

Brief psychoeducational intervention to decrease parental distress and increase self-efficacy of parents of video game players: A pilot study

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Abstract

Gaming is prevalent, especially for children and adolescents. It is a modern form of entertainment if within considerable limits. However, the definition of excessive gaming is unclear and parents have difficulties managing gaming behavior. The current study aims to test a pilot brief psychoeducational intervention for parents to help them gain a broader comprehension of gaming behavior and to support managing caregiver burden. Intervention participants attended a 90-minute brief psychoeducation intervention and wait-list control participants received no treatment. The Depression Anxiety Stress Scale Short Form, Parental Self-Efficacy Scale, and the Demographic Form were used. There was a significant decrease in depression, anxiety, and stress scores from pre- to post-measurement only in the intervention group. There were no significant differences in parental self-efficacy scores. The results revealed the effectiveness of a brief psychoeducational intervention to support parents of gamers. Future studies are necessary to tailor specific interventions depending on differential needs and delivery methods.

Keywords: caregiver burden, internet addiction disorder, parenting, parent-child relations, psychological, stress, video games

Main points

- Parents of gamers had decreases in depression, anxiety, and stress scores after a brief 90-minute psychoeducational intervention compared to a wait-list control group.
- Parental self-efficacy scores did not change significantly.
- Parents and caregivers need more support to understand the gaming behavior of their children.
- Future studies are advised to modulate treatment and sample characteristics to acknowledge what works for whom, when, and under what circumstances.

Introduction

Technological advances have opened a new venue for our lives and games are part of this process. There is such rapid development and expansion in games that gaming vocabulary has been ever-evolving globally. Technology-based games may be named online, offline, computer, or mobile games. The current study focuses on games in a video format. The complexity of naming expands to the definition of its normal vs. excessive use. The International Classification of Diseases-11 (ICD-11) includes gaming disorder as a classification

highlighting impaired control and inability to stop gaming despite negative consequences (World Health Organization, 2021). The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) includes internet gaming disorder as a condition for further study highlighting preoccupation, tolerance, withdrawal, inability to control, and negative consequences (American Psychiatric Association, 2022). Research highlights that the ICD-11 criteria may leave people undiagnosed (Borges et al., 2020) and the DSM-5-TR criteria are far from definite (Griffiths et al., 2016). Epidemiological studies utilizing a variety of definitions and

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measurements to overcome difficulties with a lack of proper definition suggest a pooled prevalence rate of 3.3%; however, rates for young age and boys are higher (Kim et al., 2022).

Several etiological factors have been highlighted to understand why regular gaming becomes problematic. Availability of media and preference for media-based (e.g., TV, computer, etc.) leisure activities as opposed to social contacts are important predictors (Bender et al., 2020; Macur & Pontes, 2021; Wartberg et al., 2017). Male gender and younger age are among the person-level risk factors (Kim et al., 2022; Rehbein & Baier, 2013; Wartberg et al., 2017). Psychological trait variables including high impulsivity, low self-control, low attentional span, and high depressiveness are also predictive (Bender et al., 2020; Gentile, 2009; Macur & Pontes, 2021; Wartberg et al., 2017). Psychosocial factors including school and family life constitute another risk domain (Gentile, 2009; Rehbein & Baier, 2013). Parent-child relationships are a specific area of interest in this realm. A systematic review points to an inverse relationship between the quality of the parent-child relationship and the severity of problem gaming (Schneider et al., 2017), and more recent studies corroborate this finding (Bender et al., 2020; Macur & Pontes, 2021). Moreover, parental factors are reported to be as explanatory as individual factors in understanding the gaming behavior of children and adolescents (Nielsen et al., 2020).

Even though the definition is fuzzy, and the reasons are complex, there is a convergence in using Cognitive Behavioral Therapy to treat gaming-related problems (King et al., 2017). However, other treatment options promise efficacy (King et al., 2017). Family-based treatments stand out considering the role of family and social dynamics in etiology especially for adolescents who experience the problem at its peak (Kim et al., 2022; King et al., 2017; Schneider et al., 2017). Multidimensional Family Therapy (MDFT), which focuses on family-, school-, and friends-related risk and protective factors to heal substance addictions, has been adapted to gaming in a randomized controlled trial (Nielsen et al., 2021). Increasing the therapeutic alliance with both parties, validating parents' emotions and efforts, and helping them create room for effective parent-child communication are targets for this treatment (Bonnaire et al., 2019). The MDFT outperforms family therapy as usual, with lower drop-out rates and decreased symptoms favoring MDFT (Nielsen et al., 2021).

The direct involvement of parents and their engagement in the psychotherapeutic process are important to support children and adolescents and increase the therapy's effectiveness. Few studies in the literature report promising results in the gaming behavior of children and adolescents by intervening in parent-child communication patterns and parenting practices (De Lepeleere et al., 2017; Hidaayah et al., 2022; Hülquist et al., 2022; Nielsen et al., 2021). However, the definition of problem gaming is unclear, and the goal is not abstinence from gaming (Bonnaire et al., 2019; Borges et al., 2020; Griffiths et al., 2016). So, parents should not be perceived solely as supporting sources for treatment protocols. Instead, they constitute a valuable resource to intervene in problematic and risky gaming

and promote healthy gaming behaviors. This perspective aligns with the multilevel healthcare management approach encompassing preventive, curative, rehabilitative, and health-promoting efforts altogether (Tengilimoğlu et al., 2017).

The Family Stress Model is informative to conceptualize parent-child relationships from a multilevel healthcare management perspective. It asserts that disrupted parenting strongly predicts child and adolescent adjustment problems (Masarik & Conger, 2017). Furthermore, the relationship between parenting and child and adolescent adjustment problems is reciprocal. The literature on the caregiving burden portrays how caregiving to disordered relatives may create psychosocial and physical health problems in caregivers with examples from a variety of disorders (Yıldırım et al., 2017). However, to the best of the author's knowledge, only one study focuses on the caregiver burden of caregivers of gamers. This study presents two cases in which caregivers (e.g., parents) suffer from disturbances in family routine and interaction, problems related to quality of life, and physical and mental health (Sharma, 2016). These case reports discuss the feelings of helplessness experienced by parents of gamers. Parents generally fall behind in understanding the underlying mechanisms of need satisfaction and social triggers of excessive gaming (Liu et al., 2015).

The current state-of-the-art in gaming reveals the need to support parents and their children. Despite the urgency of caregiver support programs in gaming research, there is a paucity of research in this area. There is only one known pilot study on strengthening parents of adolescents with problem gaming (Hülquist et al., 2022). The intervention consists of eight weekly modules (each lasting 90 minutes). The four topics covered in these modules are understanding problematic gaming, family interactions, rules and role models, and family health and prevention. The intervention is effective in improving family communication and decreasing parental psychosocial stress but ineffective in parental self-efficacy (Hülquist et al., 2022). More research is needed to understand which type of intervention is effective for this population. Caregivers of gamers correspond mostly to parents of child and adolescent gamers considering the age-contingent prevalence rates (Kim et al., 2022). Accordingly, the current study is designed to analyze the efficacy of a one-shot psychoeducational intervention in a seminar format to modulate levels of parental efficacy and psychological symptoms of the attendee parents of gamers. Aligning with a holistic approach to health, the study targets caregivers (e.g., parents) of primary- and secondary-level school students with no clinical status restriction (Tengilimoğlu et al., 2017) as opposed to the existing interventions on gaming (Hülquist et al., 2022). The results are expected to be informative in understanding how the effectiveness of intervention programs can be increased to support parental efficacy and decrease the psychological symptoms of caregivers of gamers.

Material and Methods

The study is part of a broader project focusing on understanding social and family dynamics that explain the gaming behavior of children and adolescents. It is approved by Istanbul University Institutional Review Board (date: November 27, 2023, number: 2023/387). The first phase of the project is over, and the related descriptive and cross-sectional findings are in preparation for publication. Three public schools from low-mid socioeconomic neighborhoods in Istanbul were approached via convenience sampling. All schools offered both primary- and secondary-level education. The study targeted parents of primary- and secondary-school students following the principle that the earlier preventive intervention starts, the more effective it becomes (Kuss & Griffiths, 2012). Cooperation with parents of public school students from low-mid socioeconomic status districts was prioritized to capture family-, school-, and social-related risk factors as suggested in the literature (Nielsen et al., 2021; Rehbein & Baier, 2013). All schools agreed to collaborate on the general project. The schools advertised the project to parents and provided physical space for the intervention and the data collection. The inclusion criteria were parenting a child attending the collaborating school, having at least one gaming child at the primary or secondary-level school, and informed consent. The exclusion criterion was inability to comprehend the Turkish language. All participants provided informed consent. No incentives (such as payment, gifts, etc.) were provided in return for study participation.

Participants

The current study included 31 parents (intervention group: 15 mothers and one father, wait-list control group: 14 mothers and one father) from a large-scale project about gaming and parenting. The demographic characteristics of the participants are presented in Table 1.

Data Collection Tools

Depression Anxiety Stress Scale Short Form

It is a three-factor, 21-item, 4-point Likert scale measuring depression, anxiety, and stress symptoms in the last week (Henry & Crawford, 2005). The scale was adapted to Turkish by Yilmaz et al. (2017). All items and the factor structure were the same in the adaptation study. Cronbach's alphas were 0.88, 0.82, and 0.90 for depression, anxiety, and stress, respectively. Cronbach's alpha in the current study was not calculated due to the small sample size per condition ($n < 30$, Birmingham City University, 2017).

Parental Self-Efficacy Scale

It is a one-factor, 12-item, 7-point Likert scale measuring parents' perceived parental self-efficacy (Caprara et al., 2004). The scale was adapted to Turkish by Demir and Gündüz (2014). The resulting factor structure was a one-factor 11-item scale. Cronbach's alpha was 0.91. Cronbach's alpha in the current study was not calculated due to the small sample size per condition ($n < 30$, Birmingham City University, 2017).

Demographics Form

It was developed by the researcher to collect information about the study participants (ex., age, socioeconomic and marital status, etc.), their gamer child (ex., age, gender, school grade, etc.), and the type of games he/she plays.

Procedure

Intervention

The intervention was held as a 90-minute psychoeducational seminar including a Q&A session. All presenters were undergraduate senior students. They volunteered to be presenters of the seminar. They had nine hours of theoretical and six hours of practical training on gaming as part of the clinical psychology-oriented elective course that they participated in. Three of them presented information on what addiction is, when and how gaming becomes problematic, the experiences of gamers, how families can help them overcome this problem, and the healing journey. Then another student presented a case example. The last student answered further questions from the attendees. The presented information followed the flow of a handbook on internet addiction (Feindel, 2019). The book reference along with the front cover was included in the PowerPoint presentation. Flyers summarizing the seminar were handed out to the attendees at the end of the meeting. The author supervised the whole process.

Data Collection Process

The current study is part of an institutional collaboration project of Istanbul University. The project focuses on understanding parents' experiences with their children's gaming. Gaming is not restricted to clinical diagnosis. Instead, the project welcomes all parents who report that their children play video games. The project has quantitative and qualitative steps. The current study constitutes a part of the project.

The current study utilizes a quasi-experimental design with intervention and wait-list control groups without randomization. The intervention group includes data from one school where parents attended the seminar and filled out pre- and post-measurements. The wait-list control group includes data from a convenience sample where parents were asked to

Table 1. Demographic characteristics of the participants

	Intervention Group		Wait-list Control Group	
	Mean	SD	Mean	SD
Age of participant	38.55	7.99	41.07	4.77
Number of children	2.09	0.70	2.00	0.76
Age of the children with problematic gaming	8.55	3.80	9.71	1.94
Duration of the child's gaming (hours)	2.36	1.69	1.58	1.49
	n	%	n	%
Parent's self-reported perception of the child's gaming is disordered				
Yes	6	37.5	3	20.0
No	10	62.5	12	80.0
Gender of the child with problematic gaming				
Girl	6	37.5	7	46.7
Boy	9	56.3	8	53.3
Previous treatment for problematic gaming				
Yes	5	31.3	0	0.0
No	10	62.5	12	80.0
Level of education (self)				
Primary school	3	18.8	1	6.7
Secondary school	7	43.8	1	13.3
High school	4	25.0	3	20.0
Vocational training	1	6.3	1	6.7
Undergraduate	1	6.3	8	53.5
Masters	0	0.0	1	6.7
PhD	0	0.0	1	6.7
Level of education (partner)				
Primary school	4	25.0	0	0.0
Secondary school	8	50.0	0	0.0
High school	3	18.8	3	20.0
Vocational training	0	0.0	0	0.0
Undergraduate	1	6.3	12	80.0
Masters	0	0.0	2	13.3
PhD	0	0.0	3	20.0
Working status (self)				
Not working	16	100.0	11	73.3
Working without insurance	0	0.0	0	0.0
Working with insurance	0	0.0	4	26.7
Working status (partner)				
Not working	1	6.3	0	0.0
Working without insurance	3	18.8	0	0.0
Working with insurance	12	75.00	15	100.0
Monthly income				
0–11,402.00	3	18.8	0	0.0
11,403.00–22,805.00	7	43.8	0	0.0
22,806.00–33,208.00	4	25.0	2	13.3
33,209.00–44,611.00	1	6.3	0	0.0
44,612.00–56,014.00	1	6.3	2	13.3
56,015.00–67,417.00	0	0.0	2	13.3
47,418+	0	0.0	9	60.0

fill out pre- and post-measurements without participating in the intervention. They were asked to have a 90-minute break between two measurements. In both groups, data collection was carried out via Google Forms or printed forms depending

on participant preference. The students of the elective course were available during data collection to offer technical and practical help if needed. The scales were presented randomly in both measurements. Demographic information was

asked at the end of the preintervention measurement only. Participants were asked to consider the current moment (not the last week) to fill out the Depression Anxiety Stress Scale Short Form (DASS 21) as part of the post-measurement.

Data Analysis

SPSS v30 Package (IBM SPSS Corp.; Armonk, NY, USA) was used for data analysis. Data from the voluntary participants were checked for the parametric test assumptions before the main analyses. Missing data were mean replaced. The results of the Shapiro-Wilk tests revealed that the normality assumption was met for depression and stress pre- and post-measurements in both groups. Anxiety scores were normally distributed for post-measurement scores in both groups. Anxiety scores were normally distributed for pre-measurement scores in the wait-list control group but not in the treatment group ($S-W(15) = 0.80, p < .05$). In the wait-list control group, parental self-efficacy scores were normally distributed for post-measurement but not for pre-measurement ($S-W(14) = 0.86, p < .05$). They were not normally distributed for pre- ($S-W(15) = 0.88, p < .05$) and post-measurement ($S-W(15) = 0.86, p < .05$) scores in the intervention group. The visual inspection of the histograms and Q-Q plots showed that assumption violations were mostly due to utilizing a conservative procedure and were negligible. So, Pillai's trace statistics were reported in multivariate comparisons (Olson, 1976).

Results

As for the demographic findings, the mean age of participants was 38.55 ($SD = 7.99$) in the intervention and 41.07 ($SD = 4.77$) in the wait-list control group. The participants had 2.09 ($SD = 0.70$) children on average in the intervention group and 2.00 ($SD = 0.76$) children on average in the wait-list control group. They reported that their children played approximately 2.36 ($SD = 1.69$) hours per day in the intervention group and 1.58 ($SD = 1.49$) hours per day in the wait-list control group. Participants' age ($t(29) = 1.39, p > .05, \eta^2 = 0.07$), number of children ($t(29) = 0.48, p > .05, \eta^2 = 0.01$), and child's hours of

gaming per day ($t(29) = 1.66, p > .05, \eta^2 = 0.10$) were similar across groups.

All parents were married. Wait-list control group presented with a comparably higher socioeconomic status. In the intervention group, 37.5% ($n = 6$) of parents thought their child had a problematic gaming pattern whereas it was 20.0% ($n = 3$) in the wait-list control group. The participants were generally able to name the games that their children played. The review of game preferences of the children as reported by the parents revealed similar preferences across groups. However, statistical analyses were not possible for these variables due to a high number of cells with low expected frequencies (see Table 1 and Table 2). So, there were no covariates in the multivariate model.

A mixed design repeated measures MANOVA was utilized with group (intervention vs wait-list control), measurement time (pre vs post), and scale (PSES total score, DASS subscale scores) as independent variables. Multivariate tests revealed that only the three-way interaction was statistically significant such that depression, anxiety, and stress scores decreased from pre- to post-measurement only in the intervention group (Pillai's trace = 0.28, $F(3, 27) = 3.51, p < .05, \eta_p^2 = 0.28$). All other interaction effects were insignificant. The results are summarized in Table 3.

Discussion

The current study results reveal that a 90-minute psychoeducational intervention helps to decrease levels of depression, anxiety, and stress of parents of gamers compared to a wait-list control. However, it is not effective in significantly increasing levels of parental self-efficacy.

Perceived stress levels of parents of problematic gamers were responsive to intervention in another pilot study (Hülquist et al., 2022). Available case studies underline clinical psychiatric distress levels in parents of excessive gamers (Sharma, 2016). Other studies point to the effectiveness of one-shot interventions in reducing parental stress (VanVoorhis et al., 2023). So, being able to decrease the stress levels of parents of gamers constitutes the possibility of a quick solution

Table 2. The game preferences of their children as reported by the participants

	Intervention Group		Wait-list Control Group	
	n	%	n	%
I don't know	1	6.3	1	6.7
Action/strategy games: League of Legends (LOL), Civilization, Warcraft, Age of Empires, etc.	6	37.5	2	13.3
Shooting games: Valorant, PUBG, Counter Strike, Call of Duty, Battlefield, etc.	4	25.0	2	13.3
Survival/construction and management games: Minecraft, The Forest, ARK: Survival Evolved, Valheim, etc.	4	25.0	5	33.3
Adventure/role playing games: GTA, Genshin Impact, The Witcher, Assassin's Creed, Detroit: Become Human, etc.	3	18.8	2	13.3
Simulation games: The Sims, Euro Truck Simulator (ETS), etc.	1	6.3	5	33.3
Platform games: Mario, Ori, Dead Cells, Limbo, etc.	5	31.3	6	40.0

Reliable between-group comparisons were not possible for noncontinuous variables due to cells with low expected frequencies.

Table 3. The results of the multivariate model

Group	Variable	Pre-test Mean (SD)	Post-test Mean (SD)	p	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Intervention	Depression	4.19 (2.90)	3.25 (2.62)	.04	0.03	1.84
	Anxiety	4.94 (2.69)	3.47 (1.95)	.01	0.46	2.48
	Stress	6.13 (2.16)	4.81 (1.94)	.02	0.23	2.40
	Parental self-efficacy	63.75 (13.46)	64.06 (13.87)	.74	-2.25	1.62
Wait-list control	Depression	4.00 (2.59)	3.40 (2.23)	.20	-0.33	1.53
	Anxiety	3.33 (2.74)	3.00 (2.42)	.52	-0.71	1.38
	Stress	5.07 (2.76)	5.80 (2.88)	.19	-0.39	1.85
	Parental self-efficacy	61.07 (15.75)	60.60 (14.83)	.64	-1.53	2.47

Pillai's trace = 0.28, $F(3, 27) = 3.51$, $p < .05$, $\eta_p^2 = 0.28$

to a prevalent problem. Furthermore, offering a shorter intervention compared to the existing one-shot interventions in the literature (Hülquist et al., 2022), the current intervention portrays practical utility.

Psychiatric distress in the case studies in the literature encompasses depression, anxiety, and stress (Sharma, 2016). Levels of depression, anxiety, and stress correlate with each other in general (Henry & Crawford, 2005; Yılmaz et al., 2017). Similarly, the current intervention is effective in producing simultaneous decreases in psychiatric symptoms. Considering feelings of loneliness and hopelessness as depressive symptoms, the current intervention might have been effective by changing participants' beliefs about these feelings through a psychoeducational format. The participants might have taken a broader perspective to see that gaming is a prevalent problem and neither they nor their children are the sole victims. Also, they might have personally experienced that there is professional help offered by the readily existing schooling services in cooperation with other institutions. Both the intervention design and content are thought to target these beliefs successfully.

Parental self-efficacy did not show a significant change in the intervention and wait-list control conditions, although the insignificant change was in the expected direction only in the intervention group. Parenting is affected by the psychological distress levels of parents and their children (Masarik & Conger, 2017). However, parental self-efficacy scores stayed similar across measurements as opposed to changing depression, anxiety, and stress levels in the current study. Even longer interventions in the gaming literature show a significant increase in parental self-efficacy levels of parents only at the descriptive level (Hülquist et al., 2022). Similar treatment-contingent changes are observed in parent-adolescent communication (Hülquist et al., 2022; Liu et al., 2015). So, a 90-minute psychoeducational intervention may not be sufficient to provide the expected effects observed in the literature. Alternatively, the measurement of general parental self-efficacy but not parental self-efficacy peculiar to the child's gaming behavior may explain this result. A more specific measure might have detected changes in the self-efficacy perception of parents about child gaming. Supporting this view, study results point to significant differences in perceived efficacy for study-specific parenting practices

of parents of disabled children (Lane et al., 2021). However, there is no known scale that specifically assesses gaming-related efficacy of parents. There are some recent attempts to operationalize this variable through a set of questions (Gruchel et al., 2022; Krossbakken et al., 2018). Developing a scale that focuses on gaming-related parental efficacy may be a necessary next step for the field (Birol & Birol, 2022).

The study provides a one-shot example to the literature on fighting the parental burden of gamers. The results are informative and promising. However, they should be considered with the study limitations. First, the study included a low number of participants from a single school in Istanbul in the intervention condition and a low number of participants via convenience sampling in the wait-list control condition. Also, most of the attending parents were mothers. So, the results may not be generalizable to fathers, diverse populations, or the general public. However, the study prioritized a low-mid socioeconomic district to offer intervention support to more vulnerable populations first.

Second, there was only one intervention group and one passive control group (i.e., wait-list control group). The coexistence of an active control group might have revealed levels, producing more sound results. No randomization was possible, raising the issue of any selection bias. Indeed, voluntary participants in the intervention group may be the ones who are by themselves more responsive to any intervention. This possibility diminishes the validity of the study findings. Lacking an active control group and randomization were related to constraints of time and labor force in the collaborating institutions. Future collaborations may seek funds to overcome those practical problems. It may help to capture real-world experiences with no methodological costs with sound power analysis at the start of the research conduction.

Third, treatment adherence was not measured by blind reviewers. The author tracked adherence to the reference material. However, she was not blind to the study aim, and the adherence check was not standardized. A related issue was the lack of standardized intervention evaluations and standardized feedback from the study participants. Feedback from observer professionals (two school counselors and one teacher) provided positive comments such that the information provided fit the needs of the participants. They

further highlighted that the psychoeducation was presented effectively and the attendees actively followed it, paying a sufficient level of attention. Parents' active participation in the Q&A session supported observers' evaluations. General participant evaluations were also positive at the end of the intervention. This feedback deserves credit considering its congruence with the available information in the literature concerning in-person information delivery methods followed by an open Q&A (VanVoorhis et al., 2023). However, no standardization was followed for these evaluations.

As a fourth limitation, the study is the first step in developing a broader and more feasible intervention against the caregiver burden in parents related to children's gaming behavior. Even though the study results imply the utility of a shorter intervention compared to the available studies in the literature (Hülquist et al., 2022), a direct experimental comparison is necessary to rule out confounding variables. Future studies are advised to modulate experimental conditions with the inclusion of differential treatment conditions, delivery methods, length, and participants. For instance, De Lepeleere et al. (2017) highlight that parental self-efficacy related to screen time and gaming is more open to change in parents of 6-9-year-olds compared to parents of 10-12-year-olds. They argue that parents with younger children may be more in search of better practices for their everyday lives. Also, interventions starting when the child is younger may be more effective regardless of the treatment content (Kuss & Griffiths, 2012).

As another point, a wide array of variables was not included in the current dataset. Research with public institutions defines an extra burden on the everyday demands at these institutions. So, active collaboration with public institutions may require lowering the number of variables to start collaborations. This tactic helps researchers to be active in the field, albeit decreasing the research validity. For instance, adding measures of affect and well-being might have produced a more detailed portrait. They were not included in the current study because time constraints at the institution obliged the researchers to restrict the number of variables. Researchers may focus on these variables in the future. Complementarily, supporting professionals to apply research methods in their everyday practices may lower time and energy costs leading to more comprehensive research designs. This may advance research soundness and professional competence collectively.

Another unmeasured variable was the severity of gaming in the current study. The attendees were welcomed regardless of the existence of a diagnosis related to gaming. This was because of the issues related to diagnosis, holistic support instead of a treatment protocol. Nevertheless, more than a quarter of the participants self-evaluated their children's situation as potentially disordered. The sample may therefore be composed of heterogeneous participants who need preventive, curative, rehabilitative, and health-promoting interventions. Furthermore, the literature discusses possible typologies of gamers depending on the triggers and the underlying mechanisms of need satisfaction (Lee et al., 2017). Accordingly, analyzing what works for whom, when, and

under what circumstances will be a valuable line of inquiry for future studies.

Last but not least, the study was conducted with senior undergraduate students as part of their curricula. The intervention was effective when implemented with future professionals. Future studies may analyze the comparative effectiveness of supervised student preprofessionals as providers of public psychoeducational interventions.

Collectively, the study findings suggest that even a 90-minute one-shot intervention may affect the psychological distress levels of parents of gamers even though more effort may be needed to affect the perceived parental self-efficacy. These findings are of value when the study findings that report similar power for individual and parental factors to explain child and adolescent problematic gaming are considered (Nielsen et al., 2020). So, intervening in parental factors may produce expected outcomes for parents and their children as the current pilot findings suggest. Pilot studies are important to provide a time- and cost-effective theoretical and methodological checkpoint for future studies. Future studies may benefit from the current study to design methodologically rigorous studies with higher effect sizes.

The current study offers the first study with a holistic parental intervention for parents of gamers. However, the current state-of-the-art for parent-focused studies in gaming literature is in its infancy. Games- and gaming-related measures focus on the child actor and there is no available measure to understand parents' experience and perspective on the gaming behavior of their children (Birol & Birol, 2022). So, the current study provides a first step to develop a broader and more feasible intervention against the caregiver burden in parents of gamers, which is significant for the field in understanding parents' perspectives. Gaming literature overlooks parents' (e.g., caregivers') experiences and the caregiver burden literature overlooks issues related to gaming. Therefore, the current study targets a neglected study topic and is expected to support the future of the field as a pilot intervention study.

The study has practical implications for professionals. It underlines the significance of holistic perspectives to have an in-depth understanding of mental health-related problems. It reminds professionals of the merits of collaborating with the immediate surroundings of children to understand and intervene in their behavior patterns. The study underlines the opportunities of mobilizing preprofessionals actively in the field. Engagement with preprofessionals may be helpful for clinicians.

Future studies may consider utilizing larger and more heterogeneous samples concerning socioeconomic status (low to high) and parental role (mothers and fathers) to increase generalizability of the findings. Validating the protocol with parents who parent different age ranges may be a fruitful research area. Applications with parents whose children present with differential severity levels for gaming may be informative to tailor the program for the general public, at-risk groups, and clinical groups. Study

variables may include affect and well-being among others. Scientific rigor may be enhanced with randomized control studies that include intervention, active- and passive-control groups. Development of a gaming-specific parental efficacy measure may be prioritized. Future studies may consider applying standard forms to measure treatment adherence. Also, variables related to intervention providers such as field of expertise, professional experience, etc. may be critically analyzed.

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Author contributions

Conception and design: N.T.; Data acquisition: N.T.; Data analysis: N.T.; Data interpretation: N.T.; Drafting of the manuscript: N.T.; Critical revision of the manuscript: N.T. The author 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 University Ethics Committee for Social Sciences and Humanities (Date: November 27, 2023, Decision/Protocol No: 2023/387). 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 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.

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Generative AI statement

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

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