulation and coping mechanisms. Future studies are warranted to further explore the mediating and moderating factors underlying the association between anxiety and disordered eating in individuals with IGD. Moreover, interventions targeting anxiety symptoms and enhancing adaptive coping strategies may not only ameliorate disordered eating but also reduce the severity of IGD symptoms.

The findings of the present study indicate that eating and shape concerns were modestly associated with antipsychotic use, whereas no significant associations were observed with stimulant or antidepressant medications. Several neurobiological mechanisms may underlie this observation, particularly those involving dopaminergic pathways implicated in appetite and reward regulation. Key brain regions contributing to food-related dopaminergic reward circuitry include the nucleus accumbens, insula, amygdala, anterior cingulate cortex, orbitofrontal cortex, and hypothalamus (Petrovich et al., 2005; Volkow et al., 2011). Dysregulation within these neural substrates may contribute to maladaptive eating behaviors (Berner et al., 2019). Also, despite their clinical benefits, antipsychotic medications may reduce cognitive control over satiety, causing dysregulation in food-related

rewards and appetite (Elman et al., 2006). Given that youth with IGD demonstrate deficits in inhibitory control within the reward system (Hwang et al., 2020; Li et al., 2020; Raiha et al., 2020), the antidopaminergic effects of antipsychotics may further exacerbate difficulties in modulating food-related reward sensitivity, potentially contributing to the emergence of disordered eating patterns (Arnsten, 2006). On the other hand, stimulant medications, which act as dopaminergic agonists, may enhance executive functioning and reduce eating-related impulsivity. This interpretation aligns with theoretical frameworks suggesting that impulsivity interacts with cognitive distortions, emotion-regulation difficulties, and reward-driven behavioral tendencies, thereby contributing to both disinhibited eating behaviors and compulsive gaming patterns (Keshen et al., 2022; Pearlstein et al., 2024). Taken together, it could be argued that patients with IGD may be sensitive to antidopaminergic effects of antipsychotic medications and they may subsequently develop disordered eating as well as comorbid eating disorders. Therefore, a clinical implication of these findings is the need to carefully monitor the eating habits among individuals with internet addiction who receive antipsychotic treatment in clinical practice.

No significant association was found between stimulant use and eating psychopathology in the present study. However, it is important to note that the evaluation did not explore subgroups of ADHD or the optimization of stimulant dosages, both of which may influence eating behaviors (Turan & Akay, 2019). Moreover, a previous study has suggested that ADHD-specific stimulant misuse is associated with increased rates of disordered eating, although stimulants have therapeutic effects on ADHD (Gibbs et al., 2016). Nevertheless, stimulants may also reduce IGD symptoms (Han et al., 2009); hence, these medications may alleviate the risk of general psychopathology in susceptible youth.

Another important consideration is the cultural context of the study. In Türkiye, online gaming is more strongly associated with male adolescents, which is reflected in the overwhelming male predominance of our IGD outpatient clinic (Yar et al., 2019). This cultural trend influences not only the composition of the clinical sample but also gaming motivations, body image concerns, and help-seeking tendencies. Indeed, prior literature indicates that gender roles substantially shape both eating behaviors and the ways in which psychiatric symptoms are expressed. Yıldırım et al. (2025) further demonstrated that social isolation and anxiety may directly increase the risk of eating disorders among male adolescents, highlighting the need to reconsider the widespread assumption that such risk factors are primarily relevant to girls. These findings suggest that characteristics commonly observed in male adolescents with IGD—such as impulsivity, reward-seeking tendencies, and social avoidance—may interact with gendered sociocultural norms, thereby influencing both gaming behaviors and eating attitudes (Yıldırım et al., 2025). Therefore, while our findings provide insight into the clinical correlates of disordered eating in Turkish male adolescents with IGD, caution should be exercised when generalizing the results to other cultural settings or to female populations. Future cross-cultural research including both genders would provide a more comprehensive understanding of these associations.

In our study, the prevalence of disordered eating was found to be 13.8% in the clinical male population, which was comparable to the 8.3% observed in healthy controls. These values were lower than those reported in previous studies (Alpaslan et al., 2015; Hsieh et al., 2018). This finding was not surprising since eating disorders are more commonly seen in female adolescents. Nevertheless, previous studies have reported that males are more prone to internet addiction (Canan et al., 2014; Yu et al., 2021). The current findings are also in line with the previous works conducted in our IGD outpatient clinic, which reported that there was an overwhelming male predominance in terms of IGD diagnosis (Bulanik Koc et al., 2020). The lack of female participants in our sample may reflect cultural factors such as the lack of awareness among society and clinicians.

IGD is mainly characterized by a constellation of psychiatric disorders that may require psychotropic medications and psychosocial interventions (Ho et al., 2014; Ko et al., 2012; Wang et al., 2017). Considering that antidepressant and stimulant medications were not related to disordered eating, clinical implications of our study also include the importance of timely and appropriate treatment of psychiatric comorbidities such as ADHD and anxiety disorders. On the other hand, the benefit to risk ratio of antipsychotic medications should be taken into account cautiously, compared to psychosocial interventions, since they might give rise to impairments in eating patterns.

Limitations and Directions for Future Research

Limitations and strengths of the study have to be discussed when interpreting the results. The sample size of the study was modest to investigate the association between internet gaming disorder and eating attitudes. Additionally, there were only male patients and healthy controls. However, the study was implemented in the IGD outpatient clinic of the hospital. Accordingly, patients were consecutively recruited and there were no female participants. However, this finding was also compatible with previous reports conducted in our IGD outpatient clinic (Bulanik Koc et al., 2020). While this reflects real-world clinical practice and increases ecological validity, it restricts the generalizability of our findings to female adolescents. Future studies including both genders across different cultural contexts are warranted to provide a more comprehensive understanding of disordered eating behaviors in IGD. Moreover, we focused on disordered eating behaviors, as eating disorders were not present in the sample. Another limitation is the cross-sectional nature of the study, which precludes the establishment of causality between eating symptoms and clinical variables. Given that patients and healthy controls did not differ significantly in terms of dysfunctional eating behaviors, larger clinical samples, including individuals with and without disordered eating, are required to yield more definitive conclusions. Furthermore, the small subsample sizes of individuals with specific

characteristics in the linear regression analyses may limit the generalizability of the results. Although all research diagnoses were confirmed via a semi-structured interview, the severity of psychiatric symptoms was not assessed using Likert-type scales, which could have provided more nuanced data. Sociodemographic and clinical data were used to covariate the results of the study. The number of healthy controls was modest for between-group comparisons, which also increases the possibility of Type II error. Despite these limitations, the findings of the present study offer several practical implications for clinicians. The observed associations between GAD comorbidity and antipsychotic treatment with eating attitudes in adolescents with IGD suggest that incorporating brief screening instruments for eating behaviors and anxiety symptoms into routine clinical assessments may be beneficial. Furthermore, careful monitoring of appetite changes, weight fluctuations, and body-image–related concerns both prior to initiating antipsychotic treatment and throughout the course of therapy may facilitate a more comprehensive evaluation of the potential effects of these medications on both gaming behavior and eating attitudes.

Conclusion

Generalized anxiety and antipsychotic treatment were found to be clinical correlates of disordered eating behaviors among individuals engaged in excessive online gaming. Anxiety traits could be the underlying mechanism triggering both IGD and eating disorders in this population. Future studies should focus on the effects of different psychotropic and behavioral interventions on eating pathologies.

Author contributions

Conception: C.E., M.T., S.T., G.K.; Design: C.Y., C.E., M.T., G.Y.A., S.T.; Data acquisition: C.Y., S.A., M.C., E.H., N.A., B.B., A.A., G.E.A.; Data interpretation: C.E., M.T., S.A., G.Y.A., S.T., G.K.; Drafting of this study: C.Y., S.A., M.C., E.H., N.A., B.B., A.A., G.E.A.; Critical revision of this study: C.E., M.T., G.Y.A., S.T., G.K. All authors reviewed the results, approved the final version of this study, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Tekirdağ Namik Kemal University Ethics Committee (Date: January 26, 2021, Decision/Protocol No: 2021.10.01.10). Informed consent was obtained from all participants involved in this study.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Alnaimi, S., Al-Habies, F. A. M., Baniyounes, M. M., Alqudah, A. F., & Al Nuaimat, A. (2025). Electronic game addiction and eating behaviors: Implications for adolescent health and academic engagement in Jordan. *Educational Process: International Journal, 17*, e2025328. **[Crossref]**

Alpaslan, A. H., Kocak, U., Avci, K., & Uzel Tas, H. (2015). The association between internet addiction and disordered eating attitudes among Turkish high school students. *Eat Weight Disord, 20*, 441-448. **[Crossref]**

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders 5th edition.* **[Crossref]**

Arnsten, A. F. (2006). Stimulants: Therapeutic actions in ADHD. *Neuropsychopharmacology*, *31*(11), 2376-2383. **[Crossref]**

Berner, L. A., Brown, T. A., Lavender, J. M., Lopez, E., Wierenga, C. E., & Kaye, W. H. (2019). Neuroendocrinology of reward in anorexia nervosa and bulimia nervosa: Beyond leptin and ghrelin. *Molecular and Cellular Endocrinology, 497*, 110320. **[Crossref]**

Bulanik Koc, E., Karacetin Ozer, G., Mutlu, C., Onal, B. S., Ciftci, A., & Ercan, O. (2020). Assessment of attitude of parents towards adolescents with Internet gaming disorder. *Pediatrics International, 62*(7), 848-856. **[Crossref]**

Canan, F., Yildirim, O., Ustunel, T. Y., Sinani, G., Kaleli, A. H., Gunes, C., & Ataoglu, A. (2014). The relationship between internet addiction and body mass index in Turkish adolescents. *Cyberpsychology, Behavior, and Social Networking, 17*(1), 40-45. **[Crossref]**

Duncan, A. E., Bucholz, K. K., Neuman, R. J., Agrawal, A., Madden, P. A., & Heath, A. C. (2007). Clustering of eating disorder symptoms in a general population female twin sample: A latent class analysis. *Psychological Medicine, 37*(8), 1097-1107. **[Crossref]**

Ellithorpe, M. E., Meshi, D., & Tham, S. M. (2023). Problematic video gaming is associated with poor sleep quality, diet quality, and personal hygiene. *Psychology of Popular Media, 12*(2), 248-253. **[Crossref]**

Elman, I., Borsook, D., & Lukas, S. E. (2006). Food intake and reward mechanisms in patients with schizophrenia: Implications for metabolic disturbances and treatment with second-generation antipsychotic agents. *Neuropsychopharmacology*, *31*, 2091-2120. **[Crossref]**

Evren, C., Dalbudak, E., Topcu, M., Kutlu, N., Evren, B., & Pontes, H. M. (2018). Psychometric validation of the Turkish nine-item internet gaming disorder scale-short form (IGDS9-SF). *Psychiatry Research, 265*, 349-354. **[Crossref]**

Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *The International Journal of Eating Disorders, 16*(4), 363-370. https://www.ncbi.nlm.nih.gov/pubmed/7866415

Fernández-Villa, T., Alguacil Ojeda, J., Almaraz Gómez, A., Cancela Carral, J. M., Delgado-Rodríguez, M., García-Martín, M., Jiménez-Mejías, E., Llorca, J., Molina, A. J., Ortíz Moncada, R., Valero-Juan, L. F., & Martín, V. (2015). Problematic internet use in university students: Associated factors and differences of gender. *Adicciones*, *27*(4), 265-275.

Garner, D. M., & Garfinkel, P. E. (1979). The eating attitudes test: An index of the symptoms of anorexia nervosa. *Psychological Medicine, 9*(2), 273-279. **[Crossref]**

Gibbs, E. L., Kass, A. E., Eichen, D. M., Fitzsimmons-Craft, E. E., Trockel, M., & Wilfley, D. E. (2016). Attention-deficit/hyperactivity disorder-specific stimulant misuse, mood, anxiety, and stress in college-age women at high risk for or with eating disorders. *Journal of American College Health, 64*(4), 300-308. **[Crossref]**

Han, D. H., Lee, Y. S., Na, C., Ahn, J. Y., Chung, U. S., Daniels, M. A., Haws, C. A., & Renshaw, P. F. (2009). The effect of methylphenidate on internet video game play in children with attention-deficit/hyperactivity disorder. *Comprehensive Psychiatry, 50*(3), 251-256. **[Crossref]**

Harrison, A., O'Brien, N., Lopez, C., & Treasure, J. (2010). Sensitivity to reward and punishment in eating disorders. *Psychiatry Research, 177*(1-2), 1-11. **[Crossref]**

Hilbert, A., de Zwaan, M., & Braehler, E. (2012). How frequent are eating disturbances in the population? Norms of the eating disorder examination-questionnaire. *PLoS One*, *7*(1), e29125. **[Crossref]**

Hinojo-Lucena, F. J., Aznar-Diaz, I., Caceres-Reche, M. P., Trujillo-Torres, J. M., & Romero-Rodriguez, J. M. (2019). Problematic internet use as a predictor of eating disorders in students: A systematic review and meta-analysis study. *Nutrients*, *11*(9), 2151. **[Crossref]**

Ho, R. C., Zhang, M. W., Tsang, T. Y., Toh, A. H., Pan, F., Lu, Y., Cheng, C., Yip, P. S., Lam, L. T., Lai, C. M., Watanabe, H., & Mak, K. K. (2014). The association between internet addiction and psychiatric co-morbidity: A meta-analysis. *BMC Psychiatry*, *14*, 183. **[Crossref]**

Hsieh, K. Y., Hsiao, R. C., Yang, Y. H., Liu, T. L., & Yen, C. F. (2018). Predictive effects of sex, age, depression, and problematic behaviors on the incidence and remission of internet addiction in college students: A prospective study. *International Journal of Environmental Research and Public Health, 15*(12), 2861. **[Crossref]**

Hwang, H., Hong, J., Kim, S. M., & Han, D. H. (2020). The correlation between family relationships and brain activity within the reward circuit in adolescents with Internet gaming disorder. *Scientific Reports*, *10*, 9951. **[Crossref]**

Kaufman, J., Birmaher, B., Brent, D., Rao, U., Flynn, C., Moreci, P., Williamson, D., & Ryan, N. (1997). Schedule for affective disorders and schizophrenia for school-age children-present and lifetime version (K-SADS-PL): Initial reliability and validity data. *Journal of the American Academy of Child & Adolescent Psychiatry, 36*(7), 980-988. **[Crossref]**

Kayhan Tetik, B., Kayhan, D., Sertkaya, S., & Bahar Sandikci, K. (2018). Evaluation of the effects of digital play addiction on eating attitudes. *Pakistan Journal of Medical Sciences, 34*(2), 482-486. **[Crossref]**

Keshen, A. R., Hilbert, A., Taylor, V., Harris, A. L., Trappenberg, N., Sadek, J., Frank, G. K. W., & Murray, S. B. (2022). Effect of stimulant medication on loss of control eating in youth with attention deficit/hyperactivity disorder: A prospective, observational case series study protocol. *Journal of Eating Disorders, 10*(1), 152. **[Crossref]**

King, D. L., & Delfabbro, P. H. (2018). The concept of "harm" in Internet gaming disorder. *Journal of Behavioral Addictions, 7*(3), 562-564. **[Crossref]**

Ko, C. H., Yen, J. Y., Yen, C. F., Chen, C. S., & Chen, C. C. (2012). The association between Internet addiction and psychiatric disorder: A review of the literature. *European Psychiatry, 27*(1), 1-8. **[Crossref]**

Konstantinov, V., Mynbayeva, A., Gritsenko, V., Stelmakh, S., Reznik, A., Porat, S.-L. R., & Isralowitz, R. (2024). Gaming disorder among Russian and Kazakh university students. *Discover Global Society, 2*(1), 93. **[Crossref]**

Li, Q., Wang, Y., Yang, Z., Dai, W., Zheng, Y., Sun, Y., & Liu, X. (2020). Dysfunctional cognitive control and reward processing in adolescents with Internet gaming disorder. *Psychophysiology*, *57*(2), e13469. **[Crossref]**

Mabe, A. G., Forney, K. J., & Keel, P. K. (2014). Do you "like" my photo? Facebook use maintains eating disorder risk. *International Journal of Eating Disorders, 47*(5), 516-523. **[Crossref]**

Micali, N., Ploubidis, G., De Stavola, B., Simonoff, E., & Treasure, J. (2014). Frequency and patterns of eating disorder symptoms in early adolescence. *Journal of Adolescent Health, 54*(5), 574-581. **[Crossref]**

Müller, A., Loeber, S., Söchtig, J., Te Wildt, B., & De Zwaan, M. (2015). Risk for exercise dependence, eating disorder pathology, alcohol use disorder and addictive behaviors among clients of fitness centers. *Journal of Behavioral Addictions, 4*(4), 273-280. **[Crossref]**

Newman, M. G., Llera, S. J., Erickson, T. M., Przeworski, A., & Castonguay, L. G. (2013). Worry and generalized anxiety disorder: A review and theoretical synthesis of evidence on nature, etiology, mechanisms, and treatment. *Annual Review of Clinical Psychology, 9*, 275-297. **[Crossref]**

Pearlstein, J. G., Johnson, S. L., Timpano, K. R., Stamatis, C. A., Robison, M., & Carver, C. S. (2024). Emotion-related impulsivity across transdiagnostic dimensions of psychopathology. *Journal of Personality, 92*(2), 342-360. **[Crossref]**

Petrovich, G. D., Holland, P. C., & Gallagher, M. (2005). Amygdalar and prefrontal pathways to the lateral hypothalamus are activated by a learned cue that stimulates eating. *Journal of Neuroscience, 25*(36), 8295-8302. **[Crossref]**

Pike, K. M., Hoek, H. W., & Dunne, P. E. (2014). Cultural trends and eating disorders. *Current Opinion in Psychiatry, 27*(6), 436-442. **[Crossref]**

Pontes, H. M., & Griffiths, M. D. (2015). Measuring DSM-5 internet gaming disorder: Development and validation of a short psychometric scale. *Computers in Human Behavior*, *45*, 137-143. **[Crossref]**

Quesnel, D. A., Cook, B., Murray, K., & Zamudio, J. (2018). Inspiration or thinspiration: The association among problematic internet use, exercise dependence, and eating disorder risk. *International Journal of Mental Health and Addiction*, *16*(5), 1113-1124. **[Crossref]**

Raiha, S., Yang, G., Wang, L., Dai, W., Wu, H., Meng, G., Zhong, B., & Liu, X. (2020). Altered reward processing system in internet gaming disorder. *Front Psychiatry*, *11*, 599141. **[Crossref]**

Rodgers, R. F., Melioli, T., Laconi, S., Bui, E., & Chabrol, H. (2013). Internet addiction symptoms, disordered eating, and body image avoidance. *Cyberpsychology, Behavior, and Social Networking, 16*(1), 56-60. **[Crossref]**

Savasir, I., & Erol, N. (1989). Anoreksiya nevroza belirtileri indeksi. *Türk Psikoloji Dergisi*, *7*(23), 19-25. https://psikolog.org.tr/tr/yayinlar/dergiler/1031828/tpd1300443319890000m000360.pdf?v=1703753232

Tao, Z. (2013). The relationship between Internet addiction and bulimia in a sample of Chinese college students: Depression as partial mediator between Internet addiction and bulimia. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity, 18*, 233-243. **[Crossref]**

Thomas, J., Gaspar, C. M., Beyahi, F. A., Bassam, B. A., & Aljedawi, Y. (2023). International comparison of gaming disorder symptomatology: Analysis of Ithra's 30-nation digital wellbeing survey. *Computers in Human Behavior, 146*, 107993. **[Crossref]**

Turan, S., & Akay, A. P. (2019). The effects of stimulants on eating patterns in children and adolescents with attention deficit hyperactivity disorder. *Journal of Mind and Medical Sciences, 6*(2), 253-260. **[Crossref]**

Turan, S., Sarioglu, F. C., Erbas, I. M., Cavusoglu, B., Karagoz, E., Sisman, A. R., Guney, S. A., Guleryuz, H., Abaci, A., Ozturk, Y., & Akay, A. P. (2021). Altered regional grey matter volume and appetite-related hormone levels in adolescent obesity with or without binge-eating disorder. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity, 26,* 2555-2562. **[Crossref]**

Unal, F., Oktem, F., Cetin Cuhadaroglu, F., Cengel Kultur, S. E., Akdemir, D., Foto Ozdemir, D., Cak, H. T., Unal, D., Tiras, K., Aslan, C., Kalayci, B. M., Aydos, B. S., Kutuk, F., Tasyurek, E., Karaokur, R., Karabucak, B., Karakok, B., Karaer, Y., & Artik, A. (2019). Reliability and validity of the schedule for affective disorders and schizophrenia for school-age children-present and lifetime version, DSM-5 November 2016-Turkish adaptation (K-SADS-PL-DSM-5-T). *Turk Psikiyatri Dergisi*, *30*(1), 42-50. https://www.ncbi.nlm.nih.gov/pubmed/31170306

Volkow, N. D., Wang, G. J., & Baler, R. D. (2011). Reward, dopamine and the control of food intake: Implications for obesity. *Trends in Cognitive Sciences, 15*(1), 37-46. **[Crossref]**

Wang, C. Y., Wu, Y. C., Su, C. H., Lin, P. C., Ko, C. H., & Yen, J. Y. (2017). Association between Internet gaming disorder and generalized anxiety disorder. *Journal of Behavioral Addictions, 6*(4), 564-571. **[Crossref]**

Wartberg, L., Kriston, L., Zieglmeier, M., Lincoln, T., & Kammerl, R. (2019). A longitudinal study on psychosocial causes and consequences of internet gaming disorder in adolescence. *Psychological Medicine, 49*(2), 287-294. **[Crossref]**

Yar, A., Gündoğdu, Ö. Y., Tural, Ü., & Memik, N. Ç. (2019). The prevalence of internet addiction in Turkish adolescents with psychiatric disorders. *Nöropsikiyatri Arşivi, 56*(3), 200-204. **[Crossref]**

Yıldırım, A. B. E., Gündoğdu, Ü., & Eroğlu, M. (2025). Myths regarding gender differences in eating disorders in adolescents. *Turkish Journal of Psychiatry, 36*(4), 27. **[Crossref]**

Yu, Y., Mo, P. K. H., Zhang, J., Li, J., & Lau, J. T. F. (2021). Why is Internet gaming disorder more prevalent among Chinese male than female adolescents? The role of cognitive mediators. *Addictive Behaviors, 112*, 106637. **[Crossref]**

Yucel, B., Polat, A., Ikiz, T., Dusgor, B. P., Elif Yavuz, A., & Sertel Berk, O. (2011). The Turkish version of the eating disorder examination questionnaire: Reliability and validity in adolescents. *European Eating Disorders Review, 19*(6), 509-511. **[Crossref]**

ADDICTA
THE TURKISH JOURNAL ON ADDICTIONS

YEŞİLAY

Case Report
DOI: 10.15805/addicta.2026.24300

Contextual therapies for substance use, experiential avoidance, and emotional dysregulation: A clinical case study

Gabriela Sequeda[1], Johan E. Acosta-López[2], Mostapha Ahmad[3], Sandra Durán-Rondón[4]

[1]Facultad de Ciencias Jurídicas y Sociales, Grupo de Investigación en Modelamiento Científico e Innovación Empresarial, Universidad Simón Bolívar, Cúcuta, Colombia
[2]Facultad de Ciencias Jurídicas y Sociales, Centro de Investigaciones en Ciencias de la Vida, Universidad Simón Bolívar, Barranquilla, Colombia
[3]Facultad de Ciencias de la Salud, Centro de Investigaciones en Ciencias de la Vida, Universidad Simón Bolívar, Barranquilla, Colombia
[4]Facultad de Ciencias Jurídicas y Sociales, Universidad Simón Bolívar, Cúcuta, Colombia

Abstract

The use of psychoactive substances is a major global public health issue with profound physical, mental, and social consequences for individuals and their communities. Dialectical behavior therapy and acceptance and commitment therapy have gained recognition as effective interventions for addressing problematic substance use and associated emotional challenges. This case study details a 26-year-old Colombian patient with a history of problematic use of cannabis, cocaine base, and heroin, presenting with primary concerns including severe emotional dysregulation, experiential avoidance, and difficulties in maintaining social relationships. A unique aspect of this case is the application of an integrated dialectical behavior therapy and acceptance and commitment therapy treatment program, specifically tailored to Colombian cultural factors, targeting both substance use behaviors and emotional challenges. The treatment program included dialectical behavior therapy skills training to manage emotional dysregulation and reduce impulsive behaviors, combined with acceptance and commitment therapy–based techniques to enhance psychological flexibility and decrease experiential avoidance. Clinically, the patient exhibited significant improvements in emotional regulation and a reduction in substance use frequency. These changes, along with improved social functioning, emphasize the efficacy of this culturally adapted approach. This case contributes to the existing literature by demonstrating the adaptability and effectiveness of dialectical behavior therapy and acceptance and commitment therapy in treating substance use disorders within a Colombian context. It highlights the importance of cultural adaptations in therapeutic methods and sets a foundation for future studies. However, the descriptive nature of this case study and its inherent limitations regarding generalizability should be taken into account. Continued research with more rigorous methodologies is essential to validate and expand upon these findings, ensuring broader applicability across similar populations.

Keywords: acceptance and commitment therapy, case study, dialectical behavioral therapy, experiential avoidance, psychoactive substance abuse

Main points

- Integrated application of dialectical behavior therapy and acceptance and commitment therapy in the Colombian cultural context.
- Reduction of psychoactive substance use.
- Reduction of emotional dysregulation and psychological inflexibility associated with addiction.
- Impact of traumatic experiences on the etiology of substance use.

Introduction

Substance use is a global public health challenge, with a devastating impact on those affected. According to the United Nations Office on Drugs and Crime's World Drug Report 2023, 296 million people reported using drugs in 2021, representing a 23% increase over the previous decade. Among them, 39.5 million are diagnosed with psychoactive substance use

Corresponding author: Gabriela Sequeda • **Email:** zuly.sequedas@unisimon.edu.co
Received: December 11, 2024 **Accepted:** July 12, 2025 **Published online:** November 7, 2025

Cite as: Sequeda, G., Acosta-López, J., Ahmad, M., & Durán-Rondon, S. (2026). Contextual therapies for substance use, experiential avoidance, and emotional dysregulation: A clinical case study. *Addicta: The Turkish Journal on Addictions*, *13*(2), 287-302. https://doi.org/10.15805/addicta.2025.24300

disorders, a 45% increase in just 10 years. Additionally, 13.2 million people reported having injected drugs, representing an 18% increase by 2021 compared with previous data (UNODC, 2023).

From a transdiagnostic perspective, the pattern of behavior associated with the use of psychoactive substances is characterized by actions that produce both negative consequences and benefits for the user. One of the sustaining factors identified in addictive behavior is that the effects of the substance provide relief from the discomfort of negative experiences, unpleasant emotions or physiological sensations, and distressing thoughts. The persistent use of psychoactive substances is reinforced by negative reinforcement mechanisms, perpetuating a cycle of both physical and psychological dependence (Michałowska & Cheć, 2024). These behaviors, which involve fleeing from or rejecting inner experiences, are known as experiential avoidance (Krotter et al., 2024).

Emotional dysregulation refers to the inability to experience and regulate emotions (Linehan et al., 1999). This vulnerability factor can lead individuals to adopt harmful and rigid strategies for coping with emotional distress, thereby increasing the likelihood of psychoactive substance use, abuse, or dependence (Michałowska & Cheć, 2024). According to Linehan, dialectical behavior therapy (DBT), originally designed for the treatment of borderline personality disorder, has emerged as a promising intervention for treating psychoactive substance use. Dialectical behavior therapy combines cognitive and behavioral strategies with a dialectical approach that fosters both acceptance and change. This integrative approach allows for the addressing of emotional vulnerability, patterns of addictive behavior, and emotional dysregulation, central phenomena in the etiology and maintenance of substance use (Linehan et al., 1999).

Additionally, acceptance and commitment therapy (ACT) has demonstrated efficacy across a wide range of mental health conditions, including anxiety, depression, and substance abuse (Krotter et al., 2024). Acceptance and commitment therapy focuses on enhancing psychological flexibility through its core components: acceptance to reduce experiential avoidance, cognitive defusion, the concept of self as context, contact with the present moment, values-based living, and committed action. For substance use interventions, third-generation therapies, including ACT, have been shown to reduce impulsive behaviors, improve emotional dysregulation, alleviate suffering, and reduce addictive behaviors (Krotter et al., 2024).

Research has shown that experiential avoidance and low distress tolerance are significantly associated with substance craving in adults in residential treatment for substance use disorders; this finding suggests that addressing experiential avoidance is essential for reducing craving and preventing relapse (Shorey et al., 2017). Similarly, a study of women with substance use and borderline personality disorder found that DBT improved emotional regulation and reduced frequency of substance use; these findings support the efficacy of DBT in treating emotional dysregulation and addictive behavior (Axelrod et al., 2011). On the other hand, a study of an ACT-based programme aimed at reducing destructive experiential avoidance behaviors, including self-harm and addictions, showed significant reductions in the frequency of these behaviors and improvements in participants' quality of life (Na et al., 2022). In the same vein, a recent exploratory review highlights the therapeutic potential of third-generation therapies, such as DBT and ACT, to address psychoactive substance use among adolescents, highlighting their focus on acceptance, psychological flexibility, and emotional regulation as key elements of effective treatment (Sequeda et al., 2024). In summary, CBT and ACT have a growing body of scientific evidence to support their effectiveness in the treatment of mental health problems, including psychoactive substance use (Krotter et al., 2024; Linehan et al., 1999).

Although studies have examined the efficacy of DBT and ACT in the treatment of emotional dysregulation and substance use, most have been conducted in cultural contexts different from that of Colombia, and the application and adaptation of these therapies in Colombia has not been sufficiently studied. Therefore, the present study aims to evaluate the effectiveness of DBT and ACT in reducing experiential avoidance, improving emotional regulation, and decreasing psychoactive substance use in a Colombian population. In doing so, the aim was to provide evidence for the applicability of these interventions in specific cultural contexts and contribute to the development of third-wave therapy-based strategies in Latin America.

Case Presentation

A 26-year-old male, who has been homeless for 6 years, is a high school graduate with unfinished higher education. He presents with age-appropriate language and memory but exhibits impulsivity, emotional lability, irritability, and inattention. He has been diagnosed with hepatitis C. His medical history reveals 13 years of problematic use of marijuana, cocaine base, and heroin. Throughout the treatment program, he has undergone rehabilitation in a psychiatric hospital, detoxification for 1 month, and psychiatric and psychological treatment for 2 months.

The patient's father used marijuana and sold psychoactive substances, while the mother had alcohol-related issues. He grew up in a dysfunctional family with an authoritarian upbringing, experiencing domestic abuse and witnessing physical violence between his parents.

In terms of psychosocial factors, the patient lacked a stable support network, faced housing instability, poor nutrition, and significant financial difficulties. He was involved in delinquent groups and participated in illegal activities. He has been admitted three times to rehabilitation programs at a psychiatric hospital for substance abuse, each for 2 months.

Clinical Findings

The patient underwent a comprehensive assessment by the medical, psychiatric, and psychological team at the psychiatric hospital where he was admitted. A structured psychiatric assessment was carried out to assess his mental health, including symptoms of impulsivity, emotional lability, irritability, and inattention. His 13-year history of substance use disorders, including marijuana, cocaine base, and heroin, was carefully reviewed. During his hospitalization, he received psychiatric treatment, including methadone and cognitive behavioral therapy, to address his addiction and emotional dysregulation.

In addition to psychiatric care, a thorough medical assessment was carried out. The patient was diagnosed with hepatitis C, a condition with significant health implications. He was also moderately malnourished, with a body mass index below average for his age and height, probably due to prolonged drug use and homelessness. Physical signs of intravenous drug use were evident, with track marks on his arms. In addition, symptoms of physical anxiety were observed, such as mild hand tremors, excessive sweating, and psychomotor restlessness, particularly in stressful situations.

Psychologically, the patient's cognitive and emotional functioning was assessed. His memory and language were found to be appropriate for his age, but his cognitive performance fluctuated due to impulsivity and emotional instability. Although his speech was coherent, he showed considerable irritability and emotional lability during the interview. His psychosocial history revealed a lack of a stable support network, exposure to domestic violence, and involvement in illegal activities, which further contributed to his emotional and behavioral difficulties.

Pharmacological Treatment

During his hospitalization and rehabilitation, the patient received pharmacological treatment aimed primarily at managing withdrawal symptoms, reducing cravings, and stabilizing his emotional and behavioral dysregulation. As part of his psychiatric treatment, he was given methadone therapy, a standard medication for opioid dependence, which helped to alleviate withdrawal symptoms and reduce cravings for heroin. He was also prescribed psychiatric medications to treat emotional instability, impulsivity, and irritability, including valproic acid and quetiapine.

The patient showed some positive effects of the pharmacological treatment, such as a temporary reduction in drug craving, improved emotional regulation, and increased engagement in psychological therapy. However, some side effects were observed, including mild hand tremor, excessive sweating, and psychomotor agitation, especially under stress, which may be related to withdrawal symptoms or medication use.

The timeline shows how traumatic factors and adversities, such as domestic violence, sexual abuse, and early substance use, marked the patient's life since childhood. These events contributed to the development of problematic substance use, accompanied by housing instability and criminality. The patient faces relapses and intermittent treatment.

Diagnostic Assessment

The study used a single-subject ABA (Applied behavioral analysis) case design, with the intervention as the independent variable and experiential avoidance, emotional dysregulation, and psychoactive substance use as dependent variables. These were assessed through quantitative data from instruments and subjective reports from the participant.

Acceptance and Action Questionnaire-II (AAQ-II) (Ruiz et al., 2016): Measures experiential avoidance and cognitive inflexibility. A score above 30 indicates clinical issues, with an internal consistency of 0.93.

Cognitive Fusion Questionnaire (CFQ) (Ruiz et al., 2017): Assesses cognitive fusion. A score of 29 or higher indicates clinical difficulties, with an internal consistency of 0.95 in Colombia.

Brief Experiential Avoidance Questionnaire (BEAQ) (Vázquez-morejón et al., 2019): Measures experiential avoidance on a 6-point Likert scale. Higher scores indicate more avoidance, with an internal consistency of 0.82.

Drug Abuse Screening Test (DAST-10) (Pérez et al., 2010): Detects problematic substance use. A score of 1–2 indicates low use, 3–5 moderate, 6–8 substantial, and 9–10 severe. It has an internal consistency of 0.93.

Emotional Regulation Assessment Scale (DERS) (Bohórquez-Borda et al., 2023): A 36-item scale assessing emotional regulation across six factors, with an internal consistency of 0.93 and test-retest reliability of 0.88.

Procedure

The psychological assessment involved operationalizing the reason for consultation, conducting synchronic and diachronic analyses, and evaluating the contexts of functioning based on the clinical case formulation model. CAse REport guidelines were implemented in order to rigorously report the case report (Gagnier et al., 2013). The procedure included two assessment sessions (interview and administration of instruments) and 6 intervention sessions (see Table 1).

Initial Assessment Findings

Synchronous analysis: The patient exhibited problematic use of multiple psychoactive substances, engaged in criminal and illegal behavior, and utilized homosexual relationships to obtain economic resources. He exhibited signs of emotional dysregulation, including thoughts of guilt, rejection, resentment, and hatred toward his mother figure. Additionally,

Table 1. Patient's alcohol, smoking, and substance involvement screening test results

Type of Psychoactive Substance	Score	Risk Level
Alcohol	10	Low
Amphetamine-related stimulants	0	Low
Inhalants	0	Low
Cannabis	4	Moderate
Sedatives or hypnotics	4	Moderate
Cocaine	6	Moderate
Opioids	38	High
Others (cocaine base)	32	High

he experienced recurrent thoughts of failure and difficulties with self-esteem. He also lacked a family and social support network (see Table 2).

Diachronic analysis: The patient experienced multiple traumatic situations. He was involved in his father's illegal activities (drug dealing, arms dealing), witnessed the murder of his father when he was 9 years old, watched his mother engage in sex work, encountered problematic alcohol consumption by his parents, and was the victim of extreme physical violence by his mother. At the age of 14, he was repeatedly sexually abused by different perpetrators.

Alcohol, smoking, and substance involvement screening test (ASSIST) (Valladolid et al., 2014). This test is designed to detect substance use and abuse. It identifies levels of risk associated with substance use and determines the most appropriate care based on the individual's results. Scores are classified as follows: low risk for alcohol (0–10 points) and other substances (0–3 points), moderate risk for alcohol (11–26 points) and other substances (4–26) points, high risk for alcohol (27 or more points) and other substances (27 or more points). It is important to note that although ASSIST includes questions about tobacco use, this is for screening purposes only, and no risk level is assigned to tobacco. The ASSIST has an internal consistency ranging from 0.55 to 0.74 and test-retest reliability ranging from 0.58 to 0.91. The results are presented below.

There is evidence of a high risk for the use of cocaine base and opiates such as heroin, as well as a moderate risk for the use of cannabis, tranquilizers, and cocaine. However, there is a low risk for the use of alcohol, amphetamines, and inhalants.

Adverse Childhood Experiences International Questionnaire (ACE-IQ): This tool measures adverse childhood experiences, including family dysfunction, abuse, physical, sexual, or emotional neglect, peer violence, exposure to violence, substance abuse by caregivers, deceased or separated parents, and other adverse experiences in individuals older than 18 years (World Health Organization, 2018). The current study utilized the binary response form.

In evaluating adverse experiences before the age of 18, the patient reported experiencing the violent loss of his father, living with a depressed mother who attempted suicide, encountering alcohol and drug problems, witnessing violence between his parents, having an uncle who went to prison, being subjected to insults, belittlement, and beatings by his mother and relatives, feeling unloved by his family, and experiencing unwanted sexual contact. In the clinical assessment, the patient rated these events as having "greatly" affected his health development. The patient reported 12 out of 14 adverse childhood experiences related to violence, family dysfunction, psychological abuse, physical abuse, neglect, and sexual abuse.

Therapeutic Intervention

The intervention scheme was an adaptation of the DBT strategies, as outlined by Linehan et al. (1999), and ACT strategies, as described (Hayes et al., 2011), specifically tailored for psychoactive substance use/consumption disorders accompanied by emotional dysregulation and experiential avoidance. The treatment included three components: individual therapy strategies (Table 1), building a social support network (through institutional resources and friendships), and the use of pharmacotherapy as a drug substitution (involving interdisciplinary interventions from psychiatry).

The individual assessment and intervention program was conducted over eight sessions (see Table 3). The findings of the intervention are detailed below:

Table 2. Risk Indicators of emotional dysregulation, experiential avoidance, and psychoactive substance abuse in patients Q1

Emotional Dysregulation	Experiential Avoidance	Abuse of Psychoactive Substances
Emotional lability	Dissociation	Illegal behaviors
Sense of hopelessness	Family isolation	Violent acts toward self and others
Feeling of emptiness	Substance use to alleviate emotional distress	Risky sexual relations
Nonacceptance	Low enjoyment of leisure activities	Homeless
Depression and anxiety	Difficulty in making decisions	Problematic social relationships
Aggressiveness and impulsivity	Substance use in response to stress, interpersonal conflicts, or excessive responsibilities	Sudden changes in behavior
Interpersonal conflicts	Substance use to eliminate painful childhood memories	Troubled romantic relationships
Absence of coping strategies	Frequent verbal and behavioral manifestations of distress caused by emotions	Incidence of diseases associated with consumption
Low emotional identification	Difficulty in the enjoyment of daily activities	Distancing from valuable goals

Table 3. Description of sessions with substance use patients

Session No.	Therapeutic Technique	Description
1	Pre-treatment phase (commitment and clarification of values)	The first session addressed the phases of the therapeutic process, facilitating a safe and validating space where she could feel heard without judgment. The session opened with a warm welcome and a brief exploration of his current mental and emotional state, reinforcing the importance of his presence as a first act of courage and commitment to his mental health. From the dialectical approach of dialectical behavior therapy (DBT), a therapeutic posture was sustained that balanced the validation of his suffering with openness to the possibility of change, modeling from the beginning the dialectical attitude of the intervention.
		The informed consent form was read and signed, explaining clearly and respectfully the ethical conditions of the accompaniment, the limits of confidentiality, the role of the therapist, and the expectations of the process. The therapeutic contract was then established, defining key aspects such as attendance, duration of sessions, commitment to tasks between sessions, and responsible communication in case of possible crises. At this point, from acceptance and commitment therapy (ACT), the idea was introduced that the commitment is not to the therapist, but to a more meaningful life aligned with her values, even if that means going through discomfort.
		Subsequently, the functional assessment of the problem was initiated by conducting a detailed chain analysis of the drinking behavior. Triggering events, previous contextual vulnerabilities (such as family arguments, insomnia, hunger), associated emotions and thoughts, the drinking behavior itself, and the immediate and long-term consequences were explored. This was developed through open-ended questions and empathic validation. The patient was able to identify how consumption emerged as a strategy to regulate intense emotions such as anger, frustration, or sadness, even if in the long term it generated guilt, isolation, and loss of personal goals.
		Throughout the analysis, the concept of experiential avoidance, one of the central processes in ACT, was introduced experientially. To facilitate its understanding, the metaphor of the "man in the hole" was used, helping him to visualize how, in a desperate attempt to escape from the discomfort, there was a man in a hole, who in order to get out dug deeper and to try to fight his way out, the opposite happened, the hole got bigger. This metaphor served as a bridge to introduce the logic of the ACT model: it is not about eliminating the discomfort, but to stop fighting with it and learn to move forward with it present, committing to actions guided by its values.
		Dialectical behavior therapy and ACT concepts such as emotional dysregulation, validation and training in specific skills (mindfulness, emotional regulation, distress tolerance, and interpersonal effectiveness) were explained. From ACT, the hexaflex model was explained through highlighting the processes of defusion, acceptance, values clarification, and engaged action. To illustrate cognitive fusion—another key process in ACT—the metaphor of the "mental radio on" was used, allowing the patient to identify how their thoughts are often imposed as absolute truths that determine their behavior, without questioning or distance. After psychoeducation, a space for dialogue was opened to evaluate the willingness to change, asking gently what emotions and thoughts he has tried to avoid, what strategies he has used to do so, and what consequences this has brought him in his life. The value dimension was also explored, introducing questions aimed at clarifying what is important to him, even in the midst of pain. This exercise allowed to open a small crack in intrinsic motivation, by connecting with the desire to rebuild the link with his family, regain the trust of his environment, and resume personal projects interrupted by consumption. To conclude, the first therapeutic objectives were agreed upon: to reduce substance use as an automatic response to emotional distress, to learn new emotional coping strategies, and to reconnect with a meaningful life project. A homework assignment was left between sessions to start a record of significant events where she experiences emotional distress, recording thoughts, emotions, and associated behaviors.

Table 3. Continued

Session No.	Therapeutic Technique	Description
2	Psychometric assessment (ACT functional contextualization phase)	In this session, clinical instruments were applied with the aim of deepening the functional understanding of the case, identifying risk factors associated with substance use, and exploring psychological processes and central variables such as experiential avoidance and cognitive fusion. A warm clinical attitude was maintained and in function of the patient's gestures and body, taking care that the application was not experienced as an interrogation, but as a space to observe from the outside the patient's own emotional, behavioral, and cognitive response patterns. The day began with a brief review of the previous session, reconnecting with the main ideas worked on about suffering and therapeutic engagement. Then, the purpose of the instruments was explained from a functional perspective: "To know better how you have been coping with pain, to understand what things have impacted you, and to discover what kind of thoughts or emotions trap you, in order to help you in a more precise way." First, the ACES (Adverse Childhood Experiences Scale) was applied in order to identify traumatic experiences during childhood and adolescence that could be related to the emergence of maladaptive strategies such as consumption. This tool allowed to the open a narrative about events of abandonment, violence, and family dysfunction, not only as a clinical history, but also as part of the framework that supports the current emotional dysregulation. Subsequently, two key instruments were administered to assess the severity of substance use: DAST-10 (Drug Abuse Screening Test): It provided an objective measure of the impact and dependence generated by substances. ASSIST (Alcohol, Smoking and Substance Involvement Screening Test): Provided a broader analysis of the pattern of use and the presence of high-risk substances, making it possible to identify critical moments of relapse or greater vulnerability. The application of these scales was accompanied by an attitude of curiosity and validation, avoiding judgments but rather understanding how consumption became a way to survive emotionally. Next, deep psychological processes were explored using three tools of the ACT model: AAQ-II (Acceptance and Action Questionnaire), which measures experiential avoidance and psychological rigidity. BEAQ (Brief Experiential Avoidance Questionnaire), which allows for observing in detail the areas of life where the person has avoided feeling, remembering, or thinking. CFQ (Cognitive Fusion Questionnaire), designed to assess the level at which thoughts are taken as truths that govern behavior. These instruments allow us to explain that human beings struggle with what they feel or think, and that the important thing is not to eliminate thoughts or emotions, but to learn to relate to them in a different way. During the application, the patient was open, and the responses to the instruments evidenced relevant clinical indicators: early trauma experiences, problematic substance use, and elevated levels of experiential avoidance and cognitive fusion. These results not only provide diagnostic information but also served as the basis for a meaningful clinical conversation, in which the patient could begin to recognize how the attempt to "not feel" has kept him trapped in repetitive cycles of suffering. The session ended with a brief practice of conscious breathing (mindfulness), as a transition to work with emotional regulation skills that will be addressed in the next session.

Table 3. Continued

Session No.	Therapeutic Technique	Description
3	Mindfulness (Mindfulness DBT) - Part I	The third session was focused on Mindfulness skills training, a transversalaxis of both the DBT and ACT models. The main objective was to introduce the conceptual and practical bases of this skill as a means to strengthen abstinence, reduce craving, and manage the emotional discomfort that often leads the patient to experiential avoidance. The session began with a brief inquiry about recent situations of craving or emotional discomfort, validating the experience without making judgments. Questions were used such as: "What do you feel when you want to consume and cannot do it because of the hospitalization process?" or "What do you notice in your body when this happens?" This introduction opened the space to connect directly with the need to learn tools to observe internal signals without reacting to them. The patient is told the fundamental principles of Mindfulness from DBT; it was explained that there are at least three ways of relating to an experience: An emotional mind dominated by urgency, impulsiveness, and intense emotions. A rational mind that reasons and acts according to logic, without considering the emotional. And a cognizant mind that is the middle between the two previous ones; it allows one to act with balance, to consider what is felt and what is known.
		The metaphor of the circle of the wise mind was used, a diagram with three circles was drawn, and the patient was asked to locate a recent situation of consumption or risk, reflecting on the mental state from which he/she acted. It was practiced through an experiential exercise starting with breathing and inviting observation of the "register of sensations" with eyes closed, identifying which parts of the body were tense, which emotions were present. "Notice what happens in your body when you feel anxiety, but without trying to change it. Just observe." Then it is directed to put the experience into words, describing it, complementing the recognition of thoughts and emotions. And to be able to recognize that it is only a thought. During the exercise, you are invited to be in contact with the present experience. After completing the exercise, the concept of radical acceptance is introduced, which is defined as the full willingness to accept reality as it is, without resistance to the experience that accompanies it. The wave metaphor was used: "Imagine you are at sea. A strong wave is approaching. You can fight it, spend all your energy … or you can float on it, even if it gets you wet. The wave can't be stopped, but you can learn to surf it." The patient was able to identify that, when faced with thoughts of anguish or memories of family conflict, his automatic response tended to be to consume. He recognized that these reactions were impulsive and failed to resolve the underlying distress. The session allowed the patient to make direct contact with his internal states without avoidance or judgment, introducing for the first time the experience of acceptance. A mindfulness approach was achieved, focusing on observation, reduction of discomfort, and readiness to change.
4	Mindfulness - Part II (Mindfulness DBT + ACT)	The fourth session was developed in training in mindfulness skills, seeking mental openness and body observation with sustained attention without judgment, in order to strengthen the patient's permanence in the present during his detoxification process and continue to reduce the emotional and physical discomfort that can activate his desire for the consumption behavior in the hospitalization process. To continue, the experience of the previous session is briefly taken up again. The patient reported having been able to perceive his thoughts. This positive disposition made it possible to link the previous work with the new exercises proposed. It begins by performing a breathing exercise as an attentional anchor, with the purpose of focusing the mind on the present and noticing the sensations that accompany the emotional reactivity. Giving indications such as: "feel how the air enters through your nose… and try to notice how it comes out through your mouth. Don't try to change anything, just notice how it is." "If your mind gets distracted, come back here and bring it back with kindness. That's also part of the exercise." "Every breath is an opportunity to come back."

Table 3. Continued

Session No.	Therapeutic Technique	Description
		The idea of breathing as an internal refuge was worked on, an accessible constant even in the moments of greatest tension. Clinical outcome: The patient reported that, during the exercise, he felt "as if he could release a little of the pressure of the body" and that the idea of consuming was dissolving. After this, a body scanning practice was introduced, starting from the head to the feet, inviting the patient to observe the physiological sensations, without interpreting or reacting to them. This technique allows decreasing the fusion with thoughts and increasing tolerance to physical and emotional discomfort, key in abstinence processes. The exercise was guided through the following phrases: "Place your feet in contact with the floor, assume a comfortable and attentive posture in your body," "Bring your attention to your body," "Bring your attention to your body," "Take your attention to your body," "Take your attention to your body." "Bring your attention to your body, observe if there is tension? Just observe." "You don't need to do anything with what you encounter, just feel it and let it be." "If you feel discomfort, you can notice how it changes with each breath." At the end of the exercise, a space for reflection was opened. It was explored how it was to observe the body without making judgments or trying to control the sensations. The patient mentioned: "It is difficult … I was distracted several times, but I did manage to realize that I could stay." His perception of the exercise is socialized by trying to resemble it with the following metaphor of the dark tunnel. "Your experience may have been similar to being in a tunnel with a shovel. And wanting to get out, you try to keep digging to the bottom, but maybe it's not going to work. But for a moment you allow yourself to be there in that space, managing to walk, in another direction, trying to go to the place of light ahead, not behind." Significant reduction of subjective discomfort: from an initial Subjective Units of Distress Scale (SUDs) of 9 to 1 SUDs at the beginning of the session and 4 SUDs at the end after guided practice. Increased awareness of the body and the present moment.
5	Emotional regulation (DBT) + values (ACT)	In this session, the exercises that were assigned as homework in the previous session are fed back. The work session begins with a focus on emotions. The dashboard metaphor is used to open the space. After this, an attempt is made to guide the patient to a list of emotions, verifying the facts, analyzing the chain effects to invite him to improve the moment, trying to make opposite actions directed to important values of his hospitalization process. Emotions are not the problem, but often one's relationship with them and one's impulsive responses are. The metaphor of the emotional dashboard was worked with. It is introduced: Imagine a pilot inside an airplane, and he is inside the cockpit, and there is a dashboard indicating various alerts, for example, turbulence or storm. Now the pilot could try to act impulsively, divert his path or land from one pile to another, try to continue piloting by identifying the signal in the opposite way to those of the impulse, will be able to do it calmly even though the alert is still on and gradually on the way stabilizes. From ACT, the idea was reinforced that feeling uncomfortable emotions is not a mistake, and that it is possible to act in the direction of what one values, even in the presence of fear, anger, or sadness. Then, a checklist of emotions (anger, sadness, fear, shame, guilt, joy, etc.) is introduced, and the patient is asked to identify which ones he/she has felt most frequently. And the fact-checking strategy is practiced, which helps to distinguish between what the emotion makes us think and what really happened. Situation: "I was ignored at the group meal." Emotion: anger. Thought: "I have to make myself respected." Verification: "What evidence is there of that—was it an omission or an automatic interpretation?" The patient was able to recognize that he had assumed without confirming, and that, when he approached to ask, his companions responded kindly. This exercise facilitated defusion, reducing the power of automatic thoughts. The behavioral chain analysis and identification of the point of intervention are done in sequences so that you can see where the impulsive behaviors (isolation, emotional explosion, consumption) come from. A table was made to see the situation, his vulnerability, such as disturbed sleep, thoughts of worthlessness, the intense emotion: anger, and the problem behavior of disconnection, escape, desire to consume, in order to be able to guide him to alternative strategies. The opposite action skill was trained, explaining that when an emotion invites you to impulsive actions, change can be generated by acting in the opposite direction to what the emotion calls for.

Table 3. Continued

Session No.	Therapeutic Technique	Description
		One activity put into practice was that "faced with the annoyance with his peers and the assigned tasks, he chose to collaborate in cleaning the animal room with the strategies used in What and How" and acknowledged that although at first he did not want to, at the end of the activity, he felt calmer and more connected. It was observed how the patient was able to relate recent situations where he used problem-solving and emotional regulation strategies, such as taking distance, breathing, writing, or talking to a partner. In session No. 5, a significant decrease in subjective distress was observed: she went from 9 to 1 on the SUDs scale, she improved her strategies for understanding the opposite action, and she solved conflicts by better managing her emotions, thoughts, and behavior in context.
6	Discomfort tolerance (DBT) + Acceptance (ACT)	The session began by recognizing that experiencing emotional pain is an inevitable part of life, but that it is possible to learn to move through it without reacting impulsively or destructively. The metaphor of "passengers on the bus" was introduced to simulate the experience in the presence of disturbing memories, thoughts, and emotions, without the need to stop and fight with them, but to allow ourselves to be in contact and take distance. From this framing, practical DBT skills were trained, including the STOP skill, a core strategy of DBT for managing crises without acting impulsively. This tool was presented as a sequence that allows gaining time and clarity before reacting. First, the S - Stop step was worked on, teaching the patient to stop physically and mentally in situations of high emotional charge, avoiding saying or doing something immediately. Then - Take a step back was practiced, guiding the patient to take a step back, both literally and symbolically, to observe the situation from a greater emotional distance. Next, O - Observe was applied, promoting full awareness of thoughts, emotions, physical sensations, and environmental cues, using questions such as, "What am I feeling?", "What is happening in my body?". And then guided to P - Proceed mindfully, inviting you to act with mindfulness, choosing a response aligned with what is important to the recognized self, rather than being driven by impulse. After this exercise was developed, the next strategy, known as "IMPROVE," was introduced through an experiential exercise designed to help in facing crises. The strategy begins with guided phrases, inviting you to: "close your eyes and allow your breathing to find its natural rhythm. Imagine a place where you feel completely safe, calm, protected; it can be real or invented—a cozy room, a view of the sea— let your mind go through it calmly (I). Now, while you stay in that place, ask yourself: what is the meaning of this difficult moment I am going through, can it be an opportunity to grow, to take care of myself, to become stronger (M)? Repeat in your mind compassionate phrases: 'I am doing the best I can in this moment,' 'I can feel this without letting it destroy me,' 'I am more than this emotion' (P). Now bring your attention to your body: inhale deeply, release the air slowly, feel how the body begins to relax. If you wish, you can slightly move your shoulders, neck, or rub your hands to release tension (R). Remember that you don't need to solve everything now: just take a small step, one that is within your reach today, such as talking to someone, taking a walk, or resting for a moment (O). Reconnect with what really matters to you: what do you want to take care of right now: compassion, stability, respect, freedom? Allow yourself to feel that acting on what is important to you is also a way to move forward (V). Finally, come back to this space little by little, open your eyes, and try to observe with your senses: notice 3 objects that you see, notice 2 sounds that you hear, 1 that you can touch, 1 that you smell. This moment is yours, you can be with it without running, without fleeing (E). Breathe calmly again, and when you are ready, open your eyes slowly." This activity allowed her to experience a noticeable decrease in discomfort, going from a SUDs of 9 to 4. During the session, the patient expressed feeling more prepared to face moments of discomfort. At this point in the intervention, the patient showed a high level of commitment to put the skills into practice, improvement at the emotional level, and the willingness and openness to the process of hospitalization and discharge from the clinic.

Table 3. Continued

Session No.	Therapeutic Technique	Description
7	Interpersonal effectiveness (DBT) + Values commitment (ACT)	The session focused on interpersonal effectiveness skills training, a fundamental component of the DBT model to strengthen relationships, reduce social pressure, and prevent relapse associated with the environment. From an experiential perspective, concrete skills were taught to improve communication, set boundaries, and resolve conflicts without giving in to intense emotions or avoiding their emotions as a function of their relationships. Two key strategies were introduced and practiced: DEAR MAN (Describe, Express, Affirm, Reinforce, Maintain posture, Appear confident, Negotiate) to ask for what is needed in a firm and clear way, and GIVE to maintain relationships with respect and empathy (Be gentle, Show interest, Validate, Maintain balance).
		The session focused on interpersonal effectiveness skills training, a fundamental component of the DBT model to strengthen relationships, reduce social pressure, and prevent relapse associated with the environment. From an experiential perspective, concrete skills were taught to improve communication, set boundaries, and resolve conflicts without giving in to intense emotions or avoiding their emotions as a function of their relationships. Two key strategies were introduced and practiced: DEAR MAN (Describe, Express, Affirm, Reinforce, Maintain posture, Appear confident, Negotiate) to ask for what is needed in a firm and clear way, and GIVE to maintain relationships with respect and empathy (Be gentle, Show interest, Validate, Maintain balance). Describing: "You're telling me to run away from the center to the trees to get down mangoes," He continued with Expressing: "That makes me uncomfortable because I'm trying hard to stay in the process and follow the rules," then he affirmed his decision: "I'm not going to do it, I don't want to go backwards or negative consequence in my process," He reinforced: "I prefer to keep moving forward, I have felt better since I have been recognized as a leader in the hospitalization process." Maintained the stance, not giving in, even if the other insisted. Appeared confident, avoiding defensive or aggressive reactions, and negotiated an alternative way out of the situation: "If you need to distract yourself, we can do something that doesn't involve breaking the rules, like playing some sports on the court." In addition, the GIVE skill was integrated: the patient was gentle, using a calm tone, showed interest in the other's discomfort (I understand that you are bored and very hungry, also a little frustrated), validated emotions (sometimes we all want to escape for a while, I have also gone through that and breaking the rules can be striking), and maintained a balance between taking care of his process and not deteriorating the social bond. The patient expressed feeling important, achieving to be learning strategies and recognizing that "before I would have let myself go and I would have done it, other times I would have been very aggressive, but for me it is more important to stay well in this process." Through role-playing, the patient rehearsed difficult conversations with his group mates, authority figures within the center of specialization, and also role-played with his family members, applying these skills in simulated situations that reflected real conflicts. Special work was done on identifying signs of social pressure related to consumption, and assertive responses were elaborated, as well as situations where the family may deny their support when leaving the institution. Work was done on letters with therapeutic accompaniment, communicating progress and requesting support, applying emotional validation skills, and clear communication. These interventions reinforced the family bond as a support network and allowed the patient to accept the limitations of his family context once he left the clinic, while strengthening the perception of interpersonal self-efficacy and resilience. The patient was able to identify recent situations in which he was able to set limits and express his needs. A significant decrease in interpersonal discomfort was observed, going from an initial SUDs of 9 to 3 at the end of the session, accompanied by verbalizations that reflect greater security, assertiveness, and autonomy: "I no longer feel obliged to say yes so that they don't get angry or accept the answer and reach agreements." This session was key to consolidating behavioral change in her social context, allowing her to act from her values and recovery goals, even in complex relational environments.

Table 3. Continued

Session No.	Therapeutic Technique	Description
8	Follow-up and closure (ACT maintenance phase + DBT generalization)	In the follow-up and closure session, held 3 months after the end of the intervention process, a comprehensive review of the patient's progress was carried out, evaluating not only his or her current state but also the challenges faced after leaving the clinical setting. The session began with the application of post-treatment instruments used in previous phases, which allowed contrasting indicators of change in variables such as experiential avoidance, cognitive fusion, and risk of relapse. The results, together with the patient's own account, evidenced maintenance of abstinence in the use of psychoactive substances, as well as a greater capacity to identify, accept, and regulate difficult emotions without resorting to impulsive behaviors. The patient shared that, in everyday situations such as family conflicts or work tensions, he has been able to apply learned strategies, such as the opposite action, the use of DEAR MAN in difficult conversations, and the practice of mindfulness to not let himself be dragged down by the discomfort. For example, she recounted how, upon receiving unfair criticism from her mother via telephone, who is a family member who distrusts her process, she managed to stop, validate her emotion, and respond firmly but respectfully, avoiding further conflict and ending the call. He also expressed having faced thoughts of hopelessness and desires of avoidance, but was able to observe them and distance himself, using defusion exercises and contact with his purpose of graduation, of getting ahead, being recognized, and helping others. In this session, the achievements were reinforced, the sustained commitment to recovery was validated, and practical guidelines were offered for ongoing risk management, a relapse prevention plan, identification of early signs of emotional vulnerability, and the conscious use of support networks were made in the middle of the session. A compassionate view of relapses as part of the learning process, not as failures, was promoted. The patient ended the session with a SUDs discomfort score of 4, significantly lower than at the beginning, and verbalized feeling that he had the tools to sustain his recovery path, with several activities and action plans to help other people going through addiction processes and the intention of being part of an institution as a support network in the accompaniment processes. This session closed the process with a sense of continuity and autonomy, integrating the therapeutic experience into their daily life with greater acceptance, responsibility, and connection with their life purpose.

Follow-Up and Outcomes

This case study analyzes the effects of a culturally tailored DBT and ACT treatment program for psychoactive substance abuse, emotional dysregulation, and experiential avoidance in a patient with a clinical history. The results offer insights into the applicability and effectiveness of these therapies in the Colombian context and provide guidance for addressing substance abuse, emotional dysregulation, and avoidance. Figure 1 shows the "Subjective Units of Distress Scale" (SUDS) at two time points: initial and end of the session, with the black line representing initial values and the gray line showing post-intervention values (see Table 4).

From the patient's perspective, noticeable changes occurred in their emotional and cognitive experience during therapy. Initial scores ranged from 7 to 10 (mean = 8.5, standard deviation [SD] = 1.3), whereas at the end of the intervention, scores decreased to a range of 1–8 (mean = 4.8, SD = 2.3), reflecting a marked reduction in subjective distress. As shown in Table 2, the SUDs scores indicate a high and relatively stable level of discomfort at baseline, followed by a substantial decrease by the end of treatment, suggesting clinically meaningful improvement in the patient's psychological state.

Assessment tools were used to measure aspects related to substance use, emotional regulation, and experiential avoidance. Pre- and post-intervention results across measurement scales are presented in Table 2 and illustrated in Figure 2, highlighting changes in the patient's evaluation over time.

The changes observed in the initial and final scores on the various scales suggest improvements in the symptoms assessed, especially in emotional regulation and in the reduction of experiential avoidance. The scores on the scales appear to show a decrease in the patient's initial difficulties, reflecting a positive response to DBT and ACT-based treatment.

The scores from the AAQ-II (Ruiz et al., 2016) (initial 41, final 16) and BEAQ (Vázquez-Morejón et al., 2019) (initial 47, final 29) reflect a decrease in experiential avoidance and an increase in emotional acceptance. The patient demonstrated a willingness to face emotions without resorting to psychoactive substances. The AAQ-II indicates increased psychological flexibility, adopting healthier behaviors in response to distressing cognitions. The CFQ results (initial 39, final 18) suggest a greater ability to observe thoughts objectively.

In the DERS (Bohórquez-Borda et al., 2023), the patient improved from 131 to 65, indicating better emotion management, control over intensity, and flexible behavioral responses.

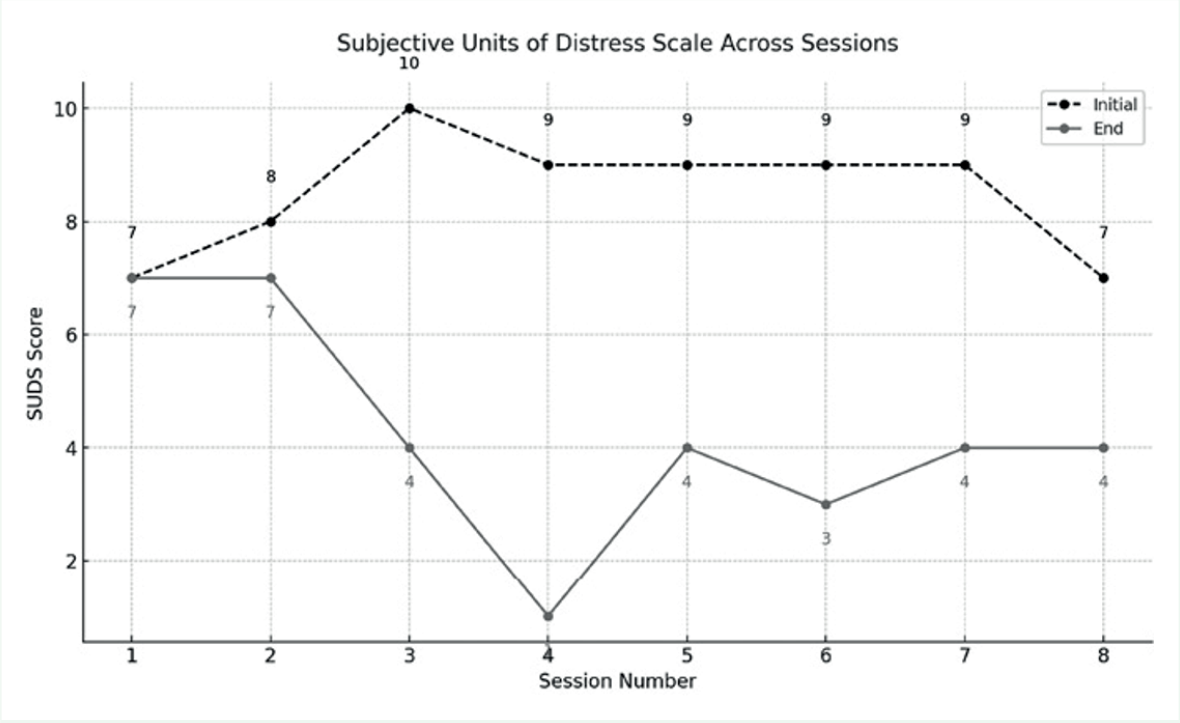

Figure 1. Subjective units of distress scale across sessions. source: Own elaboration from the patient's timeline

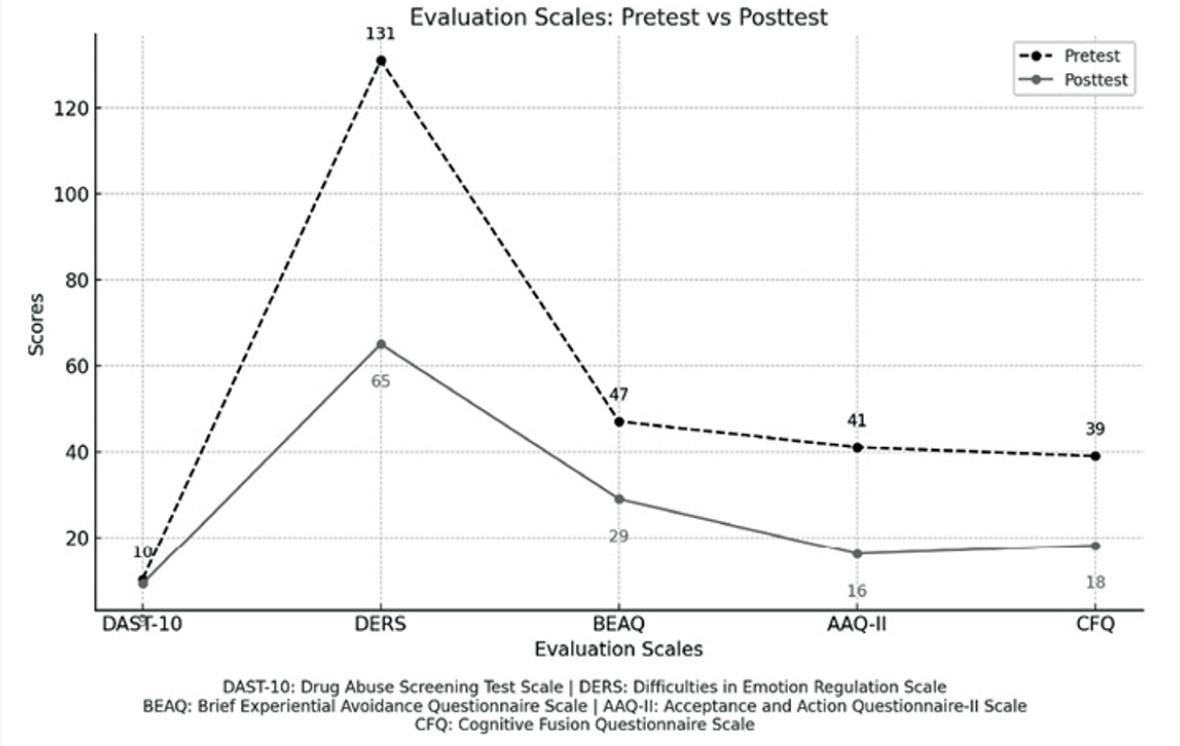

Figure 2. Evaluation scales: Pretest vs posttest

Table 4. Intervention program for the treatment of substance use, experiential avoidance, and emotional dysregulation

Session No.	Therapeutic Technique	Description	Session Duration	SUDs (Subjective Units Of Distress Scale)		Findings of the Intervention
				Start	End	
1	Pre-treatment phase	Application of informed consent and therapeutic contract. Initial evaluation of the problem is performed with functional and chain analysis. Therapy theory guide. Experiential avoidance is assessed. Goals, rules, and commitments to the therapeutic process are defined, and readiness for change is assessed.	2 hours	7	7	The patient is motivated, cooperative, and committed to the process. The patient voluntarily agrees to participate in the psychological assessment and intervention. The patient is observed as having functional cognitive abilities to understand each phase of treatment.
2	Instrument application	The application of ACES to evaluate traumatic experiences. DAST-10 and ASSIST to assess the level of risk of use. AAQ-II, BEAQ, and CFQ to assess experiential avoidance and cognitive fusion.	1 hour	8	8	The results reflect clinical indicators for each of the variables assessed (see).
3	Mindfulness (first half)	The principles of mindfulness, behavioral dialectics, and radical acceptance are addressed. Mindfulness training is offered to observe, describe, and participate in the present to help maintain abstinence, reduce craving, and manage the emotional discomfort that leads to experiential avoidance.	1 hour	10	7	Signs of substance use risk are i dentified. Mindfulness strategies are used to observe them without judgment or automatic reaction, which helps to avoid dropping out of rehabilitation. Finally, emotional and physical discomfort is reduced, which is confirmed by measuring SUDs.
4	Mindfulness (second half)	Instructions are given to focus attention and mental openness through breathing. The body is scanned for physiological sensations without judgment.	1 hour	9	4	There is evidence of increased awareness of the present during detoxification, improved adherence to therapeutic rules and coexistence, and reduced avoidance of unpleasant experiences, thoughts, and emotions.
5	Emotional Regulation	Emotion function and response were addressed using metaphors, an emotion checklist, and fact checking, and chain behavior was analyzed to reduce impulsive action. In addition, to effectively modify the patient's emotions, appraisal of emotional reactions was coached, and the opposite action was practiced.	2 hours	9	1	The patient displayed appropriate strategies to regulate emotions and behaviors, responding in the opposite way in challenging situations (e.g., he would go with his peers to clean out the animal room). He used problem-solving strategies, counteractions, and regulated emotions, thoughts, and relationships with the context.
6	Tolerance to discomfort-distress	The session focused on distress tolerance through the use of gradual exposure to trigger stimuli and the use of radical coping and acceptance skills training. Role-playing and metaphors were used to prevent avoidance and improve self-compassion. The "IMPROVE" tool was taught to manage crises and possible relapses through emotional regulation and sensory exploration.	2 hours	9	4	The patient acquires tools to manage discomfort (P, C, E), reduce side effects, and reports peace of mind by using the "IMPROVE" tool to explore sensory experiences.

Note: AAQ-II = Acceptance and Action Questionnaire-II; ACES = Adverse Childhood Experiences Scale; ASSIST = Alcohol, smoking, and substance involvement screening test; BEAQ = Brief Experiential Avoidance Questionnaire; CFQ = Cognitive Fusion Questionnaire; DAST-10 = Drug Abuse Screening Test; DEAR MAN = Describe, Express, Affirm, Reinforce, Maintain posture, Appear confident, Negotiate; DERS = Difficulties in Emotion Regulation Scale; SUDs = Subjective Units of Distress Scale.

Table 4. Continued

Session No.	Therapeutic Technique	Description	Session Duration	SUDs (Subjective Units Of Distress Scale)		Findings of the Intervention
				Start	End	
7	Interpersonal effectiveness	Effective skills for healthy relationships and for reducing the use of psychoactive substances are taught. Role-playing is used to teach assertive communication skills, limit setting, conflict resolution, and negotiation. Calls are also made to family members to report progress and increase family support, and communication strategies and emotional validation are taught. DEAR MAN and GIVE strategies are used to reinforce effective communication.	2 hours	9	3	There is evidence of improved interpersonal relationships, setting limits, resolving conflicts, and communicating with peers and therapists. There is evidence of a reduction in social pressure to return to drug use.
8	Follow-up and closure	Follow-up and closure 3 months after completion of the intervention, post-treatment instruments are administered. Challenges that the patient has encountered in the treatment process are evaluated. Guidelines are given to continue to manage the patient's problems and avoid relapses.	2 hours	7	4	Displays commitment to rehabilitation and recovery. Abstinence from psychoactive substance use, improved ability to regulate emotions, cope with daily challenges, and feelings of frustration. Greater acceptance of thoughts, feelings, and sensations, i.e., less experiential avoidance. Improved interpersonal relationships.

Note: AAQ-II = Acceptance and Action Questionnaire-II; ACES = Adverse Childhood Experiences Scale; ASSIST = Alcohol, smoking, and substance involvement screening test; BEAQ = Brief Experiential Avoidance Questionnaire; CFQ = Cognitive Fusion Questionnaire; DAST-10 = Drug Abuse Screening Test; DEAR MAN = Describe, Express, Affirm, Reinforce, Maintain posture, Appear confident, Negotiate; DERS = Difficulties in Emotion Regulation Scale; SUDs = Subjective Units of Distress Scale.

Regarding psychoactive substance use, the patient reported no use during the 2-month treatment and the following 3-month post-treatment phase, confirmed by the DAST-10 (initial 10, final 9). The change in question 3 (Can you stop using drugs when you want?) suggests greater control over substance use.

In summary, the results show improvements in emotional regulation, decreased experiential avoidance, and reduced substance use, though continued intervention and follow-up are still needed.

Discussion

This clinical case study examined the effects of DBT and culturally adapted ACT in Colombia for treating psychoactive substance use, experiential avoidance, and emotional dysregulation. The findings provide valuable insights into third-generation therapies. Dialectical behavior therapy integrates behavioral and dialectical strategies to address emotional dysregulation and promote changes in problematic behaviors (Linehan et al., 1999), while ACT focuses on psychological inflexibility by enhancing acceptance, cognitive defusion, value-based living, and committed action.

The analysis of contextual therapies revealed that early traumatic experiences, such as exposure to violence and substance use within the family, contributed significantly to the development of psychological and behavioral difficulties. Biological and contextual vulnerabilities, including the patient's father's criminal behavior and violent upbringing, worsened the emotional and behavioral challenges. These factors were compounded by emotional dysregulation, where heightened sensitivity and intense emotional reactivity further exacerbated the difficulties (Krotter et al., 2024; Linehan et al., 1999).

Adverse childhood experiences (ACEs) were also pivotal in shaping the patient's struggles in adulthood. These included physical, sexual, and emotional abuse, as well as the traumatic loss of his father, which had a lasting impact (Gallego et al., 2020). Traumatic processing of these events is strongly associated with substance use disorders, emphasizing the need for trauma-informed interventions.

The ASSIST revealed a high risk for opioid and other substance use (see Table 5), emphasizing the necessity of immediate intervention. Despite receiving methadone substitution therapy for heroin addiction, the patient's emotional distress during the assessment highlighted the need to address emotional dysregulation and psychological inflexibility. A key therapeutic goal was cognitive defusion, which helped the patient detach from distressing thoughts linked to traumatic events, reducing discomfort and emotional dysregulation (Michałowska & Cheć, 2024).

Improvements in experiential avoidance and psychological flexibility were evident through decreased scores on the Acceptance and Action Questionnaire-II (AAQ-II) and the BEAQ, indicating DBT's effectiveness in promoting emotional acceptance and cognitive flexibility (Ii et al., 2019). The CFQ showed that the patient developed the ability to observe thoughts objectively and distance himself from traumatic memories, reflecting a reduction in cognitive fusion and dysfunctional behaviors (Hayes et al., 2011).

In emotional regulation, the patient demonstrated improvements in managing emotions, evidenced by lower scores on the Difficulties in Emotion Regulation Scale (DERS), which supports the role of DBT in developing emotional regulation skills. Regarding substance use, the patient showed abstinence from psychoactive substances during the 2-month treatment and 3-month follow-up period, which, coupled with increased autonomy in drug use decisions, suggested a shift in attitudes and a reduction in addictive behaviors (Linehan et al., 1999).

The implementation of DBT and ACT strategies significantly improved the patient's relationship with his internal experiences, enabling him to better manage emotions, thoughts, and situations that previously triggered cravings and substance use. This outcome emphasizes the relevance of integrating third-generation therapies in addressing complex clinical cases involving emotional dysregulation, experiential avoidance, and substance use (Michałowska & Cheć, 2024).

This case study highlights the effectiveness of DBT and ACT in reducing substance use, emotional dysregulation, and experiential avoidance within the Colombian context. Although significant improvements were made, areas such as emotional regulation require continued intervention and interdisciplinary support. The findings underscore the importance of ongoing, individualized therapeutic efforts to address persistent challenges and promote well-being.

In conclusion, this study demonstrates the applicability of culturally adapted DBT and ACT in treating psychoactive substance use and associated psychological challenges. The results reinforce the potential of these therapies as third-generation approaches for addressing complex mental health issues and the necessity of addressing underlying trauma and emotional vulnerabilities through tailored interventions. These findings lay the groundwork for further research and application of DBT and ACT in diverse cultural settings.

Acknowledgements

It is carried out as part of the fulfillment of the requirements for training and graduation in the Doctorate in Psychology of the Universidad Simón Bolívar, Barranquilla, under the modality of Scholarship granted by MINCIENCIAS from the Program of training and insertion of high-level human capital for the regions for the biennium 2021-2022. We acknowledge the support of the publication cost by the Universidad Simón Bolívar, Colombia.

Author contributions

Conception and design: G.S., S.D-R.; Data acquisition: G.S., S.D.R.; Data analysis: G.S., S.D-R.; Data interpretation: G.S., J.E.A.-L., M.A., S.D-R.; Drafting of the manuscript: G.S., J.E.A.-L., M.A., S.D-R.; Critical revision of the manuscript: G.S., J.E.A.-L., M.A., S.D-R. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

Ethical approval

This study was approved by the Comité de ética de investigación Universidad Simón Bolívar (Date: Junio 29, 2023, Decision/Protocol No: CIE-USB-0478-00). Additionally, written informed consent was obtained from the patient(s) or their legal guardians for the publication of this study and any accompanying images.

Data availability statement

The data supporting the findings of this study are not publicly available due to the clinical nature of this case report and the protection of patient confidentiality.

Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

The authors declare that this study received no funding.

Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study.

References

Axelrod, S. R., Perepletchikova, F., Holtzman, K., & Sinha, R. (2011). Emotion regulation and substance use frequency in women with substance dependence and borderline personality disorder receiving dialectical behavior therapy. *American Journal of Drug and Alcohol Abuse*, *37*(1), 37-42. **[Crossref]**

Bohórquez-Borda, D., Gómez-Villarraga, D., Bernal-Cundy, M., Iriarte-Becerra, S., Ramírez-Moreno, V., & Riveros-Munévar, F. (2023). Difficulties in emotion regulation scale (DERS): Evidence of validity and reliability in Colombian samples. *Revista de Psicopatologia y Psicologia Clinica*, *28*(2), 129-138. **[Crossref]**

Gagnier, J. J., Kienle, G., Altman, D. G., Moher, D., Sox, H., Riley, D., & CARE Group* (2013). The CARE guidelines: Consensus-based clinical case reporting guideline development. *Global Advances in Health and Medicine*, *2*(5), 38-43. **[Crossref]**

Gallego, A., McHugh, L., Villatte, M., & Lappalainen, R. (2020). Examining the relationship between public speaking anxiety, distress tolerance and psychological flexibility. *Journal of Contextual Behavioral Science*, *16*, 128-133. **[Crossref]**

Hayes, S. C., Villatte, M., Levin, M., & Hildebrandt, M. (2011). Open, aware, and active: Contextual approaches as an emerging trend in the behavioral and cognitive therapies. *Annual Review of Clinical Psychology*, *7*, 141-168. **[Crossref]**

Ii, T., Sato, H., Watanabe, N., Kondo, M., Masuda, A., Hayes, S. C., & Akechi, T. (2019). Psychological flexibility-based interventions versus first-line psychosocial interventions for substance use disorders: Systematic review and meta-analyses of randomized controlled trials. *Journal of Contextual Behavioral Science*, *13*, 109-120. **[Crossref]**

Krotter, A., Aonso-Diego, G., González-Menéndez, A., González-Roz, A., Secades-Villa, R., & García-Pérez, Á. (2024). Effectiveness of acceptance and commitment therapy for addictive behaviors: A systematic review and meta-analysis. *Journal of Contextual Behavioral Science*, *32*, 100773. **[Crossref]**

Linehan, M. M., Schmidt, H., Dimeff, L. A., Craft, J. C., Kanter, J., & Comtois, K. A. (1999). Dialectical behavior therapy for patients with borderline personality disorder and drug-dependence. *American Journal on Addictions*, *8*(4), 279-292. **[Crossref]**

Michałowska, S. N., & Cheć, M. (2024). Dialectical behavior therapy in the treatment of trauma. *Archives of Psychiatry and Psychotherapy*, *26*(1), 26-32. **[Crossref]**

Na, E., Lee, K., Jeon, B. H., Jo, C., Kwak, U. H., Jeon, Y., Yang, K., Lee, E. J., & Jeong, J. (2022). Acceptance and commitment therapy for destructive experiential avoidance (ACT-DEA): A feasibility study. *International Journal of Environmental Research and Public Health*, *19*(24), 16434. **[Crossref]**

Pérez Gálvez, B., García Fernández, L., de Vicente Manzanaro, M. P., Oliveras Valenzuela, M. A., & Lahoz Lafuente, M. (2010). Validación Española del drug abuse screening test (DAST-20 y DAST-10). Health and addictions. *Salud y Drogas*, *10*(1), 35-50.

Ruiz, F. J., Suárez-Falcón, J. C., Cárdenas-Sierra, S., Durán, Y., Guerrero, K., & Riaño-Hernández, D. (2016). Psychometric properties of the acceptance and action questionnaire-II in Colombia. *Psychological Record*, *66*(3), 429-437. **[Crossref]**

Ruiz, F. J., Suárez-Falcón, J. C., Riaño-Hernández, D., & Gillanders, D. (2017). Psychometric properties of the Cognitive Fusion Questionnaire in Colombia. *Revista Latinoamericana de Psicología*, *49*(1), 80-87. **[Crossref]**

Sequeda, G., Acosta-López, J. E., Diaz-Camargo, E., Torres-Santos, E.-A., López-Ramírez, V., & Rivera-Porras, D. (2024). Third-generation therapies for the management of psychoactive substance use in young people: Scoping review. *Behavioral Sciences*, *14*(12), 1192. **[Crossref]**

Shorey, R. C., Gawrysiak, M. J., Elmquist, J., Brem, M., Anderson, S., & Stuart, G. L. (2017). Experiential avoidance, distress tolerance, and substance use cravings among adults in residential treatment for substance use disorders. *Journal of Addictive Diseases*, *36*(3), 151-157. **[Crossref]**

UNODC (2023). Executive summary, World Drug Report. In *New Directions for Youth Development*, *2012*(133). https://www.oecd.org/innovation/inno/47164461.pdf

Valladolid, G. R., Martínez-Raga, J., Martínez-Gras, I., Alfaro, G. P., Bértolo, J. (2014). Validation of the Spanish version of the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). *Psicothema*, *26*(2), 180-185. **[Crossref]**

Vázquez-Morejón, R., León Rubio, J. M., Martín Rodríguez, A., & Vázquez Morejón, A. J. (2019). Validation of a Spanish version of the Brief Experiential Avoidance Questionnaire (BEAQ) in clinical population. *Psicothema*, *31*(3), 335-340. **[Crossref]**

World Health Organization (2018). Adverse Childhood Experiences International Questionnaire (ACE-IQ). Geneva: World Health Organization. https://www.who.int/publications/m/item/adverse-childhood-experiences-international-questionnaire-%28ace-iq%29

YEŞİLAY

yesilay.org.tr

/1920yesilay