

ORIGINAL ARTICLE

Comparison of Substance Use and Personality Characteristics and Psychiatric Symptoms of Individuals Using Cannabis and Synthetic Cannabinoids with Healthy Controls

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Main Points

- The mean age of the participants to try alcohol was 14.78 ± 4.01 in the cannabis group, 14.91 ± 2.75 in the synthetic cannabinoid (SC) group, and 16.49 ± 4 in the healthy controls. The age of first-attempt alcohol in individuals with a history of substance use was as early as 2 years compared to healthy controls. 11.7% ($n = 12$) of the participants with a history of substance use stated that they drink alcohol almost every day. Among all participants, 57.1% ($n = 8$) of the participants who drank alcohol almost every day constituted the SC group. It has been observed that participants with a history of SC use consumed risky amounts of alcohol almost every day.
- In the study, use of cannabis more than five times was 100% ($n = 52$) in the group with a history of cannabis use and 100% ($n = 51$) in the group with a history of SC use.
- In this study, SC use more than five times was 21.2% ($n = 11$) in the group with a history of cannabis use and 100% ($n = 51$) in the group with a history of SC use.
- Healthy controls have the highest cohesion ability in all score types, and participants with a history of SC use have the lowest cohesion ability. Participants with a history of cannabis use had lower cohesion scores than healthy controls.
- Healthy controls had the lowest symptom scores in most of the sub-clusters, while participants with a history of SC use had the highest symptom scores.

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Abstract

In this study, substance use, personality traits, and psychiatric symptoms of individuals using cannabis and synthetic cannabinoid were examined and compared with healthy controls.

A total of 52 participants who applied to Ege University Faculty of Medicine, Department of Mental Health and Diseases, Substance Addiction Treatment Center between March 2015 and June 2017, who used cannabis for at least 1 year in the past, and 51 participants who used synthetic cannabinoids for at least 1 year in the past constituted the participant group with a history of substance use, and 57 Ege University employees/students without any substance use history constituted the control group participants. The age range was determined as 18 – 54. Hacettepe Personality Inventory was used to evaluate the personality traits of the participants, and the Symptom Screening Test-90 was used to examine the psychopathological symptom levels. Participants with a history of synthetic cannabinoid use evaluated by Hacettepe Personality Inventory had a significantly lower score on general adjustment, personal adjustment, social adjustment, self-actualization, emotional stability, neurotic tendencies, psychotic symptoms, family relations, social relations, social norms, antisocial tendencies sub-dimensions, and they scored significantly higher in all Symptom Screening Test 90 sub-dimensions.

The study suggests that adding social adaptation and psychoeducational programs to medical and psycho-social improvement studies in the field of addiction will increase success.

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Introduction

Cannabis is an addictive substance known since ancient times. It is the most widely used illegal substance in the world (Alıcı & Uzbay, 2006). In 2016, more than 150 000 people in Europe started drug treatment for problems related to cannabis use; about 83 000 people applied for treatment for the first time in their lives. In the 25 countries with available data, the total number of first-time counselees for cannabis problems increased by 76% between 2006 and 2016, with the majority of countries reporting an increase during this period. In general, 50% of primary cannabis users who entered treatment for the first time in 2016 reported daily drug use in the past month. However, the proportion of daily users varies between countries, with 10% or less in Latvia, Hungary, and Romania and 60% or more in Spain, France, the Netherlands, and Turkey (EMCDDA, 2018).

Synthetic cannabinoids (SC), which are increasingly popular among drug users and also called new-generation psychoactive substances (designer drugs), are available in pure, solid, or oil form (Gurdal et al., 2013; Liechti, 2015). Among users, SC, which can also be called “synthetic marijuana” or “sedge grass,” is known as Spice, K2, Genie in Europe and the USA, and “Bonzai, Jamaica, and Jamaican Gold” in Turkey (Yargıç, 2013). Most of these compounds are highly lipophilic and show good solubility in low-polarity solvents such as methanol, ethanol, acetonitrile, ethyl acetate, and acetone (İbiloğlu et al., 2017). 59.9% (564) of 941 drug-related deaths in 2017, 45.8% (301) of 657 drug-related deaths in 2018, and 13.2% of 342 drug-related deaths in 2019 (45), and 15.6% (49) of 314 drug-related deaths in 2020 were due to SC use (Türkiye Uyuşturucu Raporu, 2021).

There are many studies investigating personality traits, personality disorders, and psychopathology in alcohol and substance use. Long-term follow-up studies and cross-sectional comparative studies have shown that personality traits are associated with starting to use substances, substance dependence, and continued substance use (Başay et al., 2016). Creason and Goldman found lower motivation levels in heavy and frequent cannabis users than those who never or rarely use cannabis (Akpınar et al., 2015). It has been reported that individuals with substance use disorder have high levels of negative emotionality, such as self-isolation, self-control, and self-harm avoidance (Swendsen et al., 2002). It has been determined that some personality traits of individuals with alcohol and substance use, such as novelty seeking and impulsivity, differ from controls (Conway et al., 2003). Cluster B is the most common personality disorder cluster in those with alcohol/substance use disorder. Antisocial and borderline personality disorders are the most common diagnoses in this cluster. Although those with a co-diagnosis of personality disorder can benefit from treatment as much as those who do not, co-diagnosis of personality disorder can determine relapse in those with alcohol/substance use disorder. In a study by Başay et al. (2016), in which they examined the personality traits of adolescents with alcohol-substance use disorder (ASUD), in the MMPI psychopathology sub-dimensions of hypochondria,

hysteria, depression, psychopathic deviation, paranoia, psych-asthenia, schizophrenia, and hypomania subscales, adolescents with ASUD scored higher than the control group, while they scored significantly lower in the defensive attitude (K) subscale compared to the control group. Verheul (2001) reported in his review article that the prevalence of personality disorder in alcohol/substance addicts under treatment ranged from 34.8% to 73% (mean, 56.5%) in treated alcohol/substance users (six studies). Co-diagnosis of personality disorder also increases the risk of axis I co-diagnosis (Evren, 2004). In a study by Güleç et al., in which they examined substance use in inpatient psychiatric patients and their distribution according to diseases, the highest rates of substance use were found to be brief psychotic disorder (5.9%), psychotic disorder not otherwise specified (3.9%), bipolar affective disorder (3.5%), schizophrenia (3.2%), schizoaffective disorder (2.6%), depressive disorder (1.5%), and anxiety disorders (1.2%). Cannabis was found to be the most used substance (Güleç et al., 2010). It was found that hostility symptoms predict alcohol abuse and hostility, and depression and paranoid thinking predict substance abuse (Coşkun, 2017). It has been determined that depression, anxiety, and post-traumatic stress disorder are significantly more common in substance users than in healthy individuals (Tunçay, 2019).

In this study, the differences in substance use and personality traits and psychiatric symptoms of individuals with a history of cannabis and SC use compared to healthy individuals without a history of substance use were investigated.

Methods

Participants

The sample of the study consisted of 160 individuals who applied to Ege University between March 2015 and June 2017, who met the inclusion criteria, and those who worked at Ege University and the control group consisted of those who met the inclusion criteria of the study and who voluntarily agreed to participate after reading the informed consent form. The age range is determined as 18 – 35. Exclusion criteria of the study included features such as having an intellectual disability, having a neurological disorder, and having a history of head trauma in the past.

Participants with a History of Cannabis Use

These participants reported that they had used cannabis for at least 1 year before they applied for treatment. All of the participants ($n = 52$) were male, and their mean age was 27.76 (standard deviation (SD) = 6.54).

Participants with a History of Synthetic Cannabis Use

These participants reported that they had used SC for at least 1 year before they applied for treatment. All of the participants ($n = 51$) were male, and their mean age was 24.72 (SD = 4.83).

Participants without Substance Use

These participants reported that they did not use any illegal substance in the past. All of the participants were male ($n = 57$), and their mean age was 27.07 (SD = 7.23).

Material and Design

Sociodemographic Information Form

In addition to demographic information, the sociodemographic information form includes questions about alcohol and substance use history.

Symptom Screening Test-90

The Turkish adaptation of the scale developed by Derogatis (1977) was carried out by Dağ (1991). The scale is intended to determine the level of psychiatric symptoms and the strain that the individual is under or the level of negative stress response experienced. The scale consists of 90 five-point Likert type (not at all, very little, moderately, quite a lot, advanced) items. Each item is scored as 0, 1, 2, 3, and 4, respectively. Three general scores can be calculated from the scale (general symptom level, positive symptom total, and negative symptom level). It has subscales reflecting nine distinct symptom groups: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid thought, and psychoticism. Subscale scores consist of the weighted average of the relevant item scores and range from 0 to 4. The Cronbach alpha internal consistency of the scale is .97 and construct validity is .79 (Beştepe et al., 2002).

Hacettepe Personality Inventory

Hacettepe Personality Inventory (HPI) was developed by Özgüven (Özgüven, 1992) as a trial form in order to obtain information about individuals' personality traits, personality-related problems, total personal and social adjustment levels, and general adjustment levels. According to the research on the trial form, the first revision of the inventory was made in 1981 and the second revision was made in 1982. Personality includes all qualities of an individual, including abilities and aspects of achievement, and a person's behavior emerges as a product of these many attributes and their complex interactions. However, the concept of personality used in this inventory is used in a narrow sense to include the individual's emotion, thought, and behavior (Kızıltan, 1982). Hacettepe Personality Inventory team A underwent a second revision in 1982 and took its current form. Team A consisted of eight subscales, four for "Personal Cohesion" and four for "Social Cohesion." Each of the subscales has 20 items. Eight items are used for the validity (G) score. The inventory consists of a total of 168 items. HCI-A gives 8 subscales and 2 validity scores. It has two main dimensions under the name of personal adaptation and social adaptation. The sum of personal and social adjustment dimensions gives general adjustment scores. The sum of personal and social cohesion sub-dimensions gives the overall cohesion score. In the reliability studies conducted by Özgüven (1976 – 1982) on various groups, the reliability coefficient of the HPI for the subscales was found to be 0.82 on average, and generally, the reliability coefficients of the personal cohesion subscales were slightly higher than the social cohesion subscales (Özgüven, 1992).

Procedure

During the application, morning hours were preferred to eliminate the effect of fatigue. In the first stage, all participants had to fill out the sociodemographic information form in the form of a face-to-face interview. Then, HPI and Symptom Screening Test

(SCL-90) were applied to the participants. All of the applications were made individually, and the applications were completed by taking two or three breaks, as they had application times varying between 1.5 and 2 hours. All applications were processed at Ege University Faculty of Medicine, Department of Mental Health and Diseases, Substance Addiction Treatment Center, Psychometrics Laboratory.

Before starting the application, the informed consent form was given to the participants and they were taken to application in line with their participation requests. Ethical approval of the study was obtained from the Ege University Clinical Research Ethics Committee (ethics committee approval numbered B.30.2.EGE.0.20.05.00/OY/1028 and decision numbered 15-6.1/14).

Statistical Analysis

The data of the research were entered into the Statistical Package for Social Science 18.0 package program (IBM SPSS Corp., Armonk, NY, USA) and the analyses were carried out in this program in the computer environment. The conformity of the data to the normal distribution was checked using Kolmogorov – Smirnov test, and the normality assumption could not be met for most variables. Triple-group comparisons of variables such as education, age, income level, etc., were made using Kruskal – Wallis, and double-group comparisons of variables such as employment status, place of residence, loss of years, duration of substance use, time of last substance use, longest time spent without substance use were made using Mann – Whitney *U*, and triple post hoc analyses of group comparisons were made using Tamhane's *T2* test.

Results

Sample Characteristics and Their Substance Use History

Sociodemographic information and substance use histories of the participants are given in Table 1. The mean age of the participants differed significantly in three groups (χ^2 *K-w*: 6.508, $p < .05$). The youngest group is the participants with a history of SC use (mean: 24.72 ± 4.83). The participant groups differed significantly in terms of education level (χ^2 *K-w*: 59.413, $p < .001$). 51.8% of the control group were high school graduates and 42.9% were university graduates. No significant difference was found between the groups in terms of the participants' employment status, place of residence, and loss of years throughout their education life (χ^2 *K-w*: 5.479, $p > .05$; χ^2 *K-w*: 5.174, $p > .05$; χ^2 *K-w*: 5.922, $p > .05$). While there was a significant difference between the groups in terms of daily smoking habits (χ^2 *K-w*: 17.948, $p < .001$), the highest daily cigarette consumption is in the participants with a history of SC use (mean: 23.58 ± 13.32). There was a significant difference between the groups in terms of the number of standard drinks consumed per day (χ^2 *K-w*: 20.441, $p < .001$). While 36.5% in the group with a history of cannabis use and 46.9% in the group with a history of SC use consume seven or more standard drinks per day, 15.7% of the control group consume seven or more standard drinks per day. There was no significant difference between the groups in terms of how many months the substance was used, the maximum number of days without substance use, and the last number of days before the substance was taken (χ^2 *U*: 1056, $p > .05$; χ^2 *U*: 1192, $p > .05$; χ^2 *U*: 643, $p > .05$). It was found that the cannabis group had been using substances for an average of

Table 1.
Sociodemographic Information and Substance Use History of the Participants

	Cannabis	SC	Control	<i>p</i>
<i>n</i> (male)	52 (32.7%)	51 (32.1.5.9)	57 (35.2%)	
Age*, mean (SD)	27.76 (6.54)	24.72 (4.83)	27.07 (7.23)	<.05
Education***				
Primary school graduate	15 (28.8%)	7 (13.7%)	0 (0%)	<.001
Secondary school graduate	15 (28.8%)	30 (58.8%)	3 (5.4%)	
High school graduate	16 (30.8%)	14 (27.5%)	29 (51.8%)	
University graduate	6 (11.5%)	0 (0%)	24 (42.9%)	
Employment status				
Employed	40 (76.9%)	30 (58.8%)	32 (57.1%)	>.05
Unemployed	12 (23.1%)	21 (41.2%)	24 (42.9%)	
Place of residency				
With family	43 (82.7%)	43 (84.3%)	38 (67.9%)	>.05
Other	9 (17.3%)	8 (15.7%)	18 (32.1%)	
Loss of years				
Yes	26 (51%)	30 (58.8%)	20 (35.7%)	>.05
No	25 (49%)	21 (41.2%)	36 (65.3%)	
Average amount of smoking per day (SD)***	17.60 (8.12)	23.58 (13.32)	12.50 (10)	<.001
Number of standard drinks per day***				
1 – 2	12 (23.1%)	7 (14.3%)	24 (47.1%)	<.001
3 – 4	10 (19.2%)	7 (14.3%)	13 (25.5%)	
5 – 6	11 (21.2%)	12 (24.5%)	6 (11.8%)	
7 and more	19 (36.5%)	23 (46.9%)	8 (15.7%)	
Duration of substance use (months), mean (SD)	90.9 (77.89)	61(49.44)	–	>.05
Time without substance use (days), mean (SD)	216.38 (369.65)	143.59 (190.33)	–	>.05
Last substance use time (day), mean (SD)	42.58 (56.07)	71.81 (150.64)	–	>.05

p* < .05; **p* < .001

SC, synthetic cannabinoid; SD, standard deviation.

90.9 months, and the SC group had been using substances for an average of 61 months and that the cannabis group stayed clean for the longest average of 216 days and took the substance 42.58 days ago for the last time, while the SC group stayed clear for the longest average of 143.59 days and took the substance 71.81 days ago on average.

When the participants were asked about the age at which they first tried alcohol, it was found that the cannabis group had their first experience at a mean age of 14.78 ± 4.01 years, the SC group at an average of 14.91 ± 2.75 years, and the healthy controls at a mean age of 16.49 ± 4 years. Considering the frequency of alcohol use, 48.1% (*n* = 77) of the participants drink alcohol one to two times a month, while 25.6% (*n* = 41) drink alcohol one to five times a week. Synthetic cannabinoid group constitutes 57.1% (*n* = 8) of the participants who drink alcohol almost every day. To the question “How many standard drinks on average do you drink in a day when you drink alcohol?” 32.7% of the participants (*n* = 50) answered as seven or more standard drinks. The SC group

constitutes 46% (*n* = 23) of the participants who drank seven or more standard drinks. To the question “How often do you drink six standard drinks or more at a time?” 30.1% (*n* = 46) of the participants answered “Never,” while 54.8% (*n* = 17) of the participants who reported that they drank six standard drinks or more once a week/every day constituted the SC group (Table 2) (*p* < .05).

When the substance use frequency of the participant groups was examined, the use of sedative pills more than five times was 23.1% (*n* = 12) in the group with a history of cannabis use and 25.5% (*n* = 13) in the group with a history of SC use. The mean age of first use of sedative pills was 19.78 ± 5.11 years, and the mean duration of use was 1.85 ± 1.91 years. The use of narcotic pills (Roş-1, Roş-2, Deva-1, Deva-2, Akineton, etc.) more than five times was 11.5% (*n* = 6) in the group with a history of cannabis use and 33.3% in the group with a history of SC use (*n* = 17). The mean age of first use of narcotic pills was 17.03 ± 2.22 , and the mean duration of use was 2.13 ± 1.76 years. Cannabis use more than

Table 2.

Frequency of Alcohol Drinking by the Substance Use History of the Participant Group and Standard Drink Frequency and Percentages

	Cannabis		SC		Control		Total		p
	n	%	n	%	n	%	n	%	
Frequency of alcohol use									
Never/I only used alcohol once	7	25	6	21.4	15	53.6	28	100	.036*
I use it 1 – 2 times a month	24	31.2	26	33.8	27	35.1	77	100	
I use it 1 – 5 times a week	17	41.5	11	26.8	13	31.7	41	100	
I use it almost every day	4	28.6	8	57.1	2	14.3	14	100	
Average number of drinks taken per day									
Never/1 – 2 standard drinks	12	27.9	7	16.3	24	55.8	43	100	.000***
3 – 4 standard drinks	10	32.3	7	22.6	14	45.2	31	100	
5 – 6 standard drinks	11	37.9	12	41.4	6	20.7	29	100	
7 and more standard drinks	19	38	23	46	8	16	50	100	
Frequency of drinking 6 standard drinks or more at a time									
Never	16	34.8	8	17.4	22	47.8	48	100	.000***
Less than once a month	15	34.9	10	23.3	18	41.9	43	100	
Once a month	11	33.3	13	39.4	9	27.3	33	100	
Once a week/almost every day	10	32.3	17	54.8	4	12.9	31	100	

* $p < .05$; *** $p < .001$.

SC = synthetic cannabinoid.

five times was 100% ($n = 52$) in the group with a history of cannabis use and 100% ($n = 51$) in the group with a history of SC use. The mean age of first use of cannabis was 15.97 ± 4.07 years, and the mean duration of use was 8.24 ± 6.12 years. The use of SC more than five times was 21.2% ($n = 11$) in the group with a history of cannabis use and 100% ($n = 51$) in the group with a history of SC use. The mean age of first use of SC was 21.02 ± 5.28 years, and the mean duration of use was 2.44 ± 1.5 years. The use of ecstasy more than five times was 44.2% ($n = 23$) in the group with a history of cannabis use and 80.4% ($n = 41$) of the group with a history of SC use. The mean age of first use of ecstasy was 18.45 ± 4.85 years, and the mean duration of use was 4.09 ± 3.44 years. The use of volatile substances (thinner, glue, lighter gas, etc.) more than five times was 13.5% ($n = 7$) in the group with a history of cannabis use and 33.3% ($n = 17$) in the group with a history of SC use. The mean age of first use of volatile substances was 15.05 ± 4.19 years, and the average duration of use was 3.5 ± 3.08 years. The use of heroin more than five times was 3.8% ($n = 2$) in the group with a history of cannabis use and 21.6% ($n = 11$) in the group with a history of SC use. The mean age of first use of heroin was 20.5 ± 3.12 years, and the average duration of use was 4.5 ± 6.43 years. Cocaine or stone use more than five times was 19.2% ($n = 10$) in the group with a history of cannabis use and 19.6% ($n = 10$) in the group with a history of SC use. The mean age of first use of cocaine or stone was 21.55 ± 4.12 years, and the mean duration of use was 4.2 ± 5.08 years. The use of hallucinogens (Lysergic Acid Diethylamide [LSD], mushroom, psilocybin) more than five times was 3.9% ($n = 2$) in the group with a history of SC use. The average age of first use of hallucinogens is 21.63 ± 6.56 . The use of an unknown substance, drug, or pill more than five times was 2% ($n = 1$) in the group with a history of SC use.

The mean age of first use of an unknown substance, drug, or pill is 21.83 ± 2.85 (Table 3) ($p < .001$).

Hacettepe Personality Inventory General Cohesion, Personal Cohesion, and Social Cohesion Subtests and subscale scores (except for the Social Norms subscale) differ significantly in terms of the participants' substance use history variable (GU χ^2 κ -d Social Cop = .001; KU χ^2 κ -1; KU al Cop < .01; SU 14.641, $p = .001$; KG χ^2 κ -1; KG 4.64 $p < .05$; DK χ^2 κ -; DK 4.641 $p < .001$; NE χ^2 κ -1; NE 4.64 $p < .01$; PB χ^2 κ -; PB 4.64 $p < .05$; Aİ χ^2 κ -; Aİ 4.641 $p < .001$; Sİ χ^2 κ -1; Sİ 4.641 $p < .001$; AE χ^2 κ -w: 7.102, $p < .05$; G χ^2 κ -w: 13.267, $p = .001$). When the mean rank of the groups is considered, when it is considered that HPI evaluates the cohesion ability and personality traits of the participants, healthy controls have the highest cohesion ability in all score types, and participants with a history of SC use have the lowest cohesion ability and personality traits that strengthen cohesion (Table 4).

All subtest scores of the SCL-90-R differ significantly in terms of the participants' substance use history (SCL-Sm χ^2 κ -ffer signif $p < .01$; SCL-Ank χ^2 κ -w: 28.388, $p < .001$; SCL-Obs χ^2 κ -w: 16.742, $p < .001$; SCL-Dep χ^2 κ -w: 13.747, $p = .001$; SCL-Kd χ^2 κ -w: 14.895, $p = .001$; SCL-Psk χ^2 κ -w: 17.188, $p < .001$; SCL-Prn χ^2 κ -w: 18.212, $p < .001$; SCL-Öfk χ^2 κ -w: 26.943, $p < .001$; SCL-Fa χ^2 κ -w: 15.009, $p = .001$; SCL-Emd χ^2 κ -w: 29.507, $p < .001$; SCL-GSİ χ^2 κ -w: 21.622, $p < .001$). Considering the mean rank of the groups, when it is considered that the SCL-90-R evaluates psychiatric symptoms, while healthy controls had the lowest symptom scores in most of the subclusters, participants with a history of SC use had the highest symptom scores. Considering the obsession subdimension, the lowest group mean rank belonged to the participants with a history of cannabis use (Table 5).

Table 3.

Frequency and Percentages of Substance Use Frequency of the Participant Group

Substance Use Frequency	Cannabis		SC		Control		Total		<i>p</i>
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Tranquilizers (Diazem, Xanax vb.)									
I have never used	38	31.4	27	22.3	56	46.3	121	100	.000
I used it 1 – 5 times	2	14.3	11	78.6	1	7.1	14	100	
I used it more than 5 times	12	23.1	13	25.5	0	0	25	100	
Drug pills (Roş-1, Roş-2, Deva-1, Deva-2, Akineton vb.)									
I have never used	41	32.5	28	22.2	57	45.2	126	100	.000
I used it 1 – 5 times	5	45.5	6	54.5	0	0	11	100	
I used it more than 5 times	6	26.1	17	73.9	0	0	23	100	
Cannabis (marijuana, joint, weed)									
I have never used	0	0	0	0	57	100	57	100	.000
I used it more than 5 times	52	50.5	51	49.5	0	0	103	100	
Synthetic cannabis (Bonzai, Jamaika, K2 vb.)									
I have never used	30	34.5	0	0	57	65.5	87	100	.000
I used it 1 – 5 times	11	100	0	0	0	0	11	100	
I used it more than 5 times	11	17.7	51	82.3	0	0	62	100	
Ecstasy (candy)									
I have never used	16	20.3	6	7.6	57	72.2	79	100	.000
I used it 1 – 5 times	13	76.5	4	23.5	0	0	17	100	
I used it more than 5 times	23	35.9	41	64.1	0	0	64	100	
Volatile substances (thinner, glue, lighter gas, etc.)									
I have never used	39	32.8	23	19.3	57	47.9	119	100	.000***
I used it 1 – 5 times	6	35.3	11	64.7	0	0	17	100	
I used it more than 5 times	7	29.2	17	70.8	0	0	24	100	
Heroin									
I have never used	47	33.8	35	25.2	57	41	139	100	.000***
I used it 1 – 5 times	3	37.5	5	62.5	0	0	8	100	
I used it more than 5 times	2	15.4	11	84.6	0	0	13	100	
Cocaine or stone									
I have never used	36	29.3	30	24.4	57	46.3	123	100	.000***
I used it 1 – 5 times	6	35.3	11	64.7	0	0	17	100	
I used it more than 5 times	10	50	10	50	0	0	20	100	
Hallucinogens (LSD, mushroom, psilocybin)									
I have never used	48	32.2	44	29.5	57	38.3	149	100	.000***
I used it 1 – 5 times	4	44.4	5	55.6	0	0	9	100	
I used it more than 5 times	0	0	2	100	0	0	2	100	
Unfamiliar substance, drug, or pill									
I have never used	52	34.7	41	27.3	57	38	150	100	.000***
I used it 1 – 5 times	0	0	9	100	0	0	9	100	
I used it more than 5 times	0	0	1	100	0	0	1	100	

****p* < .001.

SC = synthetic cannabinoid.

Table 4.

Distribution of HCI Subtest Scores of Kruskal – Wallis Test Results According to Participants' Substance Use History

			<i>n</i>	Mean Rank	χ^2 K-W	<i>p</i>
HPI scores	General cohesion (GC)	Cannabis	52	82.06	14.463**	.001
		SC	51	60.33		
		Control	54	93.67		
	Personal cohesion (PC)	Cannabis	52	81.71	11.562**	<.01
		SC	51	62.32		
		Control	54	92.13		
	Social cohesion (SC)	Cannabis	52	81.74	14.641**	.001
		SC	51	60.35		
		Control	54	93.97		
	Self-actualization (SA)	Cannabis	52	82.14	6.365*	< .05
		SC	51	66.31		
		Control	54	87.95		
	Emotional stability (ES)	Cannabis	52	76.70	17.365**	<.001
		SC	51	61.26		
		Control	54	97.96		
	Neurotic tendencies (NT)	Cannabis	52	81.14	9.632**	<.01
		SC	51	63.92		
		Control	54	91.17		
	Psychotic symptoms (PS)	Cannabis	52	85.09	7.215*	<.05
		SC	51	65		
		Control	54	86.35		
	Family relations (FR)	Cannabis	52	84.29	16.615***	<.001
		SC	51	58.42		
		Control	54	93.33		
	Social relations (SR)	Cannabis	52	84.75	16.171***	<.001
		SC	51	58.56		
		Control	54	92.75		
	Social norms (SN)	Cannabis	52	76.61	0.633	>.05
		SC	51	77.25		
		Control	54	82.94		
	Antisocial tendencies (AT)	Cannabis	52	79.71	7.102*	<.05
		SC	51	66.53		
		Control	54	90.08		
	Validity score (V)	Cannabis	52	84.60	13.267**	.001
		SC	51	60.53		
		Control	54	91.03		

p* < .05; *p* < .01; ****p* < .001.

SC = synthetic cannabinoid.

Discussion

While determining the sample within the scope of the research, it was decided to include male participants. The reason why the male gender was preferred was that the prevalence of substance use was higher in males and that the majority of the applicants

within the scope of the probation measure decision were male. There are various studies to determine substance use patterns in Turkey. In a study conducted by Işıklı and Irak (2002) in 72 provinces, the prevalence of substance use was found to be higher in men than in women and in the 15 – 24 age group compared to those over the age of 25. In the study by Evren et al. (2003)

Table 5.
Distribution of SCL-90-R Sub-Test Scores and Kruskal – Wallis Test Results According to Participants' Substance Use History

			<i>n</i>	Mean Rank	χ^2 <i>K-W</i>	<i>p</i>
SCL-90-R Scores	Somatization (SCL-Sm)	Cannabis	52	79.18	12.663**	<.01
		SC	51	96.95		
		Control	56	65.32		
	Anxiety (SCL-Ank)	Cannabis	52	77.10	28.388***	<.001
		SC	51	105.12		
		Control	56	58		
	Obsession (SCL-Obs)	Cannabis	52	67.375	16.742***	<.001
		SC	51	101.53		
		Control	56	72.10		
	Depression (SCL-Dep)	Cannabis	52	72.09	13.747**	.001
		SC	51	99.61		
		Control	56	69.47		
	Interpersonal sensitivity (SCL-Kd)	Cannabis	52	75.38	14.895**	.001
		SC	51	99.74		
		Control	56	66.30		
	Psychotic symptoms (SCL-Psk)	Cannabis	52	72.08	17.188***	<.001
		SC	51	101.34		
		Control	56	66.88		
	Paranoid symptoms (SCL-Prn)	Cannabis	52	71.01	18.212***	<.001
		SC	51	102.54		
		Control	56	67.80		
	Anger/hostility symptoms (SCL-Öfk)	Cannabis	52	73.88	26.943***	<.001
		SC	51	106.49		
		Control	56	61.55		
	Phobic anxiety symptoms (SCL-Fa)	Cannabis	52	78.63	15.009**	.001
		SC	51	98.45		
		Control	56	64.46		
	Additional substances (SCL-Emd)	Cannabis	52	76.65	29.507***	<.001
		SC	51	106.74		
		Control	56	58.75		
	General Symptom Index (SCL-GSİ)	Cannabis	52	73.62	21.622***	<.001
		SC	51	104.02		
		Control	56	64.03		

p* < .05; *p* < .01; ****p* < .001.

SC = synthetic cannabinoid.

examining the gender difference in substance use disorder in Istanbul AMATEM, it was found that the majority of inpatient drug addicts were men, and the rate of cannabis and volatile use in men was higher than that of women. In the study conducted by Zorlu (2011), it was reported that 99.5% of the patients referred for treatment within the scope of probation application were men.

The mean age of the participants to try alcohol was 14.78 ± 4.01 in the cannabis group, 14.91 ± 2.75 in the SC group, and 16.49

± 4 in the healthy controls. The age of first attempt alcohol in individuals with a history of substance use was as early as 2 years compared to healthy controls. 11.7% (*n* = 12) of the participants with a history of substance use stated that they drink alcohol almost every day. Among all participants, 57.1% (*n* = 8) of the participants who drank alcohol almost every day constituted the SC group. It has been observed that participants with a history of SC use consumed risky amounts of alcohol almost every day. İlhan et al. (2016), in their study, examined the sociodemographic determinants and prevalence of alcohol, substance, and

drug abuse using face-to-face interviews with 8045 participants aged 15 – 64 years. Alcohol use in the last month was 10.1%, alcohol use in the last year was 14.3%, and lifetime alcohol use was 51.8%. In the study by Blevins (2016) in which he examined SC use among adolescent cannabis users, the pre-assessment, characteristics of use, and treatment results, it was found that SC use affected cannabis use but not alcohol and other substance use. In the study by Blevins (2016), no relationship was found between SC use and alcohol use, but it was found to be mostly associated with cannabis use.

In the study, the use of cannabis more than five times was 100% ($n = 52$) in the group with a history of cannabis use and 100% ($n = 51$) of the group with a history of SC use. It is an important finding that all participants using SCs had repeated cannabis use in the past. In a study by Behrendt et al. (2009), the presence of cannabis experience at an early age was found to be one of the main risk factors for substance abuse in adolescents. The fact that all participants using SCs have cannabis experience supports the literature. According to the United Nations data, an estimated 192 million people in the world used cannabis in 2018. Around 1.4 million cannabis-related drug incidents were reported worldwide in 2021, with an increase of 40% compared to 2008 (UNODC, 2020). It is estimated that approximately 200 million people worldwide used cannabis in 2019 (UNODC, 2021). There are some obstacles to the research on the prevalence of SC among users. Synthetic cannabinoid tests are not suitable for routine hospital laboratory analysis. Diagnosis is based on the patient's history and clinical findings (30). For this reason, it is very difficult to give information about the combined use of cannabis and SC.

In this study, SC use more than five times was 21.2% ($n = 11$) in the group with a history of cannabis use and 100% ($n = 51$) of the group with a history of SC use. That cannabis is seen as less harmful, intoxication and withdrawal symptoms are milder than SC, SC became available as of 2010 and started to become widespread as of 2011, SC develops fast addiction, causes serious impairments in functionality, and SC causes interruption of daily life may be some of the reasons why cannabis is preferred more than SC (Özşeker et al., 2017). In Turkey, 18 045 SC incidents took place in 2020. In these events, 26 324 suspects were caught and 1737 kg of SC, known as bonsai, were seized in the streets. In the study by Hu et al. (2011) with 853 university students aged 18 – 20, it was learned that 8% ($n = 69$) of the sample had previous SC experience. It was also reported that 21% had previous cannabis experience (Hu, 2011).

Considering that HPI evaluates the cohesion ability and personality traits of the participants, healthy controls have the highest cohesion ability in all score types, and participants with a history of SC use have the lowest cohesion ability. Participants with a history of cannabis use had lower cohesion scores than healthy controls. In studies in the literature, personality tests were mostly used to determine the personality disorders of participants with cannabis use disorder. Considering that the applied SCL-90-R evaluates psychiatric symptoms, healthy controls had the lowest symptom scores in most of the subclusters, while participants with a history of SC use had the highest symptom scores. The SCL-90-R subtest scores of the participants with a history of SC use were found to be higher than those of the

participants with a history of cannabis use, and the SCL-90-R subtest scores of the participants with a history of cannabis use were found to be higher than the healthy controls. Considering the obsession sub-dimension, the mean rank of lowest group belongs to the participants with a history of cannabis use. It is thought that SC use has a more devastating effect on cohesion skills than cannabis use and also leads to a higher increase in the level of psychiatric symptoms. In the study conducted by Semiz et al. (2007) on male outpatient cases with antisocial personality disorder who applied to the GATA Haydarpaşa Training Hospital Psychiatry Service for two consecutive years, the lifetime rate of substance use disorder accompanying antisocial personality disorder cases is 88.5%, and cannabis use ranks first with 96.7% in the list of the most frequently used substances throughout life (Semiz et al., 2007). In the study by Kural et al. (2005) examining the relationship between personality disorder comorbidity in alcohol/substance addicts and other axis I diagnoses and childhood abuse, the rate of personality disorder in alcohol/substance addicts was found to be 34.8% and sub-threshold personality traits as 22.7%, and the highest personality disorder rate among the addicts participating in the study was antisocial personality disorder (23.5%). There are many researches that cannabis causes some psychiatric disorders such as panic disorder, manic excitation, depression, and schizophrenia-like psychosis. Some studies have reported that long-term cannabis use causes schizophrenia, while others aggravate a pre-existing psychiatric disorder (Hollister, 1988; Karakuş et al., 2012; Köknel, 1972; Pålsson et al., 1982; Tennant and Groesbeck, 1972; Tunving, 1985; Weller & Halikas, 1985). Determining the relationship between cannabis use and the occurrence of psychiatric disorders presents some difficulties. These are factors such as the ratio of the active substance in the cannabis used, the duration of use, the personality of the user, as well as the fact that many of the substance addicts are polytoxicomaniac, their use of alcohol and other depressants together with cannabis, and substances such as heroin, cocaine, LSD (DeMilio, 1989; Johnson et al., 1988; Karakuş et al., 2012; Pålsson et al., 1982; Tennant and Groesbeck, 1972). Another question is whether the psychiatric disorder that occurs in cannabis users is due to the direct effect of cannabis or its use with other substances or whether the psychiatric disorder is completely disassociated (Tennant and Groesbeck, 1972; Tunving, 1985). The prevailing view is that cannabis causes a number of psychiatric disorders or induces psychiatric disorders in predisposed persons (Saygılı & Özden, 1991). In order to answer these questions, longitudinal and controlled studies are needed in this area.

Limitations and Directions/Suggestions for Future Research

The first limitation of the study is the fact that the participants' own self-reports were taken as a basis for their substance use histories. A limited number of participants have urine test results. Considering the inadequacy of detecting SC in the urine, the breadth of the source of error should be considered when investigating the effect of substance use history on personality and psychopathology. Another limitation of the study is that it is difficult to balance some sociodemographic characteristics of the participant groups between the groups. Although compulsory education in Turkey is 12 years, the education years of the participants with a history of substance use are well below this. In addition, since the use of SC in Turkey is in 2010 and later,

the average age of SC users is lower than other groups (Artuç et al., 2014). Alcohol use of participants with a history of SC use is also higher than the other two groups. The difference in education levels of the groups is an important limitation of this study.

The fact that the participants in the study are a homogeneous group in terms of gender, age, and preference items reduces the generalizability of the results. The way to examine the generalizability of the results is to conduct new research on groups of different age groups, including women.

Psychiatric symptom burdens and maladaptive personality traits of individuals using SC were found to be higher than individuals with a history of cannabis use. Individuals with a history of cannabis use have higher psychiatric symptom burdens and maladaptive personality traits than healthy controls. It is thought that SC has more disruptive effects on personality and cohesion. Considering that psychiatric symptoms are one of the inevitable consequences of substance use, it is both a known and expected fact that addicts experience in social, academic, occupational, communication, and treatment compliance problems. It is thought that structuring addiction treatments by evaluating psychiatric symptoms and personality traits will increase the effectiveness of the treatment. Since personality traits and psychiatric symptoms differ individually, the chosen psychotherapy methods and psychosocial rehabilitation should be tailored to the individual.

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