THE RELATEDNESS OF ATTENTION DEFICIT HYPERACTIVITY AND CONDUCT DISORDER SYMPTOMS TO SUBSTANCE USE AND INTERNET ADDICTION: IMPORTANCE OF NEGATIVE LIFE EVENTS

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I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

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This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

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ABSTRACT

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The present study aimed to examine the differences in demographic variables (i.e., gender, age, class, parental education level, residence, income and parental smoking status) on childhood attention deficit hyperactivity disorder (ADHD), adult ADHD, conduct disorder (CD), nicotine dependence, internet addiction, psychopathology and current negative life events. Second, the study aimed to investigate the differences in ever using alcohol, cigarette and marijuana across lifetime, and the frequency of alcohol, cigarette and marijuana use in the previous 6 months on childhood ADHD, adult ADHD, CD, nicotine dependence, internet addiction, psychopathology and negative life events. The third aim of the study was to examine the relationships between all measures of the study. The forth aim was to determine the associated factors of psychopathology, internet addiction and nicotine dependence. Data was collected from 530 Turkish college students whose ages differ from 18 to 47 years old. The results revealed that there was an important effect of ADHD symptoms on substance use (i.e., alcohol, cigarette and marijuana) as well as on internet addiction,

and CD symptoms on cigarette use. Moreover, CD symptoms were positively associated with nicotine dependency and internet addiction, even when the effect of ADHD symptoms was controlled. Additionally, results stated that high levels of ADHD and CD symptoms as well as current negative life events were associated with high levels of current psychopathology. The results also indicated that current negative life events were positively correlated with internet addiction and nicotine dependence, even after the effects of CD and ADHD symptoms were controlled.

Keywords: Attention Deficit Hyperactivity Disorder, Conduct Disorder, Substance Use, Internet Addiction, Negative Life Events

ÖZ

DİKKAT EKSİKLİĞİ HİPERAKTİVİTE VE DAVRANIŞ BOZUKLUĞU SEMPTOMLARININ MADDE KULLANIMI VE İNTERNET BAĞIMLILIĞI İLE İLİŞKİSİ: OLUMSUZ YAŞAM OLAYLARININ ÖNEMİ

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Bu çalışmanın amacı demografik özelliklerin (cinsiyet, yaş, sınıf, ebeveyn eğitim düzeyi, kişinin büyüdüğü yer, gelir, ebeveyn sigara içme durumu) çocukluk çağı dikkat eksikliği hiperaktivite bozukluğu (DEHB), yetişkin DEHB, davranış bozukluğu, nikotin bağımlılığı, internet bağımlılığı, psikopatoloji ve güncel olumsuz yaşam olayları üzerindeki grup farklılıklarını incelemektir. İkinci olarak, bu araştırma, hayat boyunca alkol, sigara ve esrar kullanıp kullanmamanın ve son 6 ay içinde bu maddelerin kullanma sıklığının çocukluk çağı DEHB, yetişkin DEHB, davranış bozukluğu, nikotin bağımlılığı, internet bağımlılığı, psikopatoloji ve güncel olumsuz yaşam olayları üzerindeki grup farklılılarını araştırmayı amaçlamıştır. Araştırmanın üçüncü amacı, araştırma ölçütleri arasındaki ilişkiyi incelemektir. Araştırmanın dördüncü ve son amacı, psikopataloji ile internet ve nikotin bağımlılıklarını yordayan faktörleri belirlemektir. Çalışmanın verisi, yaşları 18 ile 47 arasında değişen 530 Türk üniversite öğrencisinden toplanmıştır. Sonuçlar, DEHB semptomlarının madde kullanımı (alkol, sigara ve esrar) ve internet bağımlılığı ile,

davranış bozukluğu semptomlarının ise sigara kullanımı ile pozitif yönlü bir ilişkisi olduğunu ortaya koymuştur. Bunun yanında, DEHB semptomlarının etkisi kontrol edildiğinde, davranış bozukluğu semptomlarının, nikotin ve internet bağımlılıkları ile pozitif yönlü bir ilişkisi olduğu ortaya konulmuştur. Tüm bunlara ek olarak, araştırmanın sonuçları DEHB ve davranış bozukluğu semptomları ile güncel olumsuz yaşam olaylarının yüksek seviyelerinin psikopatalojinin yüksek seviyeleri ile ilişkili olduğunu ortaya koymuştur. Sonuçlar ayrıca göstermiştir ki, davranış bozukluğu ve DEHB semptomlarının etkisi kontrol edildiğinde, güncel olumsuz yaşam olayları, internet ve nikotin bağımlılıkları ile pozitif yönlü bir ilişki içindedir.

Anahtar Kelimeler: Dikkat Eksikliği Hiperaktivite Bozukluğu, Davranış Bozukluğu, Madde Kullanımı, İnternet Bağımlılığı, Olumsuz Yaşam Olayları

"Don't forget that the earth delights to feel
your bare feet and the winds long
to play with your hair."

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mountains that recalled of my freedom and the sky that embraced me and all other beauties of nature... May the freshness be with you.

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CHAPTER I

INTRODUCTION

1.1. Childhood Attention Deficit Hyperactivity Disorder (ADHD)

ADHD is one of the most common behavioral disorders in childhood, occurring in approximately 3 to 5 percent of school aged children (APA, 1994; Barkley, 2006). Thus, it is referred as the primary reason of referral to child mental health institutions (Barkley, 1998) and is one of the most commonly researched childhood psychiatric disorders (APA, 1994). The symptoms of ADHD are classified under three main domains that are inattention (for example failing to give attention to details, having difficulties sustaining attention or being forgetful in daily activities), hyperactivity (for example talking excessively or fidgeting with hands and feet), and impulsivity (for example having difficulties awaiting turns in games or group situations or interrupting or intruding on others). One receives a diagnosis of ADHD if symptoms are present for at least six months and cause impairment in at least two settings (for example at home and at school).

There are three main subtypes of ADHD: predominantly inattentive, predominantly hyperactive-impulsive and comu87bined type. A diagnostic subtype is determined based on the characteristics of present symptoms. Children with solely high levels of inattention are categorized as the predominantly inattentive type, high degrees of hyperactivity/impulsivity are classified as the predominantly hyperactive/impulsive type and those who exhibit high levels in both of these domains are placed under combined types (APA, 1994). The prevalence of ADHD is higher in boys than girls with a ratio changing between 2:1 to 9:1 (Wilmshurst, 2009).

1.2. Co-morbidities of ADHD

ADHD is a heterogenic developmental disorder and has different manifestations, co-morbidities and behavioral problems linked to it (Barkley, 1998;

Mannuzza, Klein, Abikoff, & Moulton, 2004; Scahill et al., 1999). It is rare that ADHD exists alone: a large number of children diagnosed with ADHD display other problems in addition (National Institutes of Health Consensus Statement, 1998). To put it more clearly, 2 out of 3 of children diagnosed with ADHD exhibit another co-morbid disorder (Frank-Briggs, 2011). Co-morbidities occurring together with ADHD are anxiety, depression, obsessive compulsive disorder, Tourette's syndrome and substance abuse (Pliszka, Carlson & Swanson, 1999). Apart from co-morbid disorders, children with ADHD often experience difficulties in different areas such as peer relationships, expression of aggression, learning, academic achievement and self-esteem (Barkley, 2006; Slomkowski, Klein & Mannuzza 1995). The two most common behavioral disorders that accompany ADHD are Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD).

1.3. Conduct Disorder

While ODD is a disorder marked by a higher degree of defiant, oppositional, hostile and negative behavior for child's age and gender, CD is a more serious form of it. The primary features of CD are violation of basic rights of others and breaking societal norms for the child's developmental level. Diagnostic criteria of CD might include aggression to people and animals, destruction of property, deceitfulness or theft and serious violations of rules (Phares, 2008).

1.4. Adult ADHD

Despite the fact that ADHD is a disorder that first arises in childhood and is labeled as a childhood disorder, a great number of children (i.e., fifty to eighty percent) convey their symptoms into adulthood (Frank-Briggs, 2011; Nair, Ehimare, Beitman, Nair & Lavin, 2006). Besides, the prevalence of sub-types in adult ADHD shows similarity to the prevalence of sub-types in childhood ADHD, from least prevalent to the most prevalent: hyperactivity (2 %), inattentive (37 %) and combined (56 %) types (Millstein, Wilens, Biederman, & Spencer, 1997).

An epidemiological study conducted in the US found the percentage of adults with ADHD to be 4% to 5% (Kessler et al., 2006) and other researches supported this claim (Barkley, Fischer, Smallish, & Fletcher, 2002; Clarke, Heussler, & Kohn, 2005; Weisler & Goodman, 2008). In line with the findings of this study, another research which was conducted in ten different countries in America, Europe and the

Middle East also found a very similar prevalence rate (3.4 %) of adults with ADHD (Fayyad et al., 2007).

As for children, ADHD in adulthood is also frequently accompanied by various additional problems. Researches show that adults with ADHD have higher risks to suffer from mood and anxiety disorders, antisocial personality disorder as well as alcohol and substance abuse (Biederman et al., 2006; Ekinci, Öncü and Canat, 2011; Kessler et al., 2006; Milberger, Biederman, Faraone, Murphy, Ysuang, 1995; Torgersen, Gjevan, & Rasmussen, 2006). Besides, adults with ADHD are more likely to face impairments in academic achievement as well as employment (Torgersen et al., 2006).

1.5. ADHD and College Students

Considering the continuity of ADHD into adolescence and then into adulthood, it can be stated that college students with ADHD constitutes a specific sub-group among individuals with ADHD. Researches about ADHD in college students started in the 90's and have gained acceleration in recent years. Studies reporting the prevalence of college students with ADHD provide inconsistent results. One research revealed that the prevalence of college students meeting the criteria of ADHD is 0.5 to 5 percent (Farrell, 2003), whereas another claimed that it is somewhere between 2 and 8 (DuPaul, Weyandt, O'Dell, & Varejao, 2009).

Attention deficit disorders are claimed to be the second most common disability displayed by college students after learning disabilities (Faigel, 1995). According to Wolf (2001), the disorder that is increasing with the greatest pace among college students is ADHD, and some even reported that the number of students with ADHD in colleges increases with a high rate that might outpace the number of students with learning disorders (Frazier, Youngstrom, Glutting, & Watkins, 2007). Frazier et al. (2007) also asserted that nearly one quarter of students who use disability services on campuses have a diagnosis of ADHD.

Attending college brings up new challenges in one's life as it brings up new responsibilities. During college years, students have to take crucial decisions that will shape their academic, professional, and personal lives in the future (Ross & DeJong, 2008). These demands from the academic life happen to add new stressors to college students with ADHD, whose lives are notably different than their age-mates who do

not attend college. Predictably, this makes it necessary to study this specific subgroup separately (Fleming & McMahon, 2012; Frazier et al., 2007).

Being able to study in college is already a predictor of high functioning; therefore college students with ADHD are expected to have higher previous academic achievement, capacity and better compensatory mechanisms than their age-mates with ADHD who do not attend to the college (Frazier et al., 2007). On the other hand, the routine of college life comprises a real challenge for adolescents with ADHD, as they find themselves in an educational setting where conforming to course schedules is a must (DuPaul et al., 2001; Farrell, 2003; Weyandt & DuPaul, 2008). They are exposed to different types of stressors based on college life compared to their peers with ADHD who do not attend to the college. They have to struggle with academic difficulties and fulfill the necessities of college life. That is, they have to sustain their attention, give more priority to long-term rewards over short-term and develop their organization and management skills (DuPaul et al., 2009). Besides, there are a lot of distractions within the campus life and they are not under parental supervision and structure anymore (Farrell, 2003).

A large body of literature produced considerable findings that differentiate college students with ADHD from their peers with no or few symptoms, and reported that the first group is under greater risk for academic, psychological, social and occupational domains. College students with ADHD were found to have lower GPAs, more academic concerns, higher rates of academic probation, be more likely to perceive academic or test-taking problems and less likely to attend and graduate from college compared to their non-ADHD college peers (Blase et al., 2009; DuPaul et al., 2009; Lewandowski, Lovett, Codding, & Gordon, 2008; Murphy, Barkley, & Bush, 2002; Rabiner, Anastopoulos, Costello, Hoyle, & Swartzwelder, 2008; Wolf, 2001).

Additionally, college students with ADHD were more likely to exhibit poorer psychological adjustment and have lower self-reported quality of life than non-ADHD college students. Grenwald-Mayes (2001) found that college students with ADHD exhibited lower quality of life compared to non-ADHD college mates. A recent study stated that ADHD group showed significantly higher levels of depressive symptoms, social concerns, emotional instability compared to non-ADHD

group in a college setting (Blase et al., 2009). Another study compared college students with and without ADHD and reported that overall score in Symptom Checklist–90–Revised (SCL-90-R; Deragotis, 1975) of those with ADHD was significantly higher than non-ADHD group, which means that ADHD group exhibited higher levels of psychopathology (Richards, Rosen, & Ramirez, 1999). Besides, it was found that college students with ADHD had more difficulties in regulating personal stress compared to non-ADHD college peers (Kern, Rasmussen, Byrd, & Wittschen, 1999).

Compared to their age-mates, adolescents with ADHD experience problems regarding social relations at a greater degree (Bagwell, Molina, Pelham, & Hoza, 2001), and this statement largely applies to college students with ADHD. Meaux and his colleagues (2009) suggested that because of impulsivity female college students were not able to establish satisfactory social relationships. Plus, these students defined themselves as blunt and admitted to have made comments which might have offended others (Meaux, Green, & Broussard, 2009). Another study examined the perception of other college students regarding their ADHD peers and reported that more negative than positive adjectives were chosen to define college students with ADHD (Chew, Jensen, & Rosen, 2009). A study by Canu and Carlson (2003) demonstrated that male college students with ADHD, particularly those with inattentive symptoms, had less romantic dating rates and received more negative ratings by females compared to control group. Another study reported that social skills and self-esteem of college students with ADHD were lower compared to college students without the disorder (Shaw-Zirt, Popali-Lehane, Chaplin, & Bergman, 2005). On the other hand, in a recent study, Norwalk, Norvilitis and MacLean (2009) found no effect of neither hyperactivity nor inattention symptoms on the social functioning of college students with ADHD. Regarding social life satisfaction, a study reported that students with ADHD were not less satisfied than the control group in the first year of college (Rabiner et al., 2008).

1.6. Substance Use

1.6.1. Substance Use and ADHD

There is a sizable body of research stating that ADHD and substance use as well as abuse are closely linked (Smith, Molina, & Pelham, 2002) and the presence

of ADHD among adults and adolescents confer an important risk to have any substance use disorder (SUD) (Biederman, Wilens, Mick, Faraone, & Spencer, 1998, Gudjonsson, Sigurdsson, Sigfusdottir, & Young, 2012; Katusic et al., 2005; McGough et al., 2005). Arias et al. (2008) reported that individuals with ADHD start using substances earlier and they are more likely to be diagnosed by any type of SUD than individuals without ADHD. Moreover, ADHD symptoms were found to be linked to smoking, alcohol and illicit drug use; where symptomatic individuals were significantly more likely to consume different types of drugs than non-symptomatic ones (Gudjonsson et al., 2012).

Kollins, McClernon, & Fuemmeler (2005) observed adolescents when they went through adulthood and stated that there was an elevated risk of smoking regularly across life span associated with ADHD symptoms even after controlling the effect of CD. Milberger, Biederman, Faraone, Chen and Jones (1997) suggested that children with ADHD started smoking earlier than controls (i.e., rate before age 15: ADHD, 25%; non-ADHD, 9%), and their possibility of becoming a smoker was higher. According to Biederman et al. (2006) there was a great level of probability that individuals diagnosed with ADHD in their childhood become dependent on nicotine across one year. A study conducted among high school sophomores put evidence that adolescents suffering from inattention problems had higher rates of smoking and had higher risk of becoming regular smokers (Tercyak, Lerman and Audrain, 2002). Consistent with these findings, Wilens et al. (2008) reported that individuals with ADHD had a higher tendency to develop dependency on nicotine and other drugs than a non-ADHD group. A recent meta-analytic review showed that, children with ADHD were under an increased risk of using nicotine and three times more likely to develop a nicotine use disorder across their lifetime when compared to children without ADHD (Lee, Humphreys, Flory, Liu, & Glass, 2011). The same study showed that childhood ADHD was associated with ever having used nicotine.

Compared to the literature concerning nicotine use, the number of researches reporting alcohol and drug use of individuals with ADHD is limited and relevant literature conveys conflicting results. A longitudinal study examined children diagnosed with ADHD and revealed that in contrast to 22 % of control group who

used alcohol, nearly half of the adolescents (i.e., 40 %) with ADHD reported having ever used alcohol (Barkley, Fischer, Edelbrock, & Smallish, 1990). Similarly, Molina and Pelham (2003) suggested that the risk for an increased use and abuse of alcohol was associated with the presence of ADHD in childhood. A recent meta-analytic study pointed out that childhood ADHD was linked with alcohol use disorder in adulthood (Charach, Yeung, Climans, and Lillie, 2011). Another recent meta analytic study provided similar results, by stating that there was a significant association between childhood ADHD and increased risk for alcohol use, more clearly children with ADHD were 1.7 times more likely to develop alcohol abuse or dependence than children without the disorder (Lee et al., 2011), although the same research found that childhood ADHD did not confer a significant increase in the rates of having ever used alcohol.

On the other hand, some studies suggested that ADHD was not associated with alcohol use. For example, it was stated that among adolescents, the link between ADHD and alcohol use was not significant when the effect of CD was controlled (Disney, Elkins, McGue, & Iacono, 1999). Another study provided similar results by stating that alcohol use did not differ between young adults with and without ADHD (Weiss & Hechtman 1993); however, more people with ADHD were described as meeting the criteria of alcohol use disorder, a set of symptoms closely linked to problems associated with alcohol use. Smith, Molina and Pelham (2002) reported that young adults with ADHD seemed to use alcohol at higher amounts than people without ADHD and the rapidity of the transition from alcohol use to dependency rendered those with ADHD more vulnerable to develop dependency on alcohol (Smith et al., 2002; Wilens, 1998).

Although there are few researches suggesting that individuals with ADHD were not more likely to have ever tried marijuana or exhibit higher levels of marijuana use as compared to individuals without the disorder (Flory, Milich, Lynam, Leukefeld, & Clayton, 2003), the extensive literature about the association of marijuana use and ADHD generally suggest a close link. Marijuana was shown to be one of the most frequently consumed substance among individuals with ADHD (Faraone, Wilens, Petty, Antshel, Spencer, & Biederman, 2007) and the rate of marijuana use was shown to be higher in individuals with ADHD compared to

people without the disorder (Barkley, Fischer, Edelbrock, & Smallish, 1990). In their study, Elkins, McGue, and Iacono (2007) put evidence that hyperactivity and impulsivity are closely linked to the marijuana abuse as well as dependency when CD is controlled. Another study stated that beyond the effects of anxiety, depression and antiestablishment attitudes, ADHD predicts marijuana use (Gudjonsson et al., 2012.) A recent meta-analysis supported these claims by suggesting that there is an association between childhood ADHD and high risk of marijuana use across life-time as well as abuse and dependency on marijuana (Lee et al., 2011).

1.6.2. Substance Use and College Students with ADHD

25 % of all college students with disabilities have ADHD (Wolf, 2001). Within the college context, special vulnerabilities related to ADHD may sharpen difficulties in the transition period from adolescence to adulthood. Not surprisingly, these vulnerabilities may intensify the risk of engaging in any substance use behavior of college students (Rooney, Chronis-Tuscano, & Yoon, 2012). Compared to ADHD among children, adolescents and adults, ADHD among college students is a relatively recent therefore a less studied topic. The findings about children and adolescents with ADHD offer a useful base, yet do not always fit to college students with ADHD and are not generalizable to the college student population (Rooney et al., 2012). As stated above, college students with ADHD form a special sub-group among other college students so it is not surprising that their tendency to use, abuse or develop dependence for nicotine, alcohol and marijuana operates differently than their non-ADHD college mates.

According to the existing knowledge, college students with ADHD were found to display a greater likelihood of using tobacco at any time in their life, starting to use tobacco earlier and having a higher total ratio of tobacco consumption. In line with these findings, Upadhyaya et al. (2005) stated that the more severe ADHD symptoms college students had, the higher their rates of tobacco use in the past month as well as in the past year. Similarly, Rabiner et al. (2008) claimed that students with past or current ADHD smoked more than twice as much as their non-ADHD college mates. Another research provided very similar results by claiming that college students with ADHD smoked 2 to 2.5 times more than non-ADHD students (Blase et al., 2009). Consistently, Upadhyaya and Carpenter (2008) claimed

that an association exists between the frequency of past-month and past-year smoking and the severity of ADHD symptoms among college students. Glass and Flory (2012) demonstrated that contrary to hyperactivity and impulsivity symptoms, the attention domain of ADHD was related to cigarette smoking among college students. Rooney and her colleagues (2012) demonstrated that there was an association between the presence of ADHD and having first use of tobacco at an earlier age regardless of CD as well as the frequency of tobacco use within previous month (Rooney et al., 2012). Besides, the same research showed that individuals with ADHD were 3.6 times more likely than their peers without ADHD to have ever used tobacco.

As opposed to the data on smoking status of college students with ADHD, the research linking alcohol use, abuse and dependence in college students is sparse and conflicting and a great number of studies did not take co-morbid CD into consideration. Rabiner et al. (2008) found no link between ADHD symptoms and the likelihood of using alcohol among college students with and without ADHD. Upadhyaya et al. (2005) supported the outcomes of the previous article by stating that college students with ADHD did not have greater rates of alcohol consumption than their non-ADHD college mates. Another research provided similar results by claiming that there was no difference between college student with and without ADHD in terms of the likelihood of having ever used alcohol, the age of first alcohol trial and the quantity, as well as the frequency of alcohol consumption regardless of CD during the past six months (Rooney et al., 2012). However, in the same research those with ADHD were found more likely to be exposed to negative outcomes of alcohol use such as having a memory loss and engaging in a fight or argument. Contrary to the mentioned articles, some researches provide adverse findings. For example, a study with a large number of participants (i.e., 3400) stated that ADHD was related to an increased level of alcohol consumption among college students (Blase et al., 2009).

Although data on the link between ADHD and illicit drug abuse (e.g., marijuana) among college students is scarce, it generally does provide consistent results. Upadhyaya et al. (2005) suggested that college students with ADHD used higher amounts of marijuana in the previous year compared to their non-ADHD

peers and the more severe ADHD symptoms were related to the more frequent marijuana use in the past month as well as in the past year. Another study claimed that in the first semester of college, students with self-reported ADHD had higher probability to use marijuana than non-ADHD students (Rabiner et al., 2008). Likewise, students with ADHD were found to be more likely to develop marijuana abuse than their peers without ADHD (Murphy, Barkley, & Bush, 2002) and Blase et al. (2009) claimed that marijuana use was between 2 to 2.5 times more common among students with ADHD. Moreover, regardless of CD, ADHD was found to be associated with an earlier first trial, a higher probability of having ever used marijuana, and elevated impairment degrees related to marijuana abuse but not to the frequency of marijuana use among college students (Rooney et al., 2012).

1.6.3. Substance Use and CD

A handful of studies have attempted to examine the effect of CD on the use, abuse and dependence of various substances. Both in population based and clinical samples, CD symptoms were consistently important precursors for substance use, abuse and dependency. In a recent study, CD was found to constitute a risk factor for the age of first trial of cigarette, alcohol, marijuana and other substances (Hopfer et al., 2013). Plus, the same research stated that young people with CD were more likely to have ever used any substance and develop a SUD according to the experienced substance. Elkins et al. (2007) reported similar results by stating that being diagnosed by CD between the ages of 11 and 14 predicted SUD related to tobacco, marijuana and alcohol by the age of 18. Breslau (1995) also stated that history of past conduct problems was linked to the early onset of cigarette use, particularly trying the first cigarette before the age of 14. Another study that was conducted to assess the relationship between crime, substance abuse and CD in the biggest juvenile detention house in İstanbul stated that CD was detected more commonly among juvenile detainees abusing a variety of substances (i.e., cannabis, volatile substances, bally, thinner etc.) than juvenile detainees with no substance abuse (Copur, Turkcan, & Erdogmus, 2005). Similarly, Reebye, Moretti and Lessard (1995) suggested that the majority (i.e., 52%) of young people, who had a CD diagnosis, was also diagnosed with SUD. In a follow-up study of children and adolescents, Biederman et al. (1997) revealed an association between CD and an

increased risk of SUD, independent of any psychiatric status. Similarly, Weinberg and Glantz (1999) established a strong link between CD and substance abuse in their review and Boyle et al. (1993) suggested that CD predicted marijuana use and abuse of other hard drugs among adolescents when other psychopathologies were controlled. Likewise, Heron et al. (2013) revealed the predictor value of early-onset conduct problems on problems related to cannabis use at the age of 16; where nearly a quarter of the cannabis problems was explained by early-onset conduct problems. Another study suggested that when attentional problems were controlled, conduct problems in childhood as well as in adolescence were associated to later substance use, with the exception of alcohol, which was unrelated to conduct problems in childhood (Fergusson, Horwood, Ridder, 2007).

1.6.4. Substance Use and Nicotine Dependency (ND)

The relationship between ND and use, abuse and dependency of other drugs is quite robust. A study that was conducted to assess ND and Axis I and II psychiatric disorders based on Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) revealed a close link between ND and alcohol as well as illicit drug abuse in the US population (Grant, Hasin, Chou, Stinson &, Dawson, 2004). A recent study aimed to examine the prevalence and correlates of ND among substance abusers found that earlier age of starting to smoke and single substance use such as alcohol and illicit drugs were the correlates of ND (Ward, Kedia, Webb &, Relyea, 2012). Breslau (1995) stated that compared to non-smokers and non-dependent smokers, people with ND exhibited higher levels of alcohol and illicit drug disorders.

1.6.5. Substance Use and Internet Addiction (IA)

Internet became an essential tool for entertainment, communication, information and research in the past decade (Frangos, Frangos, & Sotiropoulos, 2011). With the rise of people who have access to internet, the phenomenon became a focus of interest within the scope of academic researches (De Leo & Wulfert, 2013). In the literature, internet use was studied under various titles such as internet addiction or dependency (Johansson & Götestam, 2004; Young, 1998), internet addiction disorder (Goldberg, 1996), pathological internet use (Morahan-Martin &

Schumacher, 2000), problematic internet use (Liu, Desai, Krishnan-Sarin, Cavallo, & Potenza, 2011; Shapira et al., 2003; Yellowlees & Marks, 2007) and compulsive internet use (Greenfield, 1999; Sun et al, 2012).

Young (1996) stated that the term 'addiction' which generally applies to physical substances ingested into the body can also be applicable to internet use behavior. Therefore, similar to other addictions, he suggested the term 'internet addiction' may correspond to engaging in internet use activity to extremes (Young, 1996). Although the literature on the association between IA and the use of other addictive substances (e.g., alcohol, cigarette, marijuana etc.) is reported to be scarce (Hollander, 2009), the existing literature generally states a positive link. For instance, Yen et al. (2008) stated that adolescents with IA exhibited increased scores on items related to substance use on Brief Symptom Inventory (BSI). Another research conducted among a high number (i.e., 2114) of high school students revealed an association between IA and problematic alcohol use (Ko et al., 2008).

Young adults whose ages vary between 18 and 32 constitute the majority of those who are online (Jones & Fox, 2009) and IA is observed among 8–13 % of undergraduate students (Morahan-Martin & Schumacher, 2000; Sherer, 1997). It is not surprising that the availability and easy accessibility of internet turned it into one of the most desirable and preferable tool for recreational and academic purposes particularly for college students. Few researches conducted among college students suggested that when gender, age and depression levels were controlled, there was a link between IA and harmful alcohol use among college students (Yen, Ko, Yen, Chen, & Chen, 2009) and problematic internet use was linked to cigarette use, consuming alcohol and taking drugs (Frangos et al., 2011).

1.6.6. Substance Use and Psychopathology

A handful of studies have attempted to study the link between psychopathology and substance use, especially during the last thirty years. Researchers agree on the fact that an association exists between psychopathology and substance use and this statement is accurate for adolescents, children as well as adults within clinical and non-clinical samples (Angold, Costello, & Erkanli, 1999; Gregg, Haddock, Emsley, & Barrowclough, 2013; Saban & Flisher, 2010; Saban, Flisher, & Distiller, 2010).

Several studies put emphasis on the association between cigarette use and depression. Kendler et al. (1993) reported that there is a strong link between the average daily smoking amount during lifetime and the prevalence of major depression across lifetime as well as in previous year among women. Similarly, Fergusson, Lynskey and Horwood (1996) suggested that compared to teenagers without a depressive disorder, 16 years old teenagers with a depressive disorder were 4.6 times more likely to develop ND, demonstrating a close link between depression and smoking. Breslau, Kilbey and Andreski (1993) conducted a research on young adults and found that a history of major depressive disorder and ND preceded the occurrence of each other, providing proof for a close link. Besides, depression was revealed to be a risk factor for ever smoking and becoming a smoker among young girls (Fernander et al., 2006). Niemela et al. (2009) found that depressive symptoms in childhood were correlated with an increased prevalence of daily cigarette use at the age of 18. However, a recent follow-up study suggested that tobacco smoking was preceded by aggression, delinquency and attention problems but not by depression and anxiety, which may actually be outcomes of the smoking activity (Fischer, Najman, Williams, & Clavarino, 2012).

Alongside with the association between smoking and depression, cigarette use was generally found to be related to anxiety disorders (Morissette, Tull, Gulliver, Kamholz, & Zimering, 2007). Current smoking was depicted to correlate with anxiety (Degenhardt & Hall, 2001) and cigarette use was shown to be a risk factor for the development of panic disorder, agoraphobia, panic attack disorder and generalized anxiety disorder among young adults (Breslau & Klein, 1999; Johnson et al., 2000). Besides, compared to people without a psychiatric problem, those with panic disorders exhibited greater levels of current daily smoking (McCabe et al., 2004). Patton et al. (1998) reported that alongside with depression, anxiety predicted onset of cigarette use in the presence of peer smoking.

Existing data on the association between alcohol use and psychopathology particularly concentrates on anxiety and depression. Miller, Miller, Verhegge, Linville and Pumariega (2002) revealed that, among college students, higher levels of depression and general psychiatric symptoms were associated with increased extents of alcohol use. A follow-up study find out that women with a history of

depression had higher risk of becoming heavy drinkers than women with no history of depressive disorder when age, history of antisocial personality disorder, or father's history of heavy drinking were controlled (Dixit & Crum, 2000). Low, Lee, Johnson, Williams and Harris (2008) showed evidence for the existence of a link between alcohol use and current anxiety; while Fidalgo, Silveira and Silveira (2008) suggested that half of the daily alcohol drinking adolescents exhibited anxiety symptoms. A study conducted among young people showed that anxiety sensitivity was a risk factor for the emergence of alcohol use disorders (Schmidt, Buckner, & Keough, 2007). Likewise, another study conducted among young adults demonstrated that the existence of anxiety disorders was linked to the dependency on alcohol and the former took precedence over the latter (Lopez, Turner, & Saavedra, 2005). However, Pardini, White, and Stouthamer-Loeber (2007) reported that anxiety did not precede any alcohol use disorder and adolescents with increased levels of anxiety were less likely to become dependent on alcohol when they reached young adulthood.

The data on the association between marijuana use and psychopathology is considerably robust and researches hitherto focused particularly on depression, anxiety and aggression. Linn (1972) stated that students showing more psychiatric symptoms had higher probabilities to involve into marijuana use. Troisi, Pasini, Saracco, and Spalletta (1998) revealed that marijuana use was closely linked to Axis I and Axis II disorders, and particularly affective disorders. Besides, the increase in depressive, anxious and alexithymic symptoms were correlated with the level of engagement with marijuana. Rey, Martin and Krabman (2004), and Degenhardt, Hall and Lynskey (2003) provided extra evidence for the association between depression and marijuana use. A large scale study conducted in a birth cohort of 3239 people revealed that marijuana use before 15 years of age and frequent use at 21 was linked to higher levels of anxiety as well as depression symptoms in early adulthood (Hayatbakhsh et al., 2007). A follow-up study of 7 years suggested that marijuana use on a daily basis was linked to a 5 times increase in anxiety and depression, whereas marijuana use on a weekly basis resulted in a 2 fold increase (Patton et al., 2002). There was a linkage between marijuana use across lifetime and an elevated probability to be diagnosed with panic disorder across past-

year and lifetime (Zvolensky, Cougle, Johnson, Bonn-Miller, & Bernstein, 2010). Although there is generally a consensus on the association between marijuana use and depression as well as between marijuana use and anxiety, some researches did not support these findings. For instance, in one study marijuana use was depicted to correlate with delinquent and aggressive behavior, whereas its correlation to depression was weak (Monshouwer et al., 2006). Another study suggested that current anxiety was not correlated with problems related to marijuana abuse (Low et al., 2008), and Musty and Kaback (1995) found no difference in depressive symptoms between chronic heavy and light users of marijuana.

1.6.7. Substance Use and Negative Life Events

The interaction between negative life events and substance use has been a subject of interest for the last thirty-five years and researches were mostly conducted with adolescent samples. Nearly all researches bring evidence for a close link. For instance, Nordfjaern, Hole and Rundmo (2010) reported that negative life events predicted substance use among patients who were recruited from substance use disorder treatment facilities. Similarly, Taylor (2006) stated that negative life events place college students in a risky position for the occurrence of a substance use problem. A recent study conducted with young adolescents pointed out the importance of the type of life event in their association with the use of different substances. Specifically, they found that stressful life events about romantic break-ups were associated with the use of alcohol, cigarette and marijuana but not with illicit drug use. Similarly, stressful life events about family disruption were found to correlate with marijuana use and smoking (Low et al., 2012). The difference between various ethnic groups in the relationship between life events and substance use was also investigated. Results of a study conducted among a multi-ethnic adolescent sample revealed a non-significant link between stressful events and substance use among African-Americans contrary to Hispanic and White non-Hispanic ones (Biafora, Vega, Warheit & Gil, 1994). This may be explained by the fact that the reaction towards stressful life events differs among different ethnic groups (Biafora et al., 1994). Besides, another study showed that stressful life events were correlated with smoking for both sexes; however there were differences in the use of illicit drug and alcohol among men and women (Frone, Cooper, & Russell, 1994). That is,

stressful life events were more strongly linked with alcohol use among men than woman; while among women, stressful life events were more strongly linked with psychotherapeutic drug use (Frone et al, 1994).

The question of whether negative life events or substance use is the cause of the other one was also under investigation and researches generally supported the hypothesis that negative life events preceded the substance use. For instance, Wills, Sandy, Yeager, Cleary, and Shinar (2001) provided evidence for the positive relationship between negative life events and the onset as well as the intensification of substance use among adolescents. Consistent with previous research, a longitudinal study conducted by Wills, Sandy, and Yager (2002) showed that stress, which was evaluated by measures of negative life events and negative affect, preceded smoking activity whereas the hypothesis that smoking would increase stress was not justified.

1.7. The Relationship of ND with Other Variables

1.7.1. Relationship Between ND, ADHD and CD

The contribution of ADHD to the emergence and maintenance of smoking and ND has been a topic of interest in recent years. Although the predictor value of ADHD in smoking and ND has largely been proved by the relevant literature, some argued that this relationship is no longer significant when CD is taken into consideration. However, some researches claimed that, even independently of CD, the association between ADHD and smoking as well as ND still exists and some claimed that the combined effect of ADHD and CD is the strongest in predicting smoking and ND.

The contribution of CD to ND and smoking is robust. Lambert (2005) provided evidence for the positive association between conduct problems in childhood and ND. Similarly, a study conducted among adolescents from an outpatient clinic found that the likelihood of smoking in patients with a history of CD was higher than others without such a history; however no such difference was detected between smoking and non-smoking adolescents in relation to ADHD symptoms (Ditchburn & Sellman, 2013). The findings of Elkins et al. (2007) were parallel to the statements above; even after adjusting the effect of ADHD, a diagnosis of CD at 14 years of age was linked to an elevated risk of having ND at 18.

Consistent with previous researches, in a long-term longitudinal study, Biederman et al. (2008) found that CD predicted an increased degree of smoking rate among youths, and the effect of ADHD symptoms on smoking was not significant.

CD is closely related to externalizing behaviors that are social aggression, disruptive behavior, perceived lack of constraint and risky behaviors. The findings of Fischer et al. (2012) showed that externalizing behavior by the age of 14 and 21 were positively related to ND at 21. Hakko et al. (2006) suggested further evidence that CD and ODD were associated with ND among adolescent psychiatric inpatients and Disney et al. (1999) confirmed these findings by showing that CD was closely related to ND among adolescents. In a study examining the differences in girls and boys, CD symptoms were found to be associated with ND; and some differences in the findings for both sexes were noted. That is, there was a relationship between ND and CD except for aggression sub-scale among boys; whereas the only link was found between deceitfulness or theft subscale and ND among girls (Riala, Ilomaiki, Hakko, & Rasanen, 2011).

The emergent literature linking ADHD and ND as well as cigarette use is well-documented. A recent meta-analytic study by Lee et al. (2011) found that children with ADHD symptoms were three times more likely to develop ND in adolescence and adulthood compared to those without the disorder. Similarly, ND was stated to be twofold among adolescents with a diagnosis of ADHD (Disney et al., 1999). Wilens et al. (2008) confirmed these statements by providing extra evidence that ND was higher among those with ADHD symptoms, including both inattentive and hyperactive/impulsive cluster symptoms. Lambert (2005) confirmed the positive correlation between ADHD and tobacco dependence, and Upadhyaya and Carpenter (2008) stated that the severity of ADHD symptoms correlated with smoking in the past month as well as in the past year among college students. In line with these suggestions, Gudjonsson et al. (2012) declared that, regardless of the measure type of ADHD symptoms (i.e., categorical or dimensional), ADHD constituted a risk factor for smoking. However, in this research co-morbid CD was not taken into account.

Some researchers studied the effect of sub-types of ADHD on ND and the majority of articles pointed at the predictor value of inattention domain on ND. For

instance, Fischer et al. (2012) found that attention problems seen at 14 and 21 years of age were correlated with higher levels of ND at the age of 21 and the findings of Abrantes, Strong, Ramsey, Lewinsohn, and Brown (2005) stated that among sub-scales of ADHD, only inattention domain of ADHD was correlated with ND. In line with these results, Tercyak et al. (2002) stated that inattention domain of ADHD was a predictor of lifetime and current smoking.

Some researchers suggested that, if CD is taken into consideration, the effect of ADHD on ND is not significant anymore. For example, Burke, Loeber, and Lahey (2001) stated that the relationship between ADHD and cigarette smoking in adolescence disappeared when a co-morbid CD existed. Greene, Biederman, Faraone, Sienna, and Garcia-Jetton (1997) compared the cigarette use of adolescent boys with ADHD and social disability, those with only ADHD and those without neither ADHD nor social disability. Their results showed that the first group had higher rates of smoking than the two other groups and when CD was included, only CD and social disability predicted cigarette use. A research by Abrantes et al. (2005) provided evidence for the contribution of ADHD and CD to different aspects of smoking; according to their results, ADHD was associated with a diagnosis of ND whereas CD was linked with the number of ND symptoms.

Substantial research has provided evidence for a link between ADHD and ND as well as cigarette use even when the effect of CD is controlled. For instance, Wilens et al. (2008) indicated that there was an association between ND and the overall symptoms of ADHD as well as inattentive and hyperactive/impulsive sub-types, and these results were not due to CD. These findings concurred with the results of a large national epidemiological study conducted among adolescents, showing that ADHD symptoms, especially hyperactivity/impulsivity sub-type of the disorder correlated with lifetime regular smoking (Kollins, McClernon, & Fuemmeler, 2005). They also found that the severity of cigarette use was proportional to the severity of ADHD symptoms when the effect of the overlap between ADHD and CD was taken into account. Consistently, Flory et al. (2003) stated that ADHD was correlated with tobacco use regardless of the effect of a co-occurring CD. Elkins et al. (2007) declared that hyperactivity-inattention subtype of ADHD positively correlated with ND, independently of CD.

The findings of some other researches are in line with the findings mentioned above and extend these results by stating that the combination of ADHD and CD are the most powerful risk factor for smoking and ND. For example, Milberger, Biederman, Faraone, Chen, and Jones (1997) suggested that childhood ADHD predicted an elevated level of smoking four years later in mid-adolescents, independently of CD; however the combination of ADHD and CD placed young people at the most risky position for smoking. Besides, Groenman et al. (2013) conducted a follow-up study among adolescents with ADHD and according to their findings; ADHD predicted the emergence of ND regardless of CD, whereas the risk was even greater when ADHD was accompanied by CD.

1.8. ND and Negative Life Events

Negative life events have serious impacts on the life of individuals who were exposed to such events and have been represented as correlates of ND and cigarette smoking. Despite the considerable attention devoted to negative life events and cigarette smoking separately concerning their association to other variables, the literature about their relationship with each other is very scarce. As for the association between negative life events and ND, researches are even more limited.

Nordfjaern et al. (2010) reported that negative life events predicted substance use among patients who were recruited from substance use disorder treatment facilities, suggesting for a link between negative life events and substance use. Similarly, Frone, Cooper, and Russell (1994) found that stressful life events were correlated with smoking. Another research supported this claim, by providing evidence for the association between negative life events and initiation as well as elevation of tobacco use among adolescents (Wills et al., 2001). Besides, in a longitudinal study conducted among adolescents by Wills et al. (2002), a correlation was found between negative life events and smoking, which was measured by a questionnaire along with a biochemical measure. In the same research, stress, which was assessed by measures of negative life events and negative affects, was shown to precede smoking activity whereas the hypothesis that smoking would increase stress was not justified.

A study conducted with over 18.000 smokers from the 2001–2002 data set of the National Epidemiological Survey on Alcohol and Related Conditions reported

that stressful life events experienced during the previous year were associated with a diagnosis of ND in the same year. Plus, this effect was accurate independent of a prior history of ND, psychiatric diagnoses and alcohol abuse or dependence (Balk, Lynskey, & Agrawal, 2009). A study by Low et al. (2012) highlighted the type of life event in its association with smoking. That is, cigarette use was associated with stressful life events caused by romantic break-ups and family disruption. Another study conducted among Chinese adolescents provided several findings related to the link between stressful life events and smoking behaviors (Booker et al., 2007). According to their findings, lifetime smoking was unrelated to stressful life events among adolescent boys whereas among adolescent girls, lifetime smoking was correlated with school and family related negative events. There are other researches examining the role of sexes in the association between negative life events and cigarette use. For instance, a study indicated a positive relationship between stressful life events and cigarette use regardless of a concurrent substance use. Besides, the magnitude of the association between stressful life events and cigarette use was shown to be the same for men and women (Frone et al., 1994). Todd (2004) stated that increased number of negative events as well as perceived stress was correlated with more smoking and greater urges to smoke. However, this statement was true particularly for women.

1.9. The Relationship of IA with Other Variables

1.9.1. IA and CD

As stated earlier, ADHD confers a risk factor for substance use dependence and some research suggested that there is a great contribution of CD, which generally exists together with ADHD, to this phenomenon. 'Reward deficiency hypotheses' may be particularly important in studying the relationship between ADHD, CD and addictive behaviours. According to the 'reward deficiency hypothesis', for some people, natural rewards are not satisfactory enough therefore, they are inclined to abuse a variety of substances to achieve an elevated stimulation of reward pathways (Blum, Cull, Braverman, & Comings, 1996; Comings & Blum, 2000). Internet addiction may be one of these addiction types that serve an unnatural reward, therefore it is important to bear in mind this hypothesis when studying the link between ADHD, CD and internet addiction.

There are very few articles about the link between excessive internet use and CD. Internet use has been mostly studied under the title of 'internet addiction' and 'problematic internet use' in its relation with CD and the majority of researches provide evidence for a close link. For instance, a recent study conducted among over 11,000 adolescents showed that problematic internet use was associated with conduct problems (Durkee et al., 2013). Similarly, conduct problems were observed eight times more common among adolescents with problematic internet use compared to adolescents with normal levels of internet use (Kormas, Critselis, Janikian, Kafetzis, & Tsitsika, 2011). Congruent with these findings, a study conducted among Chinese adolescents demonstrated that those with internet addiction displayed elevated rates of conduct problems compared to adolescents with no internet addiction (Cao & Su, 2007). The findings of another study by Ozgun, Ekinci, Ozturk, and Canan (2013) were in line with previous researches, suggesting a positive correlation between conduct problems and IA among high school students.

1.9.2. IA and ADHD

ADHD has been shown to be one of the close associates of IA by the relevant literature. The comorbidity of ADHD and IA is a proof of a cause-effect relationship or a similar etiology (Mueser, Drake, & Wallach, 1998), a subject which will be discussed largely in the discussion part of the present study.

Cao and Su (2007) reported that high school students with IA exhibited higher numbers of hyperactivity-inattention symptoms than their age-mates with a normal use of internet. In line with this research, a 2 year follow-up study conducted among 2,293 adolescents studying in ten different high schools of Taiwan provided evidence for a positive correlation between ADHD and IA (Ko, Yen, Chen, Yeh, & Yen, 2009). Specifically, they reported that for adolescent girls, ADHD was the leading predictive factor for IA; whereas for adolescent boys, ADHD constituted the second most important predictive factor after hostility. ADHD symptoms were shown to be closely linked to IA among high school students; and ADHD, along with depression, was the only variable predicting IA both for male and female students (Yen, Ko, Yen, Wu, & Yang, 2007). Congruent with previous statements, a study conducted by Yoo and his colleagues (2004) among Korean children claimed a significant association between childhood ADHD and IA (Yoo et al., 2004).

Researchers also reported that, the existence of ADHD symptoms comprised a risk factor for the occurrence of IA and the risk factor role remained accurate for both inattention and hyperactivity-impulsivity domains. Wu et al. (2013) reported similar findings in a recent research by suggesting that students with IA displayed a higher severity of hyperactivity-impulsivity symptoms than students with normal levels of internet use. In a review of existing literature concerning publications between 2000 and 2009, Weinstein and Lejoyeux (2010) provided extra evidence for the high co-morbidity between IA and ADHD. Along with IA, problematic internet use was showed to correlate with ADHD symptoms at greater levels (Carli et al., 2012).

The researches conducted in Turkey were in line with previous findings. For instance, Dalbudak and Evren (2013) conducted a research among Turkish college students and found that ADHD predicted IA independently of personality traits, depression and anxiety symptoms. Plus, the researches claimed that particularly hyperactivity/impulsivity symptoms were closely linked with IA. Tahiroğlu et al. (2010) added extra data to the literature by reporting that, within a variety of psychiatric disorders, the use of internet more than 8 hours per week was the most common among ADHD group, just after mood disorder group. Moreover, the same study found that problematic internet use was observed more frequently among people with ADHD than the control group. Ozgun et al. (2013) supported the previous findings by claiming that IA was associated with ADHD among Turkish high school students.

1.9.3. IA and Negative Life Events

College students experience a variety of adverse life events (e.g., romantic break-ups, accidents, being socially isolated) during college years (Anders, Frazier, & Shallcross, 2012). Although the reactions of college students to these negative life events are very diverse, one of the hypotheses is that negative life events pave the way for IA among college students. So far, very limited number of studies focused on the role of negative life events on IA among college students and other samples. Yet, extensive literature almost invariably reports a close link between negative life events and IA among a variety of samples; although these researches do not reflect a causal relationship.

For instance, a study by Yan, Li and Sui (2013) reported that the level of stressful life events were associated with IA, where it was mostly predicted by health and adaptation problems. Moreover, Jie and his colleagues (2014) reported that stressful life events that are linked to interpersonal relationships and school were associated with IA among students in China. Another study conducted in China among 14,296 high-school students showed that conflictive relations with family members along with study-related stress and poor interaction with classmates and teachers at school were all predictors of problematic internet use (Wang et al., 2011). Li, Zhang, Li, Zhen, and Wang (2010) replicated these findings by providing extra evidence for the link between stressful life events and problematic internet use among adolescents. Li, Wang and Wang (2009) assessed the relationship between generalized problematic internet use, stressful life events and coping styles among Chinese college students and in accordance with previous findings, they discovered that there was a predictive value of stressful life events on generalized problematic internet use. Furthermore, this effect was mediated through avoidant coping style (e.g., self-blame, fantasy, withdrawal or rationalization).

Leung (2006) reported that there was a significant association between stressful life events and adolescents' internet use for mood management and social compensation. Perceived stress was also found to be a predictor of internet abuse, especially for sexual purposes among college students (Velezmoro, Lacefield, & Roberti, 2010). Contrarily, Deatherage, Servaty-Seib and Aksoz (2014) found that the time spent on internet was not related to perceived stress. However, they went beyond the question of the time spent online and analyzed students' motives for internet use. Their findings indicated that lower levels of stress was associated with using internet for raisons of excitement and fun; whereas higher levels of stress was associated with internet use for purposes of stress relief and digression from problems.

1.10. The Relationship of Psychopathology with Other Variables

1.10.1. Psychopathology and CD

There is robust data about the literature that CD or conduct problems are leading to a variety of adult psychiatric conditions and prepare the way for various forms of psychopathology. Researches generally put an emphasis on the association

of CD with a future antisocial personality (Hill, 2003) and substance use disorders (McGue, Iacono, & Krueger, 2006) but the literature offers remarks going beyond these findings.

For instance a study demonstrated that conduct problems displayed at the ages of 11 to 15 were associated with an increased probability of having all psychiatric disorders (e.g., disorders related to schizophrenia, mania substance abuse disorders and internalizing problems) at the age of 26 (Kim-Cohen et al, 2003). Morcillo et al. (2012) conducted another study among 34,000 adults whose minimum age is 18 and found that CD was associated with both axis I and axis II disorders, particularly with antisocial personality and substance use disorders in adulthood when sociodemographic features and psychiatric co-morbidity were controlled. Researches also discovered that CD in childhood as well as in adolescence was associated with internalizing psychopathology and personality disorders. Furthermore, the degree of CD was related to the increase of psychiatric disorders (Morcillo et al., 2012).

Gyllenberg et al. (2010) conducted a longitudinal study to elucidate whether psychopathology at the age of 8 predicts later psychiatric condition. According to their findings, which are in line with the statements above, psychiatric hospital treatment was predicted by the combined effect of conduct and emotional problems with some differences in the findings for both sexes. That is, for females, anxiety and depression were associated with an increased risk of later psychiatric hospital treatment whereas among males, childhood conduct, attention and emotional problems had the prediction value on later psychiatric conditions. Specifically psychosis in early adulthood was associated with emotional problems and conduct problems at the age of 8, among females and males respectively. The same research provided extra evidence for the fact that conduct problems preceded substance use disorders.

Consistent with previous findings, Robins (1986) reported that among women, childhood CD was the predictor of various psychiatric disorders in adult life, such as drug and alcohol use, antisocial problems and emotional disorders. Another study analyzed the association between youth CD and its effect on psychosocial results and psychopathology at the age of 30 and found that adult psychosocial

outcomes were highly related with CD in youth. Regarding psychopathology, antisocial behavior was the only one predicted by CD, when the effect of gender and other forms of psychopathology were controlled (Olino, Seeley, & Lewinsohn, 2010).

1.10.2. Psychopathology and ADHD

Data on the adult and adolescent outcome of children with ADHD provided clear evidence for the association between ADHD in childhood and later psychopathology, psychiatric symptomatology as well as dysfunctions in several areas of life. A follow-up study which lasted 10 years demonstrated that at the age of 21, young individuals with ADHD had higher risks of exhibiting symptoms of antisocial, addictive, mood and anxiety disorders (Biederman et al., 2006). Mannuzza, Klein, Abikoff, and Moulton (2004) suggested that, independently of co-morbid oppositional defiant or CD symptoms, childhood ADHD was a predictor of antisocial disorder in adulthood. Other researches supported these findings by claiming that childhood ADHD is a risk factor for a higher frequency of adult psychopathology, specifically antisocial personality disorder and substance abuse (Mannuzza & Klein, 2000; Mannuzza, Klein, & Moulton, 2003; Rutter, Kim-Cohen, & Maughan, 2006). A study assessed the adolescent outcome of children with ADHD and found that childhood ADHD was a significant predictor of a later oppositional defiant disorder (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003).

In a longitudinal study, Fischer, Barkley, Smallish, and Fletcher (2002) reported that later major depression and several personality disorders were more common among children with hyperactivity. Another study sought to evaluate the adolescent and young adult outcomes of girls diagnosed with ADHD and found that they exhibited higher levels of depressive symptoms compared to a control group. However, they did not show any difference regarding substance use or ADHD symptomatology (Babinski et al., 2011). Similarly, Biederman et al. (2010) conducted a follow-up study among girls with ADHD to evaluate their psychopathological progress at 11 years old up to young adulthood period. The risks for showing symptoms of ADHD, antisocial, addictive, mood, anxiety and eating disorders were significantly high among girls with ADHD compared to a control group.

1.10.3. Psychopathology and Negative Life Events

The literature notes a relatively robust association between negative life events and various types of psychopathology and psychiatric disorders among clinical and non-clinical samples. For instance, Gunther, Drukker, Feron and Os (2007) suggested that adverse life events had an important effect on the severity of psychopathology and that, family related life events were stronger predictors of psychopathology than school-related ones. In line with the findings of this research, a study conducted among young adolescents put more evidence for the link between negative life events and various forms of psychopathology. Specifically, stressful life events related to romantic break-ups were found to be associated with an increased rate of depression, CD and substance use. Plus, depressive symptoms were linked to an increased number of life events related to interpersonal stress and family disruption (Low et al., 2012). Congruent with these findings, a study conducted among children from 11 to 18 years old suggested that the number of negative life events experienced was a risk factor for broad and externalizing psychopathology and the life events experienced in the closest past were better predictors (Flouri & Tzavidis, 2008). Besides, Michl, McLaughlin, Shepherd and Nolen-Hoeksema (2013) reported an association between stressful life events and an increase in anxiety and depression symptoms among adults and increased rumination was stated to mediate between these two variables. Pine, Cohen, Johnson, and Brook (2002) contributed to the literature by stating that negative life events being exposed during adolescence was a predictor of major depressive and generalized anxiety disorders in adulthood, although the second relationship was only accurate for females.

A meta-analytic study of studies published between 1980 and 2001 found that negative life events experienced in the present and in the past were associated with depressive symptomatology (Tennant, 2002). The association between stressful life events and depression was also replicated among college students and trait hope was detected to moderate this relationship. That is, students with lower degrees of trait hope exhibited a stronger association between stressful life events and depressive symptoms (Visser, Loess, Jeglic, & Hirsch, 2013). Among Chinese adolescents, negative life events were found to constitute a higher risk for internalizing problems as depression and anxiety and externalizing problems as aggression and delinquent

behaviours (Liu & Tein, 2005). Negative life events were also found to be correlated with psychopathology (especially schizophrenia, personality disorders and depression) among individuals with intellectual disability (Tsakanikos, Bouras, Costello, & Holt, 2007).

1.11. The Rationale, Hypothesis and Aims of the Study

In this literature review, the unique relationships between variables that are included in this study are explained in detail for each association. As it was stated above, people showing ADHD symptoms are more vulnerable to develop different kinds of addiction (e.g.., licit and illicit substances and internet). However, looking at the researches conducted, only very few of them studied different types of addictions in one study. In other words, researches concentrated only one type of addiction in a single study. That is a reason why in this reseach, different aspects of addictions (i.e., cigarette, marijuana, alcohol, internet) were incorporated all together. Cigarette, marijuana and alcohol use rates were included in the analysis because they are the most widely used substances among college students. Internet became one of the indispensable needs especially for university students, and that is why internet addiction was also incorporated in the analysis.

Although ADHD is known to be a disorder that start in childhood and continue till adulthood years, in this study, both childhood and adult ADHD symptoms were incorparated into analysis to control the continuity. As it was stated above, conduct disorder goes hand in hand with ADHD. In the literature, conduct disorder was taken into account only when assessing the relationship between ADHD symptoms and cigarette use. However, conduct disorder symptoms may interfere with the results not only for cigarette use or nicotine dependence but also for other substance use or addiction types. Therefore, while studying the relationship between ADHD symptoms and substance use as well as addictions, controlling the effect of a co-morbid conduct disorder is a must and this is the reason why conduct disorder symptoms were incorporated in this study.

General symptoms of psychopathology were also included in the present research because they are highly correlated with substance use and internet addiction. Plus, in this study, it was aimed to evaluate whether past ADHD, conduct disorder symptoms are risk factors for general symptoms of psychopathology. Lastly,

negative life events were incorporated into analysis because it was aimed to see whether when ADHD and conduct disorder symptoms were controlled, current negative life events still have a prediction value on other conditions (i.e., general symptoms of psychopathology and internet as well as nicotine addictions), or on the contrary, negative life events do have no importance when ADHD and conduct disorder symptoms are taken into account.

In this study, it is hypothesized that, past and current ADHD symptoms and conduct disorder symptoms between 5-18 ages will have prediction value on substance use (alcohol, cigarette and marijuana), internet addiction, and general symptoms of psychopathology. Second, a positive association between substance use and current negative life events is hypothesized to be detected. Third, another positive association between internet addiction and current negative life events are hypothesized be found. Plus, it is hypothesized that, when the effect of co-morbid conduct disorder symptoms is controlled, ADHD symptoms will still predict nicotine dependence on college students. In the literature, the crucial effect of negative life events on college students is highlighted especially for college student population. Therefore, another hypothesis is that, there will be strong correlations between current negative life events and substance use, internet addiction as well as general symptoms of psychopathology, independent of the effect of ADHD and conduct disorder symptoms. To be clearer, here are the aims of the present study:

1. To examine gender, age, class, mothers and fathers' education level, residence, income and mother and fathers' smoking status differences on the measures of the study.
2. To examine ever using rates of alcohol, cigarette and marijuana across lifetime and the frequency of their use on the measures of the study.
3. To examine the intercorrelations between the measures of the study.
4. To determine factors associated with psychopathology.
5. To determine factors associated with internet addiction.
6. To find out factors associated with nicotine dependency.

CHAPTER II

METHOD

2.1. Participants

530 Turkish university students participated in the study, 340 (64.2 %) of which were female and 190 (35.8 %) of which were male. The age range of participants was 18 to 47 (*M* = 23.78, *SD* = 4.67) and 172 (32.6 %) of them aged between 18 and 21, whereas 356 (67.4 %) of them aged 22 or above. Regarding the education level of the participants, 9 (1.7 %) of them were taking part in preparatory school, 403 (77.4 %) of them were undergraduate, 74 (14.2 %) of them were graduate and 35 (6.7 %) were postgraduate students. Participants were from a large variety of departments in 90 different universities (See Table 2.2. for detailed information).

Concerning parental education level, participants' answers revealed that 297 (58 %) of mothers were high school graduates or below whereas 215 (42 %) of them were university graduates and above. As for fathers, 247 (47.5 %) of them were high school graduates or below whereas 273 (52.5 %) of them were university graduates and above (See Table 2.1. for detailed information).

About the place where participants spent the majority of their life, 337 (63.6 %) of them reported to have spent most of their life in big cities (i.e., İstanbul, Ankara, İzmir), 162 of them in cities (30.6 %), 23 of them in towns (4.3 %) and 8 (1.5 %) of them in villages. Participants also differed in income levels; 270 (51.0 %) of them had an average monthly family income as 3000 TL or less and 259 (49.0 %) of them had an average monthly family income higher than 3000 TL (See Table 2.1. for detailed information.)

Table 2. 1: Demographic Characteristics of Participants

Variables	N	%
Gender		
Female	340	64.2
Male	190	35.8
Age		
18-21	172	32.6
22 or above	356	67.4
Class		
Preparation Class	9	1.7
Undergraduate	403	77.4
Graduate	74	14.2
Post graduate	35	6.7
Mother Education		
High school graduate or below	297	58.0
University graduate or above	215	42.0
Father Education		
High school graduate or below	247	47.5
University graduate or above	273	52.5
Residence		
Big city	337	63.6
City	162	30.6
Town	23	4.3
Village	8	1.5
Income		
Low (3.000 TL or less)	270	51.0
High (higher than 3000 TL)	259	49.0

Table 2. 2: Distribution of Universities and Departments of Participants

Variables	N	%
School		
Middle East Technical University	112	21.2
Hacettepe University	33	6.2
Istanbul University	30	5.7
Ankara University	28	5.3
Namık Kemal University	21	4.0
Istanbul Technical University	19	3.6
Bilgi University	17	3.2
Koç University	17	3.2
Marmara University	16	3.0
Yıldız Teknik University	16	3.0
Bogazici University	15	2.8
19 Mayıs University	14	2.6
Anadolu University	11	2.1
Yeditepe University	11	2.1
Gazi University	10	1.9
Bilkent University	10	1.9
Ege University	8	1.5
9 Eylül University	7	1.3
Süleyman Demirel University	6	1.1
Balıkesir University	5	0.9
Cyprus International University	5	0.9
Galatasaray University	5	0.9
Maltepe University	5	0.9
Osmangazi University	5	0.9
Selçuk University	5	0.9
Others	98	18.5

Table 2.2 (Continued)

Departments		
Psychology	54	10.2
Medicine	40	7.6
International Relations	23	4.3
Business Administration	19	3.6
Economy	16	3.0
Law	14	2.6
Architecture	13	2.5
Mechanical Engineering	13	2.5
Primary Education	12	2.3
Civil Engineering	11	2.1
Chemistry	10	1.9
Sociology	9	1.7
Chemistry Engineering	8	1.5
Computer Engineering	8	1.5
Industrial Engineering	8	1.5
Clinical Psychology	7	1.3
Dentistry	7	1.3
Geomatics Engineering	7	1.3
Food Engineering	6	1.1
Philosophy	6	1.1
Statistics	6	1.1
Political Science and Public Administration	5	0.9
Public Relations	5	0.9
Social Services	5	0.9
Others	217	41.0

2.2. Measures

Data collection was conducted through a demographic form and a questionnaire that aims to gather information about the use of a variety of addictive drugs (e.g., alcohol, cigarette, marijuana) both of which were prepared by the

researcher. Additionally, participants were asked to fill a set of questionnaires consisted of Young Internet Addiction Scale (YIAS) to assess internet addiction level, Measure of Childhood Conduct Disorder (CONDUCT) to evaluate Conduct Disorder (CD) symptoms in childhood (ages 5-18), Fagerström Test of Nicotine Dependence (FAGER) to determine the level of nicotine dependence, Brief Symptom Inventory (BSI) to scan a range of psychological problems, Life Event Inventory for University Students (LEIU) to scan a variety of negative life events that participants faced in the last 2 months, Wender Utah Rating Scale (WURS) to assess childhood ADHD symptoms in adults retrospectively and Adult ADD/ADHD DSM IV- Based Diagnostic Screening and Rating Scale (AADSRS) to measure participants' current ADD/ADHD symptoms.

2.2.1. Demographic Information Form

This 18-item form consisted of both multiple choice and fill in the blank type of questions. The demographic information form was prepared by the researcher and was aimed at gathering information about participants' sex, age, university, department, class, grade point average, parental educational level, the place where the participants spent the majority of their life, the average family income level, accommodation information, parental smoking status, information about psychological disease if there was one (See Appendix B).

2.2.2. Questions of Alcohol, Cigarette and Substance Consumption

This 12-item questionnaire which was prepared by the researcher consists of both multiple choice and fill in the blank type of questions. The aim of this form is to gather information about participants' consumption of alcohol, cigarette, marijuana, and other illicit substances. Questions are aimed at collecting information on the frequency, amount, type and duration of the use of these substances (See Appendix C).

2.2.3. Young Internet Addiction Scale (YIAS)

The internet addiction scale was developed by Young (1998). This 20-item scale was developed as an improvement of the 'Diagnostic Questionnaire' which was an adaptation based on DSM- IV criteria of psychoactive drug addiction.

It is a 6-point Likert type scale where "0" stands for "never" and "5" for "all the time". Participants who have the cut-off score of 80 and above are described as

‘internet addicts’, those who have scores between 50 and 79 are described as ‘showing limited symptoms of internet addiction’ and those who have 50 and less are described as ‘people with no symptom’ (Bayraktar, 2001).

The scale was translated to Turkish by Bayraktar (2001). In the same study, Cronbach’s alpha of the translated version of the scale was found as .91 and Spearman-Brown value was found as .87, meaning that the scale is a reliable measure that can be used with a Turkish sample (Bayraktar, 2001). In the current study, Cronbach’s alpha of the scale was found as .92, reflecting a high reliability (See Appendix D).

2.2.4. Measure of Childhood Conduct Disorder (CONDUCT)

This rating scale directly assesses DSM-IV-TR (APA, 2000) diagnostic criteria for Conduct Disorder (CD) symptoms in childhood (ages 5-18). The questionnaire consists of 15 items and prepared by the researcher. “Lying to obtain goods or favors or to avoid obligations”, “deliberately engaging in fire setting with the intention of causing serious damage” and “being physically cruel to animals” are example questions of the questionnaire. The items are categorized under four titles called “Aggression toward people and animals”, “Destruction of property”, “Deceitfulness or theft” and “Serious violations of rules”. Participants are expected to answer 15 questions while considering their 5th-18th ages. It is a 5-point Likert type scale and answer choices range from “strongly agree” to “strongly disagree” (“0” for “strongly disagree” and “4” for “strongly agree”). Lower points indicate lower and high scores stands for higher levels of conduct disorder. This scale demonstrated adequate internal consistency (in this sample, the Cronbach’s Alpha was calculated as .79) and has adequate content validity, as the items were derived directly from DSM-IV-TR criteria (APA, 2000) (See Appendix E).

2.2.5. Fagerström Test of Nicotine Dependence (FTND)

The 6-item Fagerström Test of Nicotine Dependence (FTND) is a revised version of Fagerström Tolerance Questionnaire (FTQ) that was developed by Fagerström (1978). The revised version was published by Heatherton, Kozlowski, Frecker, and Fagerström (1991). The scale aims to measure nicotine dependence; scoring ranges from 0 to 10, where lower points indicate lower and higher points stands for higher degrees of nicotine dependence. A total score of 5 or higher scores

indicate ‘high nicotine dependence’, scores of 3 and 4 point out to ‘moderate nicotine dependence’ and scores lower than 3 stand for ‘no dependence on nicotine’. In this study, the continuous score of FTND was used.

Previous researches revealed FTND to have adequate internal consistency reliability with α = .61 (Heatherton et al. 1991) and to correlate with biochemical measures of nicotine dependence where correlation coefficients range from r = 0.24 to r = 0.33 - 0.46. (Pinto, Abrams, Monti, & Jacobus, 1987; Pomerleau, Pomerleau, Majchrzak, Kloska, & Malakuti, 1990).

Uysal, Kadakal, Karşıdağ, Bayram, Uysal, and Yılmaz (2004) translated and adapted FTND to Turkish. The Cronbach’s Alpha of the Turkish version of the scale was found as 0.68, reflecting a satisfactory reliability. In the current study Cronbach’s Alpha was calculated as .74, reflecting an adequate reliability (See Appendix F).

2.2.6. Brief Symptom Inventory (BSI)

Brief Symptom Inventory, a shortened version of 90-item SCL-90-R, is a 53-item instrument developed by Derogatis (1993) and used in psychopathological evaluations. BSI is a 5-point Likert type scale where participants can choose answers ranging between ‘Extremely’ (4 point answer) and ‘Not at all’ (0 point answer).

This instrument consists of 9 primary symptom dimensions and 3 global indices of distress. Depression (DEP), Anxiety (ANX), Somatization (SOM), Obsessive-Compulsive (O-C), Interpersonal Sensitivity (I-S), Hostility (HOS), Phobic Anxiety (PHOB), Paranoid Ideation, (PAR), and Psychoticism (PSY) are the primary symptom dimensions of the scale. As for 3 global indices of distress, General Severity Index (GSI), Positive Symptom Distress Index (PSDI), and the Positive Symptom Total (PST) can be named. Derogatis and Melisaratos (1983) stated that Cronbach’s Alpha for 9 different dimensions of BSI varied from .71 (psychoticism) to .85 (depression), indicating adequate reliability.

The scale was translated and adapted into Turkish by Şahin and Durak (1994). They found Cronbach’s Alpha for BSI as .95, and for 9 different dimensions the coefficients varied from .55 (psychoticism) to .82 (depression). Şahin and Durak (1994) suggested that items of BSI can be grouped under 5 factor dimensions, namely anxiety, depression, negative self-concept, somatisation and hostility.

Regarding internal consistency of these 5 factors that range from α = .75 (for somatization) to α = .88 (for depression), it can be denoted that each of these 5 factors has a high reliability.

Şahin and Durak (1994) stated that BSI is a valid and reliable instrument to assess psychological problems in university population. Additionally, they recommended using 5 factor dimensions of BSI when the sample is a normal young population, such as university students. Thus, in the current research, anxiety, depression, negative self-concept, somatization and hostility domains of BSI were used. In the current research, internal consistency of BSI (α = .97) and its 5 factors; anxiety (α = .91), depression (α = .92), negative self-concept (α = .91), somatization (α = .83) and hostility (α = .83) indicated high reliability (See Appendix G).

2.2.7. Life Events Inventory for University Students (LEIU)

LEIU was developed by Oral (1999) within the scope of her master thesis. The aim of this 49-item scale is to scan a variety of negative life events that university students face in their life. The scale assesses the frequency of life events encountered within the last month. It is a 5-point Likert Type Scale where 1 stands for 'never' and 5 stands for 'always' (Oral, 1999). The internal consistency of LEIU was calculated as .90 and item total correlation of 49 items ranged from .19 to .64. The correlation between Beck Depression Inventory and LEIU was found to be significant (r =.52, p < .01) (Oral, 1999). Thus, LEIU is shown to be a reliable and valid instrument to use for a Turkish university sample.

Gencoz and Dinc (2006) added 6 new items and used intensity scores of life events instead of frequency scores used in original version. One item (item no 54) were changed from "Being unable to adapt to Ankara" to "Being unable to adapt to the place where I live". Based on the factor analysis in this study, the items of the scale were grouped under 2 factors which are named 'achievement related life events' and 'social life events' (Gencoz & Dinc, 2006).

In the current study, the version prepared by Gencoz and Dinc (2006) of LEIU is used. As each item assesses the intensity and frequency of a life event encountered, total score is calculated by summing up the interaction score for each item. Plus, participants are asked to indicate negative life events encountered within the last 2 months. Some of the data was collected during summer holidays; therefore

the statement ‘within the last month’ was replaced with ‘within the last 2 months’ in order to match the academic calendar. In the current research, Cronbach’s Alpha of LEIU is calculated as .96, the first factor ‘achievement related life events’ as .93 and the second factor ‘social life events’ .92 indicating high reliability (See Appendix H).

2.2.8. Wender Utah Rating Scale (WURS)

This scale was developed to assess childhood ADHD symptoms in adults (Ward, 1993), and is among the most commonly used questionnaire that aid to diagnose adults with ADHD retrospectively. The original version of this scale consists of 61 items about childhood ADHD. Later, the scale was developed by choosing the items that best distinguish ADHD group from a normal population. It is a 25-item 4-point Likert type scale and scoring ranges from ‘not at all or very slightly’ (point 0) to ‘very much’ (point 4). The minimum score of the scale is 0, whereas the maximum is 100; higher scores stand for higher levels and lower scores stand for lower levels of ADHD symptoms in childhood. The cut-off score is 46 for the diagnoses of ADHD in childhood. WURS is shown to have an adequate internal consistency level and good test-retest reliability in university samples (Rossini & O’Connor, 1995).

The translation and adaptation of the scale into Turkish was conducted by Öncü et al. (2005). The cut-off score was calculated as 46 for the diagnosis of childhood ADHD and items were grouped under 5 factor dimensions: irritability, depression, problems related to school, behavioral problems/impulsivity and inattention.

Cronbach’s Alphas of WURS (α =.93) and the sub-domains that range from α = .0.57 (for ‘problems related to school’) to α = .88 (for ‘irritability’) indicated good reliability. The scale also yielded a good test-retest reliability (α = .81, $p < 0.001$). Therefore, WURS was shown to be a reliable instrument in scanning childhood ADHD symptoms in Turkish adults.

In the current research, Cronbach’s Alpha scores for WURS (α =.91) and its sub-domains namely irritability (α =.87), depression (α =.74), behavioral problems/impulsivity (α =.76) and inattention (α =.72) indicate high reliability, except problems related to school (α =.46) domain which had a low reliability. In the

current research, the continuous score of WURS and its sub-domains are incorporated into analysis (See Appendix I).

2.2.9. Adult ADD/ ADHD DSM-IV Based Diagnostic Screening and Rating Scale (AADSRS)

This 48-item 4-point Likert type scale was developed by Turgay (1995) to assess ADD/ADHD symptoms in adults. The scoring of each item ranges from 'almost never' (point 0) to 'very often' (point 3) and lower points stand for lower whereas higher points denote higher degrees of adult ADD/ADHD.

The scale has 3 sub-domains: inattention, hyperactivity/impulsivity and characteristics and problems related to ADHD. 9 items that constitute inattention domain include the criteria of inattention level of ADHD listed in DSM-IV and another 9 items that constitute hyperactivity/impulsivity domain include the criteria of hyperactivity/impulsivity level of ADHD listed in DSM-IV. The third domain of the scale which was prepared as a result of clinical experience and observations comprises 30 items that reflect characteristics and problems related to ADHD.

The translation and adaptation of the scale into Turkish was conducted by Günay et al. (2006) and the scale is shown to be a valid and reliable instrument to use in screening for ADD/ADHD symtoms in adults. Cronbach's Alpha of the scale was calculated as .96, indicating high internal consistency level (Günay et al., 2006). In the current study, Cronbach's Alpha scores for AADSRS (α =.95) and its sub-domains namely inattention (α =.89), hyperactivity/impulsivity (α =.87) and characteristics and problems related to ADHD (α =.91) indicate high reliability. In the current research, the continuous score of AADSRS and its sub-domains are incorporated into analysis (See Appendix J).

2.3. Procedure

Firstly, Middle East Technical University Human Subjects Ethics Committee was asked to give the necessary approval for the research to be conducted. Second, a set of questionnaires including demographic questions, questions about substance use and all the scales necessary for the research were distributed online and in print for university students to complete. The filling of each set of questionnaire took approximately 40 minutes per participant. Participants agreed to accept the terms

written on the informed consent form (See Appendix A) before starting to complete the questionnaires.

2.4. Statistical Analysis

In this study, statistics were conducted by Statistical Package for Social Sciences (SPSS), 20th version for Windows. A variety of statistical analysis was conducted. Firstly, descriptive statistics of current study's measures, demographic variables and variables reflecting the use of cigarette, alcohol and marijuana were performed. Secondly, a set of MANOVAs, ANOVAs and t-tests were conducted to investigate the differences between demographic variables and variables reflecting the use of cigarette, alcohol and other illicit drugs on the measures of the present study. Third, the correlations between measures of the study, demographic variables and variables reflecting the use of cigarette, alcohol and marijuana were calculated through pearson correlations. Forth and the last, various hierarchical regression analyses were conducted to reveal the significant associates of general symptoms of psychopathology, nicotine dependency and internet addiction.

CHAPTER III

RESULTS

3.1. Descriptive Information of Study's Measures

Descriptive features such as the number of participants, means, standard deviations, minimum and maximum scores and reliability coefficients (Cronbach's Alpha) of the present study's variables were calculated. These variables are Wender Utah Rating Scale (WURS) and its five sub-scales, Irritability (WURS-IR), Depression (WURS-DP), Problems related to School (WURS-S), Behavioural Problems/ Impulsivity (WURS-BI), Inattention (WURS-IN); Adult ADD/ADHD DSM IV-Based Diagnostic Screening and Rating Scale (AADSRS) and its three sub-scales, Inattention (AADSRS-I), Hyperactivity (AADSRS-H) and Characteristics related to ADD/ADHD (AADSRS-C), interaction of frequency and intensity scores of Life Events Inventory (LEIU), Conduct Disorder Scale (CONDUCT), Brief Symptoms Inventory (BSI) and its five sub-scales namely anxiety (BSI-A), depression (BSI-D), negative self-concept (BSI-N), somatization (BSI-S) and hostility (BSI-H), Fagerström Test of Nicotine Dependence (FAGER) and Young Internet Addiction Scale (YIAS). Information about the number of participants, mean, standard deviation, minimum and maximum scores and reliability coefficient of variables are shown in Table 3.1.

Table 3. 1: Descriptive Information of Study's Measures

Measures	N	Mean	SD	Min-Max	Cronbach's Alpha
WURS	451	51.30	15.4	25-125	.91
WURS-IR	451	2.13	0.85	1-5	.87
WURS-DP	450	2.21	0.82	1-5	.74
WURS-S	449	1.57	0.69	1-5	.46
WURS-BI	451	1.81	0.70	1-5	.76
WURS-IN	451	2.31	0.81	1-5	.72
AADSRS	434	89.9	23.3	48-192	.95
AADSRS-I	434	1.86	0.61	1-4	.89
AADSRS-H	434	1.76	0.60	1-4	.87
AADSRS-C	431	1.91	0.52	1-4	.91
LEIU	396	313.90	176.04	47-1175	.96
CONDUCT	259	19.69	4.83	15-75	.79
BSI	387	99.76	37.76	53-265	.97
BSI-A	387	1.78	0.73	1-5	.91
BSI-D	386	2.16	0.90	1-5	.92
BSI-N	387	1.89	0.82	1-5	.91
BSI-S	387	1.63	0.61	1-5	.83
BSI-H	382	1.90	0.75	1-5	.83
FAGER	245	8.17	2.48	6-16	.74
YIAS	481	48.79	15.58	20-120	.92

Table 3.1 (Continued)

Note. WURS = Wender Utah Rating Scale, WURS-IR = Wender Utah Irritability Sub-Scale, WURS-DP = Wender Utah Depression Sub-Scale, WURS-S = Wender Utah Problems Related to School Sub-Scale, WURS-BI = Wender Utah Behavioural Problems/ Impulsivity Sub-Scale, WURS-IN = Wender Utah Inattention Sub-Scale, AADSRS = Adult ADD/ADHD DSM IV-Based Diagnostic Screening and Rating Scale, AADSRS-I = Adult ADD/ADHD DSM IV-Based Diagnostic Screening and Rating Inattention Sub-Scale, AADSRS-H = Adult ADD/ADHD DSM IV-Based Diagnostic Screening and Rating Hyperactivity Sub-Scale, AADSRS-C = Adult ADD/ADHD DSM IV-Based Diagnostic Screening and Rating Characteristics related to ADD/ADHD Sub-Scale, LEIU = Life Events Inventory Scale, CONDUCT = Conduct Disorder Scale, BSI = Brief Symptoms Inventory, BSI-A = Brief Symptoms Inventory Anxiety Sub-Scale, BSI-D = Brief Symptoms Inventory Depression Sub-Scale, BSI-N = Brief Symptoms Inventory Negative Self-Concept Sub-Scale, BSI-S= Brief Symptoms Inventory Somatization Sub-Scale, BSI-H = Brief Symptoms Inventory Hostility Sub-Scale, FAGER = Fagerström Test of Nicotine Dependence, YIAS = Young Internet Addiction Scale.

3.2. Differences of Demographic Variables and Questions Related to the Use of Cigarette, Alcohol and Marijuana on the Study's Measures

Firstly demographic variables and independent questions related to the use of cigarette, alcohol and marijuana were placed into different categories (see Table 3.2). Measures of the study were set as the dependent variables; whereas demographic variables and questions related to the use of cigarette, alcohol and marijuana were defined as the independent variables in order to see how the latter differentiate on the former values. In this study, among a variety of analysis conducted, only significant results will be reported.

Table 3. 2: Categorization of Demographic Variables and Questions Related to the Use of Cigarette, Alcohol and Marijuana

Variables	N	%
Gender		
Female	340	64.2
Male	190	35.8
Age		
18-21	172	32.6
22 or above	356	67.4
Class		
Undergraduate and below	412	79.1
Graduate and above	109	20.9
Mother Education		
Graduate of high school and below	297	58.0
Graduate of university and above	215	42.0
Father Education		
Graduate of high school and below	247	47.5
Graduate of university and above	273	52.5
Residence		
Big city	337	63.6
City, town or village	193	36.4
Income		
Low (3.000 TL or less per month)	270	51.0
High (higher than 3.000 TL per month)	259	49.0
Father's Smoking Status		
Currently smoking	180	34.0
Has smoked and quitted	182	34.3
Non-smoker	168	31.7

Table 3. 3 (Continued)

Mother's Smoking Status		
Currently smoking	128	24.2
Has smoked and quitted	323	61.1
Non-smoker	78	14.7
People Ever Drunk Alcohol		
Drunk	439	85.1
Not drink	77	14.9
Frequency of Alcohol Use*		
High	188	41.7
Low	263	58.3
People Ever Smoked		
Smoked	319	61.8
Not smoked	197	38.2
Frequency of Cigarette Use**		
High	170	50.4
Low	167	49.6
People Ever Tried Marijuana		
Tried	147	28.5
Not tried	369	71.5
Frequency of Marijuana Use***		
High	117	65.7
Low	61	34.3

*** This categorisation do not comprise those who never tried alcohol**

**** This categorisation do not comprise those who never tried cigarette**

***** This categorisation do not comprise those who never tried marijuana**

3.2.1. Differences of Demographic Variables on the Study's Measures

3.2.1.1. Differences of Demographic Variables on Childhood ADHD

3.2.1.1.1. Gender Differences on Childhood ADHD

To investigate the gender differences (male, female) on the measures of childhood ADHD, MANOVA was conducted with 5 childhood ADHD domains (Irritability, depression, problems related to school, behavioral problems/impulsivity, inattention) as dependent variables.

Gender was found to have a significant main effect on childhood ADHD [Multivariate F (5, 442) = 5.09, $p < .001$; Wilks' Lambda = .95; partial $\eta^2 = .05$]. Differences between female and male conditions on childhood ADHD domains were calculated via univariate analyses with Bonferroni adjustment. However following the Bonferroni correction none of the univariate analysis revealed significant gender differences (see Table 3.3).

Table 3. 4: Gender Differences on Childhood ADHD Domains

	Male (5, 442)	Female (1, 446)	Multivariate *F* (5, 442)	Univariate *F* (1, 446)
Childhood ADHD			5.01*	
Domains				
Irritability	2.08	2.14		.51
Depression	2.11	2.25		3.26
Problems related to school	1.62	1.54		1.38
Behavioral problems/impulsivity	1.88	1.77		2.18
Inattention	2.43	2.25		5.01

Note: *$p < .001$

3.2.1.1.2. Class Differences on Childhood ADHD

To investigate the class differences (graduate and above, undergraduate and below) on the measures of childhood ADHD, MANOVA was conducted with 5 domains of childhood ADHD (Irritability, depression, problems related to school, behavioral problems/impulsivity, inattention) as dependent variables.

Class was found to have a significant main effect on childhood ADHD [Multivariate F (5,438) = 2.84, $p < .05$; Wilks' Lambda = .97; partial $\eta^2 = .03$]. Differences between 2 conditions of class on childhood ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .01 (i.e., .05/5). Results showed the only significant difference between undergraduate and below (M = 1.61) and graduate and above (M = 1.38) conditions was on the problems related to school domain of childhood ADHD [F (1, 442) = 9.15, $p < .01$, partial $\eta^2 = .02$]. These results suggested that students who were in undergraduate and below classes had significantly higher problems related to school than those who were in graduate and above group (see Table 3.4).

Table 3. 5: Class Differences on Childhood ADHD Domains

	Undergraduate and Below	**Graduate and Above**	**Multivariate *F* (5, 438)**	**Univariate *F* (1, 442)**
Childhood ADHD			2.84**	
Domains				
Irritability	2.14	2.04		1.00
Depression	2.21	2.20		.01
Problems related to school	1.61	1.38		9.15*
Behavioral problems/impulsivity	1.83	1.70		2.91
Inattention	2.33	2.20		2.09

Note: *$p < .01$, **$p < .05$

3.2.1.1.3. Mother's Education Level Differences on Childhood ADHD

To investigate the differences of mother's education levels (low which stands for graduate of high school and below, high which stands for graduate of university and above) on the measures of childhood ADHD, MANOVA was conducted with 5 domains of childhood ADHD (Irritability, depression, problems related to school, behavioral problems/impulsivity, inattention) as dependent variables.

Mother's education level was found to have a significant main effect on childhood ADHD [Multivariate F (5,428) = 3.06, $p \leq .01$; Wilks' Lambda = .96; partial η^2 = .03]. Differences between low and high levels of mother's education on childhood ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .01 (i.e., .05/5). Results showed that the only significant difference between low (M = 2.21) and high (M = 2.42) levels of mother education was on the inattention domain of childhood ADHD [F (1,432) = 6.79, $p < .01$, partial η^2 = .01]. These results suggested that people whose mother was graduate of university and above exhibited significantly more attention problems than those whose mother was graduate of high school and below (see Table 3.5).

Table 3. 6: Mother's Education Level Differences on Childhood ADHD Domains

	Low	High	Multivariate *F* (5, 428)	Univariate *F* (1, 432)
Childhood ADHD			3.06**	
Domains				
Irritability	2.14	2.09		.27
Depression	2.21	2.19		.02
Problems related to school	1.51	1.64	4.16	
Behavioral problems/impulsivity	1.78	1.86		1.43
Inattention	2.21	2.42		6.79*

Note: *$p \leq .01$, **$p < .05$

3.2.1.2. Differences of Demographic Variables on Adult ADHD

3.2.1.2.1. Class Differences on Adult ADHD

To investigate class differences (undergraduate and below, graduate and above) on the measures of adult ADHD, MANOVA was conducted with 3 domains of adult ADHD (inattention, hyperactivity/impulsivity, characteristics related to ADD/ADHD) as dependent variables.

Class was found to have a significant main effect on adult ADHD [Multivariate F (3, 424) = 3.44, $p < .05$; Wilks' Lambda = .98; partial $\eta^2 = .02$]. Differences between 2 levels of class on adult ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .016 (i.e., .05/3). Results showed that the only significant difference between undergraduate and below (M = 1.82) and graduate and above (M = 2.03) levels of class was on the inattention domain of adult ADHD [F (1,426) = 8.50, $p < .016$, partial $\eta^2 = .02$]. These results suggested that people who were in

graduate and above exhibited significantly more attention problems than those in undergraduate and below (see Table 3.6).

Table 3. 7: Class Differences on Adult ADHD Domains

	Undergraduate and Below	Graduate and Above	Multivariate *F* (3, 424)	Univariate *F* (1, 426)
Adult ADHD			3.44**	
Domains				
Inattention	1.82	2.03		8.50*
Hyperactivity/Impulsivity	1.74	1.82		1.40
Characteristics related to ADD/ADHD	1.90	1.97		1.48

Note: *$p < .016$, **$p < .05$

3.2.1.2.2. Mother's Education Level Differences on Adult ADHD

To examine the difference between 2 levels of mother education (low which stands for graduate of high school and below; high which stands for graduate of university and above) on adult ADHD, a t-test was conducted with the total score of adult ADHD as the dependent variable. A significant result was found for differences in the scores for low (M = 86.72, SD = 21.90) and high (M = 94.00, SD = 24.71) conditions; t (419) = -3.19, $p \leq .001$. Specifically, students whose mothers were graduate of university and above exhibited greater levels of ADHD than those whose mothers were graduate of high school and below (see Table 3.7).

Table 3. 8: Mother's Education Level Differences on Adult ADHD

	Mean	SD	*t* (419)
Mother			
Education			
Low	86.72	21.90	-3.19*
High	94.00	24.71	

Note: *$p \leq .001$

To investigate the differences of mother's education levels on the measures of adult ADHD, MANOVA was conducted with 3 domains of adult ADHD (inattention, hyperactivity/impulsivity, characteristics related to ADD/ADHD) as dependent variables.

Mother's education level was found to have a significant main effect on adult ADHD [Multivariate F (3,414) = 3.21, $p < .05$; Wilks' Lambda = .98; partial $\eta^2 = .02$]. Differences between low and high levels of mother's education on adult ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .016 (i.e., .05/3). Results showed that the only significant difference between low (M = 1.84) and high (M = 2.00) levels of mother education was on the characteristics related to ADD/ADHD domain [F (1,416) = 9.42, $p < .016$, partial $\eta^2 = .02$]. These results suggested that people whose mother was graduate of university and above showed significantly higher levels of characteristics related ADHD than those whose mother was graduate of high school and below (see Table 3.8).

Table 3. 9: Mother's Education Level Differences on Adult ADHD Domains

	Low	High	Multivariate *F* (3, 414)	Univariate *F* (1, 416)
Adult ADHD			3.21**	
Domains				
Inattention	1.80	1.94		5.51
Hyperactivity/ Impulsivity	1.71	1.84		4.56
Characteristics related to ADD/ADHD	1.84	2.00		9.42*

Note: *$p < .016$, **$p < .05$

3.2.1.2.3. Father's Education Level Differences on Adult ADHD

To investigate the differences between 2 levels of father education (low which stands for graduate of high school and below and high which stands for graduate of university and above) on adult ADHD, a t-test was conducted with the total score of adult ADHD as the dependent variable. A significant result was found for differences in the scores for low (M = 86.94, SD = 22.73) and high (M = 92.38, SD = 23.63) conditions; t (426) = -2.42, $p < .05$. Specifically, students whose fathers were graduate of university and above exhibited greater levels of ADHD than those whose fathers were graduate of high school and below (see Table 3.9).

Table 3. 10: Father's Education Level Differences on Adult ADHD

	Mean	SD	*t* (426)
Father			
Education			
Low	86.94	22.73	-2.42*
High	92.38	23.63	

Note: *$p < .05$

3.2.1.2.4. Income Differences on Adult ADHD

To investigate the income differences on the measures of adult ADHD, MANOVA was conducted with 3 domains of adult ADHD (inattention, hyperactivity/impulsivity, characteristics related to ADD/ADHD) as dependent variables.

Income was found to have a significant main effect on adult ADHD [Multivariate F (3,426) = 2.89, $p < .05$; Wilks' Lambda = .98; partial $\eta^2 = .02$]. Differences between low and high levels of income on adult ADHD domains were calculated via univariate analyses with Bonferroni adjustment. However following the Bonferroni correction none of the univariate analysis revealed significant income differences (see Table 3.10).

Table 3. 11: Income Differences on Adult ADHD Domains

	Low	High	Multivariate *F* (3, 426)	Univariate *F* (1, 428)
Adult ADHD			2.89*	
Domains				
Inattention	1.93	1.79		5.21
Hyperactivity/ Impulsivity	1.74	1.78		.50
Characteristics related to ADD/ADHD	1.95	1.87		2.12

Note: *$p < .05$

3.2.1.2.5. Father's Smoking Status Differences on Adult ADHD

To investigate the differences of father's smoking status differences (currently smoking, smoked and quitted, non-smoker) on the measures of adult ADHD, MANOVA was conducted with 3 domains of adult ADHD (inattention, hyperactivity/impulsivity, characteristics related to ADD/ADHD) as dependent variables.

Father's smoking status was found to have a significant main effect on adult ADHD [Multivariate F (6, 852) = 3.16, $p \leq .005$; Wilks' Lambda = .96; partial η^2 = .02]. Differences between 3 conditions of father's smoking status on adult ADHD domains were calculated via univariate analyses with Bonferroni adjustment. However, following the Bonferroni correction none of the univariate analysis revealed significant father smoking status differences (see Table 3.11).

Table 3. 12: Father's Smoking Status Differences on Adult ADHD Domains

	Currently Smoking	Smoked and Quitted	Non-smoker	Multivariate *F* (6, 852)	Univariate *F* (2, 378)
Adult ADHD Domains				3.16*	
Inattention	1.84	1.87	1.88		.16
Hyperactivity/ Impulsivity	1.85	1.68	1.74		2.86
Characteristics related to ADD/ADHD	1.97	1.92	1.84		2.34

Note: *$p \leq .005$

3.2.1.3. Differences of Demographic Variables on CD

3.2.1.3.1. Gender Differences on CD

An independent sample t-test analysis was conducted to compare CD in 2 different conditions of gender: male and female. There was a significant difference in the scores for males (M = 21.04, SD = 5.76) and females (M = 19.02, SD = 4.14); t (457) = -4.30, p < .001 on CD. These results suggested that males had significantly higher levels of CD than females (see Table 3.12)

Table 3. 13: Gender Differences on CD

	Mean	SD	*t* (431)
Gender			
Male	21.04	5.76	- 4.30*
Female	19.02	4.14	

Note: *p <.001

3.2.1.4. Differences of Demographic Variables on Nicotine Dependency

3.2.1.4.1. Gender Differences on Nicotine Dependency

An independent sample t-test analysis was conducted to compare ND in 2 different gender groups: male and female. There was a significant difference in the scores for males (M = 9.09, SD = 2.63) and females (M = 7.52, SD = 2.14); t (243) = -5.13, p <.001 on ND. More clearly, gender had an effect on ND and males tended to develop ND at greater levels than females (see Table 3.13).

Table 3. 14: Gender Differences on ND

	Mean	**SD**	***t* (243)**
Gender			
Male	9.09	2.63	-5.13*
Female	7.52	2.14	

Note: *p <.001

3.2.1.4.2. Father's Education Level Differences on Nicotine Dependency

An independent sample t-test analysis was conducted to compare ND in 2 different groups of father education: graduate and high school and below (low) and graduate of university and above (high).

A significant result was found for differences in the scores for low (M = 8.55, SD = 2.57) and high (M = 7.78, SD = 2.34) groups of father education; t (238) = 2.42, p < .05 on ND. Specifically, people whose father was graduate of high school and below exhibited greater levels of ND than those whose father was graduate of university and above (see Table 3.14)

Table 3. 15: Father's Education Differences on ND

	Mean	SD	*t* (238)
Father Education			
Low	8.55	2.57	2.42*
High	7.78	2.34	

Note: $p^* < .05$

3.2.1.5. Differences of Demographic Variables on Internet Addiction

3.2.1.5.1. Father's Education Level Differences on Internet Addiction

An independent sample t-test analysis was conducted to compare IA in 2 different conditions of father education: graduate of high school and below (low) and graduate of university and above (high).

A significant result was found for differences in the scores for low (M = 46.19, SD = 14.45) and high (M = 50.91, SD = 15.96) groups of father education; t (470) = -3.36, $p \leq .001$ on IA. Specifically, college students whose fathers were graduate of university and above exhibited greater levels of IA than those whose fathers were graduate of high school and below (see Table 3.15).

Table 3. 16: Father's Education Differences on IA

	Mean	SD	*t* (470)
Father Education			
Low	46.19	14.45	-3.36*
High	50.91	15.96	

Note: $*p \leq .00$

3.2.1.6. Differences of Demographic Variables on Psychopathology

3.2.1.6.1. Father's Smoking Status Differences on Psychopathology

To investigate the differences between 3 levels of father smoking status (consisting of; currently smoking, smoked and quitted, non-smoker) on psychopathology, one-way ANOVA was conducted with BSI total score as the dependent variable. Analysis revealed a significant difference of father smoking status on psychopathology; F (2,384) = 4.87, $p < .01$. According to the post-hoc analysis conducted by Tukey's HSD at .05 alpha level, psychopathology of college students having fathers in currently smoking group (M = 104.54) was higher than students whose fathers were in non-smokers group (M = 91.63). Psychopathology of people having fathers in smoked and quitted group (M = 103.56) was also found higher than people whose fathers were in non-smokers group (M = 91.63). People whose father were in currently smoking (M =104.54) and smoked and quitted (M = 103.56) groups did not differ from each other on psychopathology scores (see Table 3.16).

Table 3. 17: Analysis of Variance for Psychopathology Scores

Source	df	SS	MS	F
Father Smoking Status	2	13608.84	6804.420	4.87*
Error	384	536895.12	1398.16	

Note 1. *$p < .01$

To investigate the differences of father's smoking status (currently smoking, smoked and quitted, non-smoker) on the measures of psychopathology, MANOVA was conducted with 5 domains of psychopathology (anxiety, depression, negatif-self-concept, somatization, hostility) as dependent variables.

Father's smoking status was found to have a significant main effect on psychopathology [Multivariate F (10, 748) = 2.17, $p < .05$; Wilks' Lambda = .94; partial η^2 = .03]. Differences between 3 conditions of father's smoking status on

psychopathology domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .01 (i.e., .05/5). A significant result was found in difference between currently smoking (M = 2.25), smoked and quitted (M = 2.28) and non-smoker (M = 1.97) conditions of father's smoking status on depression [F (2,378) = 4.98, $p < .01$, partial η^2 =.03].

According to the post-hoc analysis conducted by Tukey's HSD at.05 alpha level depression level of people having fathers in currently smoking group (M = 2.25) was higher than people whose fathers were in non-smokers group (M = 1.97). Depression level of people having fathers in smoked and quitted group (M = 2.28) was also found higher than people whose father were in non-smokers group (M = 1.97). People whose fathers were in smoking (M = 2.25) and smoked and quitted (M = 2.28) groups did not differ from each other on depression scores.

Likewise, significant results were noted in differences between currently smoking (M = 1.99), smoked and quitted (M = 1.97) and non-smoker (M = 1.71) conditions of father's smoking status on negative self-concept [F (2,378) = 4.72, $p <$ .01, partial η^2 =.02].

According to the post-hoc analysis conducted by Tukey's HSD at.05 alpha level negative self-concept of people having fathers in currently smoking group (M = 1.99) was higher than people whose fathers were in non-smokers group (M = 1.71). Negative self-concept of people having fathers in smoked and quitted group (M = 1.97) was also found higher than people whose fathers were in non-smokers group (M = 1.71). People whose fathers were in currently smoking (M = 1.99) and smoked and quitted (M = 1.97) groups did not differ from each other on negative self-concept scores.

Similarly, significant results were noted in difference between currently smoking (M = 1.76), smoked and quitted (M = 1.65) and non-smoker (M = 1.49) conditions of father's smoking status on somatization [F (2, 378) = 6.34, $p < .01$, partial η^2 =.03].

According to the post-hoc analysis conducted by Tukey's HSD at.05 alpha level, somatization of people having fathers in currently smoking group (M = 1.76)

was higher than people whose fathers were in non-smokers group (*M* = 1.49). However, people whose fathers were in smoking (*M* = 1.76) and smoked and quitted (*M* = 1.65) groups as well as people whose fathers were in smoked and quitted (*M* = 1.65) and non-smokers groups (*M* = 1.49) did not differ from each other on somatization scores.

Significant results were also found in difference between currently smoking (*M* = 1.99), smoked and quitted (*M* = 2.00) and non-smoker (*M* = 1.73) conditions of father's smoking on hostility domain of psychopathology [F (2, 378) = 5.43, $p < .01$, partial η^2 =.03].

According to the post-hoc analysis conducted by Tukey's HSD at.05 alpha level, hostility of people having fathers in currently smoking group (*M* = 1.99) was higher than people whose fathers were in non-smokers group (*M* = 1.73). Hostility of people having fathers in smoked and quitted group (*M* = 2.00) was also found higher than people whose father were in non-smokers group (*M* = 1.73). People whose father were in smoking (*M* = 1.99) and smoked and quitted (*M* = 2.00) groups did not differ from each other on hostility scores (see Tables 3.17, 3.18, 3.19).

Table 3. 18: Father's Smoking Status Differences on Psychopathology Domains

	Currently Smoking	**Smoked and Quitted**	**Non-smoker**	**Multivariate *F* (10, 748)**	**Univariate *F* (2, 378)**
Psychopathology				2.17**	
Domains					
Anxiety	1.87	1.82	1.64		3.72
Depression	2.25	2.28	1.97		4.98*
Negative self-concept	1.99	1.97	1.71		4.72*
Somatization	1.76	1.65	1.49		6.34*
Hostility	1.99	2.00	1.73		5.43*

Note: *$p < .01$, **$p < .05$

Table 3. 19: Mean Scores for Psychopathology Domains

	Anxiety	Depression	Negative Self-Concept	Somatization	Hostility
Currently Smoking	1.88	2.25	1.90	1.76	1.99
	a	a	a	a	a
Smoked and Quitted	1.64	2.28	1.97	1.65	2.00
	a	a	a	ab	a
Non-smoker	1.82	1.97	1.71	1.49	1.73
	a	b	b	b	b

Note: The mean scores that do not share the same subscript on the same column are significantly different from each other, on .05 alpha level of Tukey's HSD.

Table 3. 20: Mean Scores for Psychopathology

	Currently Smoking	Smoked and Quitted	Nonsmoker
Psychopathology	104.54	103.56	91.63
	a	a	b

Note 1. Currently Smoking Group: People whose fathers are currently smokers, Smoked and Quitted Group: People whose fathers smoked before and do not smoke anymore, Non-smoker Group: People whose fathers are non-smoker.

Note 2. The mean scores that do not share the same subscript on the same row are significantly different from each other, on .05 alpha level of Tukey's HSD.

3.2.1.6.2. Mother's Education Level Differences on Psychopathology

To investigate the differences of mother's education levels on the measures of psychopathology, MANOVA was conducted with 5 domains of psychopathology (anxiety, depression, negatif-self-concept, somatization, hostility) as dependent variables.

Mother's education level was found to have a significant main effect on psychopathology [Multivariate F (5,364) = 2.43, $p < .05$; Wilks' Lambda = .97; partial $\eta^2 = .03$]. Differences between low and high levels of mother's education on psychopathology domains were calculated via univariate analyses with Bonferroni adjustment. However following the Bonferroni correction none of the univariate analysis revealed significant mother education differences (see Table 3.20).

Table 3. 21: Mother's Education Differences on Psychopathology Domains

	Low	**High**	**Multivariate *F* (5, 364)**	**Univariate *F* (1, 368)**
Psychopathology			2.43*	
Domains				
Anxiety	1.70	1.87		5.18
Depression	2.10	2.23		1.98
Negative self-concept	1.82	1.97		2.83
Somatization	1.61	1.66		.56
Hostility	1.89	1.93		.25

Note: *$p < .05$

3.2.1.7. Differences of Demographic Variables on Negative Life Events

3.2.1.7.1. Income Differences on Negative Life Events

An independent sample t-test analysis was conducted to compare negative life events in 2 different conditions of income: low and high. There was a significant difference in the scores for low (*M* = 336.70, SD = 178.64) and high (*M* = 289.01, SD = 169.58) conditions of income; *t* (393) = -2.72, *p* <.01 on negative life events. This result suggested that people who had a low income exhibited significantly higher levels of negative life events than those who had a high income (See Table 3.21).

Table 3. 22: Income Differences on Negative Life Events

	Mean	**SD**	***t* (393)**
Income			
Low	336.70	178.64	-2.72*
High	289.01	169.58	

Note: *$p < .01$

3.2.1.7.2. Father's Smoking Status Differences on Negative Life Events

To investigate the differences between 3 levels of father smoking status (consisting of; currently smoking, smoked and quitted, non-smoker) on negative life events, one-way ANOVA was conducted with the total score of negative life events as dependent variable. Analysis revealed a significant difference of father smoking status on negative life events; *F* (2,393) = 5.77, *p* <.005.

According to the post-hoc analysis conducted by Tukey's HSD at.05 alpha level, negative life events of people having fathers in currently smoking group (*M* = 325.22) were higher than people whose fathers were in non-smokers group (*M* = 274.59). Negative life events of people having fathers in smoked and quitted group (*M* = 345.01) were also found higher than people whose father were in non-smokers group (*M* = 274.59). People whose father were in smoking (*M* = 325.22) and smoked

and quitted (M = 345.01) groups did not differ from each other on negative life events scores (see Tables 3.22, 3.23).

Table 3. 23: Analysis of Variance for Negative Life Events Scores

Source	df	SS	MS	F
Father Smoking Status	2	348974.56	174487.28	5.77*
Error	393	11892284.94	30260.27	

Note 1. *$p < .005$

Table 3. 24: Mean Scores for Negative Life Events

	Currently Smoking	Smoked and quitted	Non-smoker
Negative life events	325.22	345.01	274.59
	a	a	b

Note 1. Currently Smoking Group: People whose fathers are currently smokers, Smoked and Quitted Group: People whose fathers smoked before and do not smoke anymore, Non-smoker Group: People whose fathers are non-smokers.

Note 2. The mean scores that do not share the same subscript on the same row are significantly different from each other, on .05 alpha level of Tukey's HSD.

3.2.2. Differences of the Use of Cigarette, Alcohol and Marijuana on the Study's Measures

3.2.2.1. Differences of the Use of Cigarette, Alcohol and Marijuana on Childhood ADHD

3.2.2.1.1. Frequency of Alcohol Use Differences on Childhood ADHD

To investigate the differences of the frequency of alcohol use levels (low, high) on the measures of childhood ADHD, MANOVA was conducted with 5 domains of childhood ADHD (Irritability, depression, problems related to school, behavioral problems/impulsivity, inattention) as dependent variables.

Frequency of alcohol use was found to have a significant main effect on childhood ADHD [Multivariate F (5,385) = 3.74, $p < .01$; Wilks' Lambda = .95; partial $\eta^2 = .05$]. Differences between low and high levels of frequency of alcohol use on childhood ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .01 (i.e., .05/5). Results showed that the only significant difference between low (M = 1.73) and high (M = 1.96) levels of the frequency of alcohol use was on the behavioral problems and impulsivity domain of childhood ADHD [F (1,389) = 10.10, $p < .01$, partial $\eta^2 = .02$]. These results suggested that people who had a high frequency of alcohol use exhibited significantly higher behavioural problems and impulsivity than people who had a low frequency of alcohol consumption (see Table 3.24).

Table 3. 25: Alcohol Use Frequency Differences on Childhood ADHD Domains

	Low	High	Multivariate *F* (5, 385)	Univariate *F* (1, 389)
Childhood ADHD			3.74*	
Domains				
Irritability	2.07	2.14		.51
Depression	2.16	2.22		.49
Problems related to school	1.61	1.53		1.21
Behavioral problems/impulsivity	1.73	1.96		10.10*
Inattention	2.31	2.33		.07

Note: * $p < .01$

3.2.2.1.2. Differences of Smoking Levels History on Childhood ADHD

An independent sample t-test analysis was conducted to compare childhood ADHD in 2 different conditions of smoking history: smoked that stands for cases who tried cigarette and not smoked that stands for cases who didn't try cigarette. There was a significant difference in the scores for those who did smoke (M = 53.69, SD = 15.38) and who did not (M = 47.47, SD = 14.74); t (449) = 4.24, p <.001 on the total score of childhood ADHD. This result suggested that people who did smoke showed higher degrees of ADHD in their childhood than those who never smoked (see Table 3.25).

Table 3. 26: Smoking History Differences on Childhood ADHD

	Mean	SD	*t* (449)
Smoking			
Smoked	53.69	15.38	4.24*
Not smoked	47.47	14.74	

Note: *p <.001

To investigate the differences of smoking history (smoked stands for cases who tried cigarette and not smoked stands for cases who did not try cigarette) on the measures of childhood ADHD, MANOVA was conducted with 5 domains of childhood ADHD (Irritability, depression, problems related to school, behavioral problems/impulsivity, inattention) as dependent variables.

Smoking history was found to have a significant main effect on childhood ADHD [Multivariate F (5,442) = 5.97, p < .001; Wilks' Lambda = .94; partial η^2 = .06]. Differences between cases who tried and not tried cigarette on childhood ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .01 (i.e., .05/5). Significant results were found in difference between tried (M = 2.29) and not tried (M = 2.07) conditions of smoking history on depression domain of childhood ADHD [F (1,446) = 8.05, p < .01, partial η^2 = .02]. These results suggested that people who tried cigarette showed significantly higher levels of depression than those who did not try cigarette. The difference between tried (M = 1.65) and not tried (M = 1.44) conditions of smoking history was also significant on problems related to school domain of childhood ADHD [F (1,446) = 9.59, p < .01, partial η^2 = .02]. These results indicated that people who tried cigarette showed significantly higher levels of problems related to school than those who did not try cigarette. Another significant result was noted for the difference between tried (M = 1.91) and not tried (M = 1.64) conditions of smoking history on behavioral problems/impulsivity domain of childhood ADHD [F (1,446) = 16.90, p < .01, partial η^2 = .04]. These results showed that people who tried cigarette showed significantly higher levels of behavioral problems and impulsivity than those who did

not try cigarette. Lastly, a significant difference was found in the difference between tried (M = 2.44) and not tried (M = 2.10) conditions of smoking history on inattention domain of childhood ADHD [F (1,446) = 19.54, $p < .01$, partial $\eta^2 = .04$]. These results indicated that people who tried cigarette showed significantly higher attention problems than those who did not try cigarette (see Table 3.26).

Table 3. 27: Smoking History Differences on Childhood ADHD Domains

	Smoked	Not Smoked	Multivariate *F* (5, 442)	Univariate *F* (1, 446)
Childhood ADHD			5.97**	
Domains				
Irritability	2.19	2.02		4.21
Depression	2.29	2.07		8.05*
Problems related to school	1.65	1.44		9.59*
Behavioral problems/impulsivity	1.91	1.64		16.90*
Inattention	2.44	2.09		19.54*

Note: **$p < .001$, *$p < .01$

3.2.2.1.3. Differences of Marijuana Use Levels History on Childhood ADHD

To find out the differences of marijuana use history (tried stands for cases who tried marijuana and not tried stands for cases who did not try marijuana) on the measures of childhood ADHD, MANOVA was conducted with 5 domains of childhood ADHD (Irritability, depression, problems related to school, behavioral problems/impulsivity, inattention) as dependent variables.

Marijuana use history was found to have a significant main effect on childhood ADHD [Multivariate F (5,442) = 5.37, $p < .001$; Wilks' Lambda = .94;

partial η^2 = .06]. Differences between cases who tried and not tried marijuana on childhood ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .01 (i.e., .05/5). Significant results were found in difference between tried (M = 2.00) and not tried (M = 1.73) conditions of marijuana use history on behavioral problems/impulsivity domain of childhood ADHD [F (1,446) = 14.76, p < .01, partial η^2 = .03]. These results suggested that people who tried marijuana exhibited significantly higher levels of behavioral problems and impulsivity than those who did not try marijuana (see Table 3.27).

Table 3. 28: Marijuana Use History Differences on Childhood ADHD Domains

	Tried	**Not Tried**	**Multivariate *F* (5, 442)**	**Univariate *F* (1, 446)**
Childhood ADHD			5.37**	
Domains				
Irritability	2.14	2.12		.04
Depression	2.31	2.16		3.23
Problems related to school	1.58	1.56		.04
Behavioral problems/impulsivity	2.00	1.73		14.76*
Inattention	2.40	2.27		2.64

Note: **p < .001, *p < .01

3.2.2.1.4. Differences of Alcohol Use Levels History on Childhood ADHD

To find out the differences of alcohol use history (tried stands for cases who tried alcohol and not tried stands for cases who did not try alcohol) on the measures

of childhood ADHD, MANOVA was conducted with 5 domains of childhood ADHD (Irritability, depression, problems related to school, behavioral problems/impulsivity, inattention) as dependent variables.

Alcohol use history was found to have a significant main effect on childhood ADHD [Multivariate F (5,442) = 2.53, $p < .05$; Wilks' Lambda = .97; partial η^2 = .03]. Differences between cases who tried and not tried alcohol on childhood ADHD domains were calculated via univariate analyses with Bonferroni adjustment. However following the Bonferroni correction none of the univariate analysis revealed significant alcohol use history differences (see Table 3.28).

Table 3. 29: Alcohol Use History Differences on Childhood ADHD Domains

	Tried	**Not Tried**	**Multivariate *F* (5, 442)**	**Univariate *F* (1, 446)**
Childhood ADHD			2.53*	
Domains				
Irritability	2.10	2.26		2.09
Depression	2.18	2.34		2.04
Problems related to school	1.57	1.52		.28
Behavioral problems/impulsivity	1.82	1.74		.84
Inattention	2.32	2.24		.43

Note: *$p < .05$

3.2.2.2. Differences of the Use of Cigarette, Alcohol and Marijuana on Adult ADHD

3.2.2.2.1. Frequency of Alcohol Use Differences on Adult ADHD

An independent sample t-test analysis was conducted to compare adult ADHD in 2 different conditions of alcohol use frequency: low and high. There was a significant difference in the scores for low (M = 87.65, SD = 23.44) and high (M = 93.82, SD = 23.76) conditions of alcohol use frequency; t (379) = 2.52, p <.05 on the total score of adult ADHD. This result suggested that people who had a high frequency of alcohol use exhibited significantly higher degrees of ADHD in their adulthood than those who had a low frequency of alcohol use (see Table 3.29).

Table 3. 30: Alcohol Use Frequency Differences on Adult ADHD

	Mean	**SD**	***t* (379)**
Income			
Low	87.65	23.44	2.52*
High	93.82	23.76	

Note: *p < .05

To investigate the differences of frequency of alcohol use (low, high) on the measures of adult ADHD, MANOVA was conducted with 3 domains of adult ADHD (inattention, hyperactivity/impulsivity, characteristics related to ADD/ADHD) as dependent variables.

The frequency of alcohol use was revealed to have a significant main effect on adult ADHD [Multivariate F (3,375) = 3.92, p < .05; Wilks' Lambda = .97; partial η^2 = .03]. Differences between low and high levels of the frequency of alcohol use on adult ADHD domains were calculated via univariate analyses with Bonferroni adjustment. Results showed that the only significant difference between low (M = 2.07) and high (M = 2.14) levels of the frequency of alcohol use was on the characteristics related to ADD/ADHD domain [F (1,377) = 8.15, p < .016, partial η^2 = .02]. These results suggested that people who had a high frequency of alcohol use exhibited significantly higher levels of characteristics related ADHD than those who had a low frequency of alcohol use (see Table 3.30).

Table 3. 31: Alcohol Use Frequency Differences on Adult ADHD Domains

	Low	High	Multivariate *F* (3, 375)	Univariate *F* (1, 377)
Adult ADHD			3.92**	
Domains				
Inattention	1.86	1.90		.41
Hyperactivity/ Impulsivity	1.70	1.81		3.01
Characteristics related to ADD/ADHD	1.86	2.01		8.15*

Note: *$p < .016$, **$p < .05$

3.2.2.2.2. Differences of Smoking Levels History on Adult ADHD

An independent sample t-test analysis was conducted to compare adult ADHD in 2 different conditions of smoking history: smoked that stands for cases who tried cigarette and not smoked that stands for cases who didn't try cigarette. There was a significant difference in the scores for those who did smoke ($M = 93.62$, SD = 23.30) and who did not (M = 84.02, SD = 22.19); t (432) = 4.26, $p <.001$. This result suggested that people who did smoke showed higher degrees of ADHD in their adulthood than those who never smoked (See Table 3.31).

Table 3. 32: Smoking History Differences on Adult ADHD

	Mean	SD	*t* (432)
Smoking			
Smoked	93.62	23.30	4.26*
Not smoked	84.02	22.19	

Note: *$p < .001$

To investigate the differences of smoking history (smoked stands for cases who tried cigarette and not smoked stands for cases who did not try cigarette) on the measures of adult ADHD, MANOVA was conducted with 3 domains of childhood ADHD (inattention, hyperactivity, characteristics related to ADD/ADHD) as dependent variables.

Smoking history was found to have a significant main effect on adult ADHD [Multivariate F (3,427) = 8.78, $p < .001$; Wilks' Lambda = .94; partial $\eta^2 = .06$]. Differences between cases who tried cigarette and not tried on adult ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .016 (i.e., .05/3). Significant results were found in difference between tried (M = 1.82) and not tried (M = 1.67) conditions of smoking history on hyperactivity domain of adult ADHD [F (1,429) = 6.14, $p < .016$, partial $\eta^2 = .01$]. This result suggested that people who tried cigarette showed significantly higher levels of hyperactivity than those who did not try cigarette. Another significant result was noted for the difference between tried (M = 2.01) and not tried (M = 1.76) conditions of smoking history on characteristics related to ADHD domain of adult ADHD [F (1,429) = 23.75, $p < .016$, partial $\eta^2 = .05$]. These results suggested that people who tried cigarette showed significantly higher levels of characteristics related to ADHD than those who did not try cigarette (see Table 3.32).

Table 3. 33: Smoking History Differences on Adult ADHD Domains

	Smoked	Not smoked	Multivariate *F* (3, 427)	Univariate *F* (1, 429)
Adult ADHD			8.78**	
Domains				
Inattention	1.92	1.78		5.10
Hyperactivity/ Impulsivity	1.82	1.67		6.14*
Characteristics related to ADD/ADHD	2.01	1.76		23.75*

Note: *$p < .016$, **$p < .001$

3.2.2.2.3. Smoking Frequency Differences on Adult ADHD

An independent sample t-test analysis was conducted to compare adult ADHD in 2 different conditions of smoking frequency: low and high. There was a significant difference in the scores for those who had a high (M = 95.74, SD = 24.51) and low (M = 89.51, SD = 21.59) frequency of smoking; t (280) = 2.27, $p < .05$. More clearly, it was found that people who had a high frequency of cigarette use exhibited greater levels of ADHD than those who had a low frequency (See Table 3.33).

Table 3. 34: Smoking Frequency Differences on Adult ADHD

	Mean	SD	*t* (280)
Cigarette			
Use			
High	95.74	24.51	2.27*
Low	89.51	21.59	

Note: *$p < .05$

To investigate the differences of smoking frequency (low, high) on the measures of adult ADHD, MANOVA was conducted with 3 domains of childhood ADHD (inattention, hyperactivity/impulsivity, characteristics related to ADD/ADHD) as dependent variables.

Smoking frequency was found to have a significant main effect on adult ADHD [Multivariate F (3,275) = 4.58, $p < .01$; Wilks' Lambda = .95; partial η^2 = .05]. Differences between high and low conditions of smoking frequency on adult ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .016 (i.e., .05/3). Significant results were found in difference between low (M = 1.89) and high (M = 2.07) conditions of smoking frequency on characteristics related to ADHD domain of adult ADHD [F (1, 277) = 8.66, $p < .016$, partial η^2 = .03]. These results suggested that people who had a high frequency of cigarette use showed significantly higher levels of characteristics related to ADHD than those who had a low frequency (see Table 3.34).

Table 3. 35: Smoking History Differences on Adult ADHD Domains

	Low	High	Multivariate *F* (3, 275)	Univariate *F* (1, 429)
Adult ADHD			4.58**	
Domains				
Inattention	1.89	1.91		.14
Hyperactivity/ Impulsivity	1.75	1.85		1.71
Characteristics related to ADD/ADHD	1.89	2.07		8.66*

Note: *$p < .016$, **$p < .01$

3.2.2.2.4. Differences of Marijuana Use Levels History on Adult ADHD

An independent sample t-test analysis was conducted to compare adult ADHD in 2 different conditions of marijuana use: tried stands for cases who tried marijuana and not tried stands for cases who have not tried marijuana. There was a significant difference in the scores for those who did try marijuana (M = 96.67, SD = 23.75) and who did not (M = 87.16, SD = 22.63); t (432) = 3.90, p <.001 on the total score of adult ADHD. More clearly, it was found that people who tried marijuana exhibited greater levels of ADHD than those who have not tried (see Table 3.35).

Table 3. 36: Marijuana Use History Differences on Adult ADHD

	Mean	SD	*t* (432)
Marijuana			
Use			
Tried	96.67	23.75	3.90*
Not tried	87.16	22.63	

Note: *$p < .001$

To investigate the differences of marijuana use history (used, not used) on the measures of adult ADHD, MANOVA was conducted with 3 domains of childhood ADHD (inattention, hyperactivity/impulsivity, characteristics related to ADHD) as dependent variables.

Marijuana use history was found to have a significant main effect on adult ADHD [Multivariate F (3,427) = 8.37, $p < .001$; Wilks' Lambda = .94; partial η^2 = .06]. Differences between tried and not tried conditions of marijuana use history on adult ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .016 (i.e., .05/3). Significant result was found in difference between tried (M = 2.08) and not tried (M = 1.84) conditions of marijuana use history on characteristics related to ADHD domain of adult ADHD [F (1, 429) = 20.19, $p <$ .016, partial η^2 = .04]. These results suggested that people who tried marijuana showed significantly higher levels of characteristics related to ADHD than those who have not tried (see Table 3.36).

Table 3. 37: Marijuana Use History Differences on Adult ADHD Domains

	Tried	**Not tried**	**Multivariate *F* (3, 427)**	**Univariate *F* (1, 429)**
Adult ADHD Domains			8.37**	
Inattention	1.96	1.82		4.62
Hyperactivity/ Impulsivity	1.82	1.73		1.95
Characteristics related to ADD/ADHD	2.08	1.84		20.19*

Note: *$p < .016$, **$p < .01$

3.2.2.2.5. Marijuana Use Frequency Differences on Adult ADHD

An independent sample t-test analysis was conducted to compare adult ADHD in 2 different conditions of marijuana use frequency: low and high. There was a significant difference in the scores for those who had a high (M = 97.87, SD = 24.89) and low (M = 89.33, SD = 24.24) frequency of marijuana use; t (145) = 1.98, $p \leq .05$ on the total score of adult ADHD. More clearly, it was found that people who had a high frequency of marijuana use exhibited greater levels of ADHD than those who had a low frequency (see Table 3.37).

Table 3. 38: Marijuana Use Frequency Differences on Adult ADHD

	Mean	**SD**	***t* (432)**
Marijuana Use			
High	97.87	24.09	1.98*
Low	89.33	24.24	

Note: *$p \leq .05$

To find out the differences of marijuana use frequency (low, high) on the measures of adult ADHD, MANOVA was conducted with 3 domains of childhood ADHD (inattention, hyperactivity/impulsivity, characteristics related to ADHD) as dependent variables.

Frequency of marijuana use was found to have a significant main effect on adult ADHD [Multivariate F (3,143) = 4.56, $p < .01$; Wilks' Lambda = .91; partial η^2 = .09]. Differences between low and high levels of marijuana use on adult ADHD domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .016 (i.e., .05/3). A significant result was found in difference between low (M = 1.86) and high (M = 2.12) levels of marijuana use on characteristics related to ADHD domain of adult ADHD [F (1, 145) = 7.06, $p < .016$, partial η^2 = .05]. These results suggested that people who had high levels of

marijuana use frequency showed significantly higher levels of characteristics related to ADHD than those who had low levels of marijuana use frequency (see Table 3.38).

Table 3. 39: Marijuana Use Frequency Differences on Adult ADHD Domains

	Tried	Not tried	Multivariate *F* (3, 143)	Univariate *F* (1, 145)
Adult ADHD Domains			4.56**	
Inattention	1.94	1.88		.30
Hyperactivity/ Impulsivity	1.87	1.83		.14
Characteristics related to ADD/ADHD	2.12	1.86		7.06*

Note: *$p < .016$, **$p < .01$

3.2.2.3. Differences of the Use of Cigarette, Alcohol and Marijuana on CD

3.2.2.3.1. Differences of Smoking Levels History on CD

An independent sample t-test analysis was conducted to compare CD in 2 different conditions of smoking history: smoked that stands for cases who tried cigarette and not smoked that stands for cases who didn't try cigarette. There was a significant difference in the scores for those who did smoke (M = 20.35, SD = 5.09) and who did not (M = 18.61, SD = 4.16); t (457) = 3.78, $p < .001$ on CD. This result suggested that whether people ever used cigarette or not had a significant effect on CD. Specifically, people who did smoke showed higher degrees of CD than those who never smoked (See Table 3.39).

Table 3. 40: Smoking History Differences on CD

	Mean	SD	*t* (457)
Smoking			
Smoked	20.35	5.09	3.78*
Not smoked	18.61	4.16	

Note: *$p < .001$

3.2.2.3.2. Smoking Frequency Differences on CD

An independent sample t-test analysis was conducted to compare CD in 2 different conditions of cigarette use: high and low. There was a significant difference in the scores for those who had a high (M = 20.87, SD = 5.40) and low (M = 19.60, SD = 4.73) frequency of cigarette use; t (300) = 2.18, p <.05 on CD. More clearly, it was found that people who had a high frequency of cigarette use exhibited significantly higher levels of CD than those who had a low frequency (see Table 3.40).

Table 3. 41: Smoking Frequency Differences on CD

	Mean	SD	*t* (300)
Cigarette Use			
High	20.87	5.40	2.18*
Low	19.60	4.73	

Note: *p <.05

3.2.2.3.3. Differences of Marijuana Use Levels History on CD

An independent sample t-test analysis was conducted to compare CD in 2 different conditions of marijuana use: those who did try and those who did not. There was a significant difference in the scores for those who did try (M = 21.23, SD =

5.24) and who did not (*M* = 19.06, SD = 4.51) try marijuana; *t* (457) = 4.45, *p* <.001 on CD. More clearly, people who ever tried marijuana exhibited greater levels of CD than those who did not try (see Table 3.41).

Table 3. 42: Marijuana Use History Differences on CD

	Mean	**SD**	***t* (457)**
Marijuana Use			
Tried	21.23	5.24	4.45*
Not tried	19.06	4.51	

Note: **p* <.001

3.2.2.4. Differences of the Use of Cigarette, Alcohol and Marijuana on Nicotine Dependency

3.2.2.4.1. Frequency of Alcohol Use Differences on Nicotine Dependency

An independent sample t-test analysis was conducted to compare ND in 2 different conditions of alcohol use frequency: low and high. A significant result was found for differences in the scores for low (*M* = 7.86, SD= 2.27) and high (*M* = 8.60, SD = 2.67) conditions of alcohol use frequency; *t* (230) = 2.26, *p* < .05 on ND. Results stated that alcohol use frequency had an effect on ND, where people who had a high frequency of alcohol use were found to have ND at significantly greater levels than those who had a low frequency of alcohol consumption (see Table 3.42).

Table 3. 43: Alcohol Use Frequency Differences on ND

	Mean	SD	*t* (230)
Alcohol Use			
Low	7.86	2.27	2.26*
High	8.60	2.67	

Note: *$p < .05$

3.2.2.4.2. Smoking Frequency Differences on Nicotine Dependency

An independent sample t-test analysis was conducted to compare ND in 2 different conditions of smoking frequency: low and high. A significant result was found for differences in the scores for low ($M = 6.26$, SD = .97) and high ($M = 9.16$, SD = 2.44) conditions of smoking frequency; t (243) = 10.45, $p < .001$ on ND. This result revealed that smoking frequency had a significant effect on ND, where people who had a high frequency of smoking developed ND at greater levels than those who had a low frequency (see Table 3.43).

Table 3. 44: Smoking Frequency Differences on ND

	Mean	SD	*t* (243)
Cigarette Use			
Low	6.26	.97	10.45
High	9.16	2.44	

Note: $p^* < .05$

3.2.2.4.3. Differences of Marijuana Use Levels History on Nicotine Dependency

An independent sample t-test analysis was conducted to compare ND in 2 different conditions of marijuana use: tried and not tried. A significant result was found for differences in the scores for those who tried ($M = 8.63$, SD = 2.64) and not tried ($M = 7.78$, SD = 2.27) conditions of marijuana use history; t (243) = 2.70, $p <$ .01 on ND. This result revealed that ever trying marijuana had an effect on ND and

those who did try marijuana showed significantly greater dependency on nicotine than those who did not try marijuana (see Table 3.44).

Table 3. 45: Marijuana Use History Differences on ND

	Mean	SD	*t* (243)
Marijuana			
Tried	8.63	2.64	2.70*
Not tried	7.78	2.27	

Note: $p^* < .01$

3.2.2.5. Differences of the Use of Cigarette, Alcohol and Marijuana on Internet Addiction

3.2.2.5.1. Differences of Marijuana Use Levels History on Internet Addiction

An independent sample t-test analysis was conducted to compare IA in 2 different conditions of marijuana use: tried and not tried. A significant result was found for differences in the scores for those who tried (M = 51.62, SD = 16.17) and not tried (M = 47.63, SD = 15.20) groups of marijuana use history; t (479) = 2.56, $p < .05$ on IA. This result revealed that the history of marijuana use had an effect on IA and those who did try marijuana showed greater degrees of IA than those who did not try marijuana (see Table 3.45).

Table 3. 46: Marijuana Use History Differences on IA

	Mean	SD	*t* (479)
Marijuana			
Tried	51.62	16.17	2.56*
Not tried	47.63	15.20	

Note: $*p < .05$

3.2.2.6. Differences of the Use of Cigarette, Alcohol and Marijuana on Negative Life Events

3.2.2.6.1. Differences of Smoking Levels History on Negative Life Events

An independent sample t-test analysis was conducted to compare negative life events in 2 different conditions of smoking history: smoked that stands for cases who tried cigarette and not smoked that stands for cases who didn't try cigarette. There was a significant difference in the scores for those who did smoke (M = 329.68, SD = 177.45) and who did not (M = 289.62, SD = 171.58); t (394) = 2.22, $p < .05$ on negative life events. This result suggested that whether people ever used cigarette or not has a significant effect on negative life events. Specifically, it was found that people who did smoke showed higher degrees of negative life events than those who never smoked (See Table 3.46).

Table 3. 47: Smoking History Differences on Negative Life Events

	Mean	**SD**	***t* (394)**
Smoking			
Smoked	329.68	177.45	2.22*
Not smoked	289.62	171.58	

Note: *$p < .05$

3.2.2.6.2. Smoking Frequency Differences on Negative Life Events

An independent sample t-test analysis was conducted to compare negative life events in 2 different conditions of smoking frequency: low and high. A significant result was found for differences in the scores for low (M = 281.97, SD = 150.25) and high (M = 367.37, SD = 188.96) conditions of smoking frequency; t (254) = 4.01, $p <$ .001 on negative life events. This result revealed that smoking frequency had a significant effect on negative life events, where people who had a high frequency of smoking had significantly greater levels of negative life events than those who had a low frequency (see Table 3.47).

Table 3. 48: Smoking Frequency Differences on Negative Life Events

	Mean	SD	*t* (254)
Cigarette Use			
Low	281.97	150.25	4.01*
High	367.37	188.96	

Note: *$p < .001$

3.2.2.6.3. Differences of Marijuana Use Levels History on Negative Life Events

An independent sample t-test analysis was conducted to compare negative life events in 2 different conditions of marijuana use: tried and not tried. A significant result was found for differences in the scores for those who tried (M = 347.39, SD = 180.36) and not tried (M = 300.19, SD = 172.70) conditions of marijuana use history; t (394) = 2.44, $p < .05$ on negative life events. This result revealed that marijuana use history had an effect on negative life events experienced by students where those who did try marijuana had significantly higher negative life events than those who did not try marijuana (see Table 3.48).

Table 3. 49: Marijuana Use History Differences on Negative Life Events

	Mean	SD	*t* (394)
Marijuana			
Tried	347.39	180.36	2.44*
Not tried	300.19	172.70	

Note: $p^* < .05$

3.2.2.7. Differences of the Use of Cigarette, Alcohol and Marijuana on Psychopathology

3.2.2.7.1. Differences of Smoking Levels History on Psychopathology

An independent sample t-test analysis was conducted to compare psychopathology in 2 different conditions of smoking history: smoked that stands for cases who tried cigarette and not smoked that stands for cases who didn't try cigarette. There was a significant difference in the scores for those who did smoke (M = 103.73, SD = 38.18) and who did not (M = 93.70, SD = 36.41); t (385) = 2.57, $p \leq .01$ on the total score of psychopathology. This result suggested that whether people ever used cigarette or not had a significant effect on psychopathology. Specifically, it was found that people who did smoke showed higher degrees of psychopathology than those who never smoked (See Table 3.49).

Table 3. 50: Smoking History Differences on Psychopathology

	Mean	**SD**	***t* (385)**
Smoking			
Smoked	103.73	38.18	2.57*
Not smoked	93.70	36.41	

Note: *$p \leq .01$

3.2.2.7.2. Smoking Frequency Differences on Psychopathology

An independent sample t-test analysis was conducted to compare psychopathology in 2 different conditions of smoking frequency: low and high. There was a significant difference in the scores for those who had a high (M = 109.54, SD = 39.72) and low (M = 95.43, SD = 34.72) frequency of smoking; t (246) = 2.98, $p < .005$ on the total score of psychopathology. More clearly, it was found that people who had a high frequency of smoking exhibited greater levels of psychopathology than those who had a low smoking frequency (See Table 3.50).

Table 3. 51: Smoking Frequency Differences on Psychopathology

	Mean	SD	*t* (246)
Cigarette			
Use			
High	109.54	39.72	2.98*
Low	95.43	34.72	

Note: *$p < .005$

To investigate the differences of smoking frequency (low, high) on the measures of psychopathology, MANOVA was conducted with 5 domains of psychopathology (anxiety, depression, negatif-self-concept, somatization, hostility) as dependent variables.

Smoking frequency was found to have a significant main effect on adult ADHD [Multivariate F (5, 236) = 2.97, $p < .05$; Wilks' Lambda = .94; partial η^2 = .06]. Differences between high and low conditions of smoking frequency on psychopathology domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .01 (i.e., .05/5). Significant results were found in difference between low (M = 2.05) and high (M = 2.39) conditions of smoking frequency on depression domain of psychopathology [F (1, 240) = 9.24, $p < .01$, partial η^2 = .04]. Likewise, significant results were noted in difference between low (M = 1.56) and high (M = 1.81) conditions of smoking frequency on somatisation domain of psychopathology [F (1, 240) = 9.32, $p < .01$, partial η^2 = .04]. Similary, the difference between low (M = 1.82) and high (M = 2.09) conditions of smoking frequency on hostility domain of psychopathology was significant [F (1, 240) = 7.16, $p < .01$, partial η^2 = .03]. These results suggested that people who had a high frequency of cigarette use had significantly higher levels of depression, somatisation and hostility than those who had a low smoking frequency (see Table 3.51).

Table 3. 52: Smoking Frequency Differences on Psychopathology Domains

	Low	High	Multivariate *F* (5, 236)	Univariate *F* (1, 240)
Psychopathology			2.97**	
Domains				
Anxiety	1.73	1.92		4.47
Depression	2.05	2.39		9.24*
Negative self-concept	1.83	2.06		4.79
Somatization	1.56	1.81		9.32*
Hostility	1.83	2.09		7.16*

Note: *$p < .05$, **$p < .01$

3.2.2.7.3. Differences of Marijuana Use Levels History on Psychopathology

An independent sample t-test analysis was conducted to compare psychopathology in 2 different conditions of marijuana use frequency: low and high. There was a significant difference in the scores for those who had a high (M = 104.60, SD = 37.62 and low (M = 90.86, SD = 28.36) frequency of marijuana use; t (130) = 2.08, $p < .05$ on the total score of psychopathology. More clearly, it was found that people who had a high frequency of marijuana use had significantly higher levels of psychopathology than those who had a low frequency of marijuana use (See Table 3.52).

Table 3. 53: Marijuana Use Frequency Differences on Psychopathology

	Mean	SD	*t* (130)
Marijuana Use			
High	104.60	37.62	2.08*
Low	90.86	28.36	

Note: *$p < .05$

To find out the differences of marijuana use frequency (low, high) on the measures of psychopathology, MANOVA was conducted with 5 domains of psychopathology (anxiety, depression, negatif-self-concept, somatization, hostility) as dependent variables.

Marijuana use frequency was found to have a significant main effect on psychopathology [Multivariate F (5,123) = 2.82, $p < .05$; Wilks' Lambda = .90; partial $\eta^2 = .10$]. Differences between low and high levels of marijuana use frequency on psychopathology domains were calculated via univariate analyses with Bonferroni adjustment.

Following the Bonferroni correction significant results are noted for alpha levels lower than .01 (i.e., .05/5). Significant result was found in difference between low (M = 1.85) and high (M = 2.31) levels of marijuana use on depression domain of psychopathology [F (1, 127) = 8.43, $p < .01$, partial $\eta^2 = .06$]. These results suggested that people who had high levels of marijuana use frequency showed significantly higher levels of depression than those who had low levels of marijuana use frequency (see Table 3.53).

Table 3. 54: Marijuana Use Frequency Differences on Psychopathology Domains

	Low	High	Multivariate *F* (5, 123)	Univariate *F* (1, 127)
Psychopathology			2.82**	
Domains				
Anxiety	1.69	1.89		2.33
Depression	1.85	2.31		8.43*
Negative self-concept	1.68	1.96		4.07
Somatization	1.55	1.72		2.56
Hostility	1.79	2.03		2.79

Note: **$p < .05$, *$p < .01$

3.3. Correlation Coefficients Between the Measures of the Study

Intercorrelations between all measures of the present study were calculated in order to find out the relationships between measures reflecting demographic information, the use of subtances namely cigarette, alcohol, marijuana, and other measures namely childhood ADD/ADHD, adult ADD/ADHD, general psychopathological symptoms, internet dependency, nicotine dependency, conduct disorder and current negative life events. To be more specific, measures reflecting demographic information are age, sex, class, education levels of the mother and the father, place where the person grew up, income and father's and mother's smoking status. Measures reflecting the consumption of cigarette, alcohol and marijuana are about whether the person has ever used these substances and the frequency of their consumption. The results of the correlation analysis are reported only if they are equal to or stronger than .30.

Results stated that the frequency of cigarette use was significantly correlated with the nicotine dependency ($r = -.53$, $p < .01$), meaning that higher scores in the frequency of cigarette use were related to higher degrees of nicotine dependency.

Negative life events were found to be correlated with internet dependency (r =.39, p < .01), meaning that higher levels of negative life events were correlated with higher degrees of internet dependency.

Furthermore, negative life events were found to be correlated with the adult ADHD (r =.63, p < .01) and its 2 sub-domains namely inattention (r =.53, p < .01) and characteristics related to ADD/ADHD (r =.66, p < .01). This stands for the fact that higher levels of negative life events were related to higher levels of adult ADHD and its 2 sub-domains that are inattention and characteristics related to ADD/ADHD.

Negative life events were also correlated with childhood ADHD (r =.49, p < .01) and its sub-domains such as irritability (r =.41, p < .01), depression (r =.49, p < .01), inattention (r =.34, p < .01) and behavioral problems/impulsivity (r =.36, p < .01). More clearly higher levels of current negative life events were related to higher degrees of childhood ADHD and its 4 sub-domains: irritability, depression, inattention and behavioral problems/impulsivity.

Besides, negative life events were correlated with the psychopathology (r =.74, p < .01), and sub-domains of psychopathology such as anxiety (r = .68, p < .01), depression (r =.73, p < .01), negative self-concept (r =.71, p < .01), somatization (r =.56, p < .01) and hostility (r =.66, p < .01), where higher levels of negative life events were related to higher levels of psychopathology, anxiety, depression, negative self-concept, somatization and hostility.

Psychopathology was correlated with adult ADHD (r =.68, p < .01) and its 3 sub-domains that are inattention (r =.51, p < .01), hyperactivity (r =.38, p < .01) and characteristics related to ADD/ADHD (r =.73, p < .01). According to these correlations, higher levels of psychopathology were related to higher degrees of adult ADHD and its 3 sub-domains: inattention, hyperactivity and characteristics related to ADD/ADHD.

Psychopathology was also found to be correlated with internet dependency (r =.42, p < .01) where higher levels of psychopathology were related to higher scores in internet dependency.

Moreover, psychopathology was correlated with childhood ADHD (r = .54, p < .01) and its 4 sub-domains namely irritability (r =.50, p < .01), depression (r =.51, p < .01), behavioral problems/impulsivity (r =.37, p < .01) and inattention (r =.33, p

< .01). These correlations stated that higher levels of psychopathology were related to higher degrees of childhood ADHD, irritability, depression, behavioral problems/impulsivity and inattention.

Anxiety, one of the sub-domains of psychopathology, was found to be correlated with adult ADHD (r =.67, p < .01). According to this correlation, higher levels of anxiety were related to higher degrees of adult ADHD.

Furthermore, anxiety was also revealed to be correlated with internet dependency (r =.39, p < .01), with higher scores in anxiety being related to higher levels of internet dependency.

Besides, anxiety was correlated with childhood ADHD (r =.52, p < .01). This correlation stated that higher levels of anxiety were related to higher degrees of childhood ADHD.

Depression, one of the sub-domains of psychopathology, was found to be correlated with adult ADHD (r =.66, p < .01), indicating that higher levels of depression were related to higher degrees of adult ADHD.

Besides, depression was revealed to be correlated with internet dependency (r =.42, p < .01), with higher scores in depression being related to higher levels of internet dependency.

Furthermore, depression was correlated with childhood ADHD (r =.49, p < .01). This correlation indicated that higher levels of depression were related to higher degrees of childhood ADHD.

Another sub-domain of psychopathology, negative self-concept, was associated with adult ADHD (r =.64, p < .01), indicating that higher levels of depression were related to higher degrees of adult ADHD.

Negative self-concept was correlated with internet dependency (r =.42, p < .01), meaning that higher scores in negative self-concept were related to higher levels of internet dependency.

Furthermore, negative self-concept was correlated with childhood ADHD (r =.52, p < .01). To clarify, higher levels of negative self-concept were related to higher degrees of childhood ADHD.

Somatization, a sub-domain of psychopathology was associated with adult ADHD (r =.49, p < .01), indicating that higher levels of somatization were related to higher degrees of adult ADHD.

Furthermore, somatization was correlated with childhood ADHD (r =.43, p < .01). To clarify, higher levels of negative self-concept were related to higher degrees of childhood ADHD.

Hostility, another sub-domain of psychopathology, was correlated with adult ADHD (r =.61, p < .01, indicating that higher levels of hostility was related to higher degrees of adult ADHD. Additionally, hostility had correlations with childhood ADHD (r =.52, p < .01) which out that higher levels of hostility were related to higher degrees of childhood ADHD.

Besides, hostility was correlated with internet dependency (r =.38, p < .01), meaning that higher scores in hostility were related to higher levels of internet dependency.

Regarding internet dependency, apart from results listed above, significant results were yielded with adult ADHD (r =.43, p < .01), indicating that higher scores in internet dependency was related to higher degrees of adult ADHD; inattention sub-domain of adult ADHD (r =.47, p < .01), meaning that higher levels of internet dependency was related to higher levels of inattention; characteristics related to ADD/ADHD (r =.41, p < .01), indicating that higher scores in internet dependency were related to higher levels of characteristics related to ADD/ADHD.

Internet dependency was also shown to be correlated with childhood ADHD (r =.36, p < .01) and its 2 sub-domains: depression (r =.37, p < .01) and inattention (r =.30, p < .01). These correlations mean that higher levels of internet dependency are correlated with higher degrees of childhood ADHD and its 2 sub-domains namely depression and inattention.

Regarding conduct disorder, significants results were found with adult ADHD (r =.34, p < .01) and its 2 sub-domains namely hyperactivity (r =.32, p < .01) and characteristics related to ADD/ADHD (r =.34, p < .01). These results indicated that higher degrees of conduct disorder were related to higher scores in adult ADHD as well as in hyperactivity and characteristics related to ADD/ADHD.

Conduct disorder was also revealed to be correlated with childhood ADHD (r =.37, p < .01) and its 2 sub-domains: irritability (r =.38, p < .01) and behavioral problems/impulsivity (r =.43, p < .01). According to these results, higher levels of conduct disorder were related to higher degrees of childhood ADHD and its 2 sub-domains namely irritability and behavioral problems/impulsivity.

With regards to adult ADHD, it was found to be correlated with childhood ADHD (r =.66, p < .01). This indicated that higher degrees of adult ADHD were related to higher extents of childhood ADHD. Adult ADHD was also correlated with 4 domains of childhood ADHD, namely irritability (r =.53, p < .01), depression (r =.55, p < .01), behavioral problems/impulsivity (r =.52, p < .01), problems related to school (r =.35, p < .01) and inattention (r =.54, p < .01); meaning that higher levels of adult ADHD were related to higher levels of irritability, depression, behavioral problems/impulsivity, problems related to school and inattention.

Inattention, a sub-domain of adult ADHD, was correlated with childhood ADHD (r =.51, p < .01) that pointed out that higher scores in inattention scale of adult ADHD were related to higher levels of childhood ADHD.

Hyperactivity, a sub-domain of adult ADHD, was correlated with childhood ADHD (r =.44, p < .01) and this pointed out that higher scores in hyperactivity were related to higher levels of childhood ADHD.

Characteristics related to ADD/ADHD domain of adult ADHD was found to be correlated with childhood ADHD (r =.65, p < .01). This result showed that higher scores in characteristics related to ADD/ADHD domain were related to higher levels of childhood ADHD.

Mother's education level was found to be correlated with father's education level (r =.50, p < .01), meaning that higher degrees of mother's education were associated to higher degrees of father's education.

Regarding income, it was found to be correlated with father's education level (r = -.42, p < .01), indicating that higher degrees of income were associated with higher levels of father's education.

Gender was found to be correlated with nicotine dependence (r = .31, p < .01) and this states for the fact that being a male was associated with higher levels of nicotine dependence.

The answers to the question “Have you ever tried cigarette?” were also correlated with answers to the question “Have you ever tried marijuana?” ($r = .30$, $p < .01$), showing that positive anwers to “Have you ever tried cigarette?” were associated with positive anwers to “Have you ever tried marijuana?”.

The answers to the question “Have you ever tried marijuana?” were correlated with the frequency of alcohol use ($r = .37$, $p < .01$), indicating that positive anwers to “Have you ever tried marijuana?” were associated with higher degrees of alcohol use frequency.

Table 3. 55: Pearson's Correlations between Demographic Variables and Measure of the Study

Variables	G	A	C	ME	FE	R	I	A	FA	CI	FC	M	FM	MC	FC	FGR	CD	IAS	LEIU	BSI	TUR	WURS
G	1	0.08	-.11*	-0.05	-0.03	-0.01	0	-0.08	-.12*	-0.07	-.13*	-.13**	-0.13	-0.06	-0.04	.31**	.20**	0.01	-0.08	-0.03	0.03	0.02
A		1	.42**	0.01	-0.05	-0.04	0	0.01	0.03	-0.07	0.08	-0.05	0.12	0.04	0	0.03	0.09	-0.06	-0.08	-0.07	-0.01	-0.02
C			1	.09*	.10*	.10*	0.01	-.10*	-.10*	-0.04	0.07	-.11**	.15*	0.03	-0.02	-0.11	-0.04	0.08	-0.04	-0.02	0.08	-0.08
ME				1	.50**	-0.06	-.24**	-.17**	-.17**	-0.09	-.14*	-.15**	-0.01	0.07	0.03	-0.02	-0.02	0.06	0.07	0.02	.10*	0.01
FE					1	-0.07	-.42**	0	-.10*	0	0.03	-.19**	-0.09	.10*	.15**	-0.09	-0.05	.15**	0.01	0.01	0.09	0.05
R						1	.21**	.10*	0.24	0.02	0.1	.09*	0.05	0.02	0.05	-0.04	-0.02	-0.02	-0.05	-0.04	-0.05	-0.02
I							1	0.06	-0.03	0.03	-0.06	.11**	-0.03	-0.01	-0.07	0.07	0	0.04	.16**	.11*	0.06	0.06
A								1	.27**	.21**	.14**	.52**	.19*	.10*	0.07	-0.12	-0.06	-0.08	0	0.22	-0.05	0.02
FA									1	.18**	.20**	.37**	.22**	0.04	0.01	-.15*	-0.04	-0.03	-0.08	-0.07	-.17**	-0.06
CI										1	.40**	.30**	.16*	-0.03	0.01	c	-.17**	-0.07	-.11*	-.13*	-.20**	-.20**
FC											1	.30**	.21**	0.9	0.9	-.53**	-.14*	0.03	-.19**	-.17**	-.14*	-0.09
M												1	.43**	0.06	-0.01	-.17**	-.20**	-.17*	-.12*	-0.07	-.18**	-0.08
FM													1	-0.03	-0.07	-0.14	-0.14	0.08	-0.01	-0.03	-0.04	-0.01
MC														1	.23**	-0.08	0.03	-0.05	-0.01	-0.02	0.04	0.04
FC															1	-0.08	-0.05	0.05	0.04	-0.01	-0.04	-0.04
FGR																1	.24**	0.08	.24**	.19**	.17*	0.07
CD																	1	.19**	.19**	.24**	.34**	.37**
IAS																		1	.39**	.42**	.43**	.36**
LEIU																			1	.74**	.63**	.49**
BSI																				1	.68**	.54**
BSI-A	-0.02	-0.04	-0.01	0.06	0.03	-0.05	0.09	0.06	-0.09	-.12*	-.14*	-0.09	0.02	0.01	-0.03	.17*	.23**	.39**	.68**	0.95	.67**	.52**
BSI-D	-0.07	-0.06	0	0.01	0.02	-0.03	.13*	0.05	-0.08	-.12*	-.18**	-0.06	-0.03	-0.03	0.01	.18*	.19**	.42**	.73**	.95**	.66**	.49**
BSI-N	-0.03	-0.08	-0.02	0.03	0.01	-0.05	.11*	0.07	-0.04	-.12*	-.14*	-0.03	-0.04	-0.02	-0.01	.17*	.20**	.42**	.71**	.95**	.64**	.52**
BSI-S	0	-0.06	-0.06	-0.01	-0.05	-0.03	.10*	0.07	-0.04	-.13**	-.17**	-0.08	-0.06	-0.02	-0.07	.20**	.25**	.27**	.56**	.84**	.49**	.43**
BSI-H	0.02	-0.07	-0.07	-0.04	0.04	0	0.08	0.03	-0.06	-.11*	-.17**	-0.09	-0.05	-0.04	0	.19**	.30**	.38**	.66**	.86**	.61**	.52**
TUR	0.03	-0.01	0.08	.10*	0.09	-0.05	0.06	-0.05	-.17**	-.10**	-.14*	-.18**	-0.04	0.04	-0.04	.17*	.34**	.43**	.63**	.68**	1	.66**
TUR-I	-0.03	-0.02	.14**	0.09	0.06	-0.02	.10*	-0.04	-0.06	-.10*	-.02*	-.11*	0.06	0	0.02	0.04	.16**	.47**	.53**	.51**	.78**	.51**
TUR-H	0.08	0.03	0.06	0.03	0.05	-0.01	-0.03	0.03	-.12*	-.12*	-0.1	-0.07	-0.02	0.02	-.11*	0.08	.32**	.18**	.29**	.38**	.72**	.44**
TUR-C	0.03	-0.02	0.06	.11*	0.09	-0.06	0.07	-0.07	-.19**	-.23**	-.17**	-.21**	-0.07	0.05	-0.04	.22**	.34**	.41**	.66**	.73**	.97**	.65**
WURS	0.02	-0.02	-0.08	0.01	0.05	-0.02	0.06	0.02	-0.06	-.20**	-0.03	-0.08	-0.01	0.04	-0.04	0.07	.37**	.36**	.49**	.54**	.66**	1
W-IR	-0.03	-0.02	-0.05	-0.04	0.03	0.02	0.07	0.06	-0.03	-.10*	0.03	0	0.05	0.05	-0.06	0.03	.38**	.25**	.41**	.50**	0.53	.87**
W-DP	-0.09	-0.03	-0.01	-0.03	0.04	-0.02	0.09	0.06	-0.06	-.14**	0.03	-0.08	0.08	0.01	0	0.02	.21**	.37**	.49**	.51**	.55**	.84**
W – S	0.06	0	-.14**	0.08	0.01	-0.09	0.03	-0.03	0.02	-.15**	-0.04	-0.01	0	0.01	0	-0.03	.13**	.23**	.27**	.28**	.35**	.59**
W – BI	0.07	0.02	-0.08	0	0.06	-0.02	-0.06	-0.04	-13**	-.20**	-0.09	-.17**	-0.12	0	-0.01	0.1	.43**	.25**	.36**	.37**	.52**	.79**
W – IN	.10*	-0.02	-0.07	.10*	0.06	-0.02	0.06	-0.03	-0.03	-.21**	-0.09	-0.07	-0.07	0.04	-0.04	0.13	.18**	.30**	.34**	.33**	.54**	.69**

Table 3. 56 (Continued)

*$p < .05$ **$p < .01$, c: This correlation can not be calculated.

Note. G = Gender, A = Age, C = Class, ME = Mother Education, FE = Father Education, R = Residence, I = Income, A = The Question of "Have You Ever Tried Alcohol?", FA = Frequency of Alcohol Use, CI = The Question of "Have You Ever Tried Cigarette?", FC = Frequency of Cigarette Use, M = The Question of "Have You Ever Tried Marijuana?", FM = Frequency of Marijuana Use, MC = Smoking Status of Mother, FC = Smoking Status of Father, FGR = Fagerström Test of Nicotine Dependence, CD = Conduct Disorder Symptoms, YIAS = Young Internet Addiction Scale, LEIU = Life Event Inventory for University Students, BSI = Brief Symptom Inventory, BSI-A = Brief Symptom Inventory Anxiety Sub-Scale, BSI-D = Brief Symptom Inventory Depression Sub-Scale, BSI-N = Brief Symptom Inventory Negative Self-Concept Sub-Scale, BSI-S = Brief Symptom Inventory Somatization Sub-Scale, BSI-H = Brief Symptom Inventory Hostility Sub-Scale, TUR = Adult ADD/ ADHD DSM IV- Based Diagnostic Screening and Rating Scale, TUR-I = Adult ADD/ ADHD DSM IV- Based Diagnostic Screening and Rating Inattention Sub-Scale, TUR-H = Adult ADD/ ADHD DSM IV- Based Diagnostic Screening and Rating Hyperactivity/Impulsivity Sub-Scale, TUR-C = Adult ADD/ ADHD DSM IV- Based Diagnostic Screening and Rating Characteristics and Problems Related to ADHD Sub-Scale, WURS = Wender Utah Rating Scale, W-IR = Wender Utah Rating Irritability Sub-Scale, W-DP = Wender Utah Rating Depression Sub-Scale, W-BI = Wender Utah Rating Behavioral Problems/Impulsivity Sub-Scale, W-S = Wender Utah Rating Problems Related to School Sub-Scale, W-IN = Wender Utah Rating Inattention Sub-Scale

3.4. Regression Analysis

Factors associated with psychopathology, nicotine dependency and internet addiction were determined through three hierarchical regression analyses, and in each step variables were entered via stepwise method.

3.4.1. Factors Associated with Psychopathology

In this analysis, it was aimed to find out the factors associated with general symptoms of psychopathology therefore psychopathology was set as the dependent variable. Conduct disorder, childhood ADHD, adult ADHD and negative current life events were entered into the equation respectively.

The results indicated that conduct disorder [$pr = .19$, $\beta = .25$, t (383) = 5.00, $p < .001$] was significantly associated with general symptoms of psychopathology, explaining 6 % of the variance [F (1, 383) = 24.93, $p < .001$]. This result stated that

higher levels of conduct disorder were associated with higher degrees of psychopathology.

After controlling the effect of conduct disorder, the second step of the analysis indicated that, the association between childhood ADHD [pr = .50, β = .52, *t* (382) = 11.30, *p* < .001] and general symptoms of psychopathology was significant, increasing explained variance to 30 % [*F*change (1, 382) = 127.77, *p* < .001]. This result suggested that higher levels of childhood ADHD were associated with higher degrees of psychopathology.

For the third step of the analysis, the effect of conduct disorder and childhood ADHD were controlled. Adult ADHD [pr = .51, β = .57, *t* (381) = 11.66, *p* < .001] was found significantly associated with general symptoms of psychopathology, increasing explained variance to 48 % [*F*change (1, 381) = 136.04, *p* < .001]. This result suggested that higher levels of adult ADHD were associated with higher degrees of psychopathology.

In the last step of the analysis, after controlling the effects of previous variables, current negative life events [pr = .54, β = .50, *t* (380) = 12.63, *p* < .001] were found to be significantly associated with general symptoms of psychopathology and the variance explained increased to 63 % [*F*change (1, 380) = 159.48, *p* < .001]. This showed that greater extents of current negative life events were associated with higher degrees of psychopathology.

3.4.2. Factors Associated with Internet Addiction

The aim of this analysis was to reveal the factors associated with internet addiction therefore internet addiction was set as the dependent variable. Conduct disorder, childhood ADHD, adult ADHD and negative current life events were entered into the equation respectively.

The results indicated that conduct disorder [*pr* = .16, β = .16, *t* (394) = 3.29, *p* ≤ .001] was significantly associated with internet addiction, explaining 3 % of the variance [*F* (1, 394) = 10.80, *p* ≤ .001]. This result stated that higher levels of conduct disorder were associated with higher degrees of internet addiction.

After controlling the effect of conduct disorder, the second step of the analysis indicated that, the association between childhood ADHD [*pr* = .34, β = .37, *t* (393) = 7.27, *p* < .001] and internet addiction was significant, increasing explained

variance to 14 % [*F*change (1, 393) = 52.90, $p < .001$]. This result suggested that higher levels of childhood ADHD were associated with higher degrees of internet addiction.

For the third step of the analysis, the effect of conduct disorder and childhood ADHD were controlled. Adult ADHD [*pr* = .27, β = .34, *t* (392) = 5.63, $p < .001$] was found significantly associated with internet addiction, increasing explained variance to 21 % [*F*change (1, 392) = 31.74, $p < .001$]. This result suggested that higher levels of adult ADHD were associated with higher degrees of internet addiction.

In the last step, after the effect of previous variables were controlled, current negative life events [*pr* = .15, β = .17, *t* (391) = 2.92, $p < .005$] were found to be significantly associated with internet addiction and the variance explained increased to 22 % [*F*change (1, 391) = 8.53, $p < .005$]. This showed that greater extents of current negative life events were associated with higher degrees of internet addiction.

3.4.3. Factors Associated with Nicotine Dependency

This analysis aimed to find out the factors associated with nicotine dependency therefore nicotine dependency was set as the dependent variable. Conduct disorder, childhood ADHD, adult ADHD and negative current life events were entered into the equation respectively.

The results indicated that conduct disorder [*pr* = .17, β = .17, *t* (181) = 2.32, $p < .05$] was significantly associated with nicotine dependency, explaining 3 % of the variance [*F* (1, 181) = 5.37, $p < .05$]. This result stated that higher levels of conduct disorder were associated with higher degrees of nicotine dependency.

After controlling for the effect of conduct disorder, the second step of the analysis indicated that, the association between childhood ADHD and nicotine dependency was not significant. For the third step of the analysis, after the effect of conduct disorder and childhood ADHD were controlled, adult ADHD was not found to be significantly associated with nicotine dependency.

After controlling for the effects of previous variables, the last step of the analysis found that current negative life events [pr = .21, β = .22, *t* (180) = 2.91, $p < .005$] were found to be significantly associated with nicotine dependence and the explained variance increased to 6 % [*F*change (1, 180) = 8.45, $p < .005$]. This

indicated that greater extents of current negative life events were associated with higher degrees of nicotine dependence.

Table 3. 57: Factors Associated with Psychopathology, Internet Addiction and Nicotine Dependency (Three sets of stepwise regression analysis)

DV	IV	df	F_{change}	β	t	pr	R^2
Psychopathology	CD	1, 383	24.93*	.25	5.00*	.19	.06
	Childhood ADHD	1, 382	127.77*	.52	11.30*	.50	.30
	Adult ADHD	1, 381	136.04*	.57	11.66*	.51	.48
	Negative Life Events	1, 380	159.48*	.50	12.63*	.54	.63
IA	CD	1, 394	10.80**	.16	3.29**	.16	.03
	Childhood ADHD	1, 393	52.90*	.37	7.27*	.34	.14
	Adult ADHD	1, 392	31.74*	.34	5.63*	.27	.21
	Negative Life Events	1, 391	8.53***	.17	2.92***	.15	.22
ND	CD	1, 181	5.37****	.17	2.32****	.17	.03
	Negative Life Events	1, 180	8.45***	.22	2.91***	.21	.06

Note: $p^* < .001$, $p^{**} \leq .001$, $p^{***} < .005$, $p < .05^{****}$, Note 2: CD = Conduct Disorder, Childhood ADHD = Childhood Attention Deficit Hyperactivity Disorder, Adult ADHD = Adult Attention Deficit Hyperactivity Disorder, IA = Internet Addiction, ND = Nicotine Dependence

CHAPTER IV

DISCUSSION

The first aim of this study is to examine the effect of gender (i.e., Male; Female), age (i.e., 18-21; 22 or above), class (i.e., Undergraduate and below; Graduate and above), mothers and fathers' education levels (i.e., Graduate of high school or below; Graduate of university or above), residence (i.e., Big city; City, town or village), income (Low; High) and mother's and father's smoking status (i.e., Currently smoking, Has smoked and Quitted, Non-smoker) differences on Childhood ADHD (i.e., Total score of Childhood ADHD and its domains that are Irritability, Depression, Problems related to school, Behavioural problems/impulsivity and Inattention), Adult ADHD (i.e., Total score of Adult ADHD and its domains that are Inattention, Hyperactivity/Impulsivity and Characteristics related to ADHD), Conduct Disorder, Nicotine Dependence, Internet Addiction, Psychopathology (i.e., Total score of Psychopathology and its domains that are Anxiety, Depression, Negative self-concept, Somatization, and Hostility) and Negative Life Events.

The second aim of the study is to assess the effect of ever using alcohol, cigarette and marijuana (i.e., Used, Not used) and the frequency of alcohol, cigarette and marijuana use in the previous 6 months (i.e., Low, High) on Childhood ADHD (i.e., Total score of Childhood ADHD and its domains that are Irritability, Depression, Problems related to school, Behavioural problems/impulsivity and Inattention), Adult ADHD (i.e., Total score of Adult ADHD and its domains that are Inattention, Hyperactivity/Impulsivity, and Characteristics related to ADHD), Conduct Disorder, Nicotine Dependence, Internet Addiction, Psychopathology (i.e., Total score of Psychopathology and its domains that are Anxiety, Depression, Negative self-concept, Somatization, and Hostility) and Negative Life Events.

The third aim of the study is to examine pearson correlations between all measures of the study. The forth and last aim is to determine the associated factors of psychopathology, internet addiction and nicotine dependence through three stepwise regression analysis.

In this section, the findings of the study will be discussed in the light of the relevant literature. Strengths and limitations of the study as well as clinical implications and suggestions for future researches will be noted.

4.1. Findings Regarding Differences in Demographic Variables and Questions Related to Substance Use on Study's Measures

4.1.1. Findings Regarding the Differential Roles of Demographic Variables on Study's Measures

One of the aims of the current study was to determine the differences of gender, age, class, mothers and fathers' education levels, mothers and fathers' smoking status, residence and income status differences on Childhood ADHD, Adult ADHD, Conduct Disorder, Nicotine Dependence, Internet Addiction, Psychopathology and Negative Life Events among college students. The significant results revealed by the analysis will be discussed below.

4.1.1.1. Findings Regarding the Differential Roles of Demographic Variables on Childhood ADHD

There were significant effects of class and mother's education level differences on Childhood ADHD. The present study found that class had an effect on 'problems related to school' domain of Childhood ADHD and undergraduate level or below year students had significantly higher problems in childhood related to ADHD in school than those who were pursuing their graduate or higher studies. There is a large body of literature stating that college students with ADHD have lower GPAs, more academic concerns, higher rates of academic probation, are more likely to perceive academic or test-taking problems and less likely to attend and graduate from college compared to their non-ADHD college peers (Blase et al., 2009; DuPaul et al., 2009; Heiligenstein et al., 1999; Lewandowski et al., 2008; Murphy et al., 2002;

Rabiner et al., 2008; Wolf, 2001). Besides, literature suggests that students who have an elevated degree of impairment in academic achievement because of ADHD symptoms are not likely to continue their education at a later time (Frazier et al., 2007). Therefore, the finding that college students who had less problems related to school in their childhood continue longer in their studies (i.e., getting a graduate or a post-graduate degree) is plausible considering the obstacles that ADHD brings to students' academic lives.

Regarding mother's education level, it was found that students whose mothers were university or higher level of education graduates had significantly higher scores on attention domain of childhood ADHD than those whose mothers were high school or below graduates. Parental education level is an indicator of parents' higher cognitive capacities and their possibility to support their children in many areas of their development whereas low parental education may place a child in a less fortunate position (Rydell, 2010). It has been stated that the role of parents, particularly mothers' is crucial in the aetiology of ADHD (Moghaddam, Assareh, Heidaripoor, Rad, & Pishjoo, 2013) and researches generally support the link between low maternal education and increased degrees of ADHD symptoms (Gurevitz, Geva, Varon, & Leither, 2014; Gimpel, & Kuhn, 2000; Rydell, 2010), that are not in line with the findings of the present study. However, none of these researches used a sample consisting of college students. As it was claimed before, it is uncertain to apply findings from general population to college students (Blase et al., 2009), which may explain the discrepancy between previous findings and results of the present study. Furthermore, considering that highly educated mothers may have higher expectations from their children, there may be a buffering effect of these expectations on ADHD symptoms of children, a topic which needs to be investigated by other researches.

4.1.1.2. Findings Regarding the Differential Roles of Demographic Variables on Adult ADHD

In the present study, significant effects of class, mother's and father's education levels on Adult ADHD were found. The present study showed that class had an effect on 'inattention' domain of Adult ADHD, more specifically, students who were in graduate and above classes exhibited higher attention problems than students in undergraduate and below classes. The literature generally states that ADHD is an obstacle for a successful academic life (see detailed explanation in section 4.1.1.1.); therefore it seems less probable that students with higher levels of ADHD would pursue their education longer than those with lesser degrees of ADHD. However, the work-load and academic needs are higher in higher classes (i.e., graduate and above) compared to undergraduate classes; therefore students in higher classes of university may tend to report experiencing greater problems of attention compared to those in lower classes where academic requirements, the need for concentration and self-organization are fewer.

The findings of the present study pointed out that mother's education level had an effect on total score of ADHD symptoms and characteristics related to ADHD in adulthood among college students. These results suggested that people whose mothers were graduate of university or above exhibited significantly higher ADHD symptoms and higher levels of characteristics related ADHD in adulthood (e.g., changing jobs often, problems managing time, alcohol and drug use, depression etc.) than those whose mothers were graduate of high school or below. Maternal education level is stated as the most common indicator of a child's socioeconomic status (SES) (Tolani & Brooks-Gun, 2006) and literature generally stated that lower SES, thus lower maternal education is related to higher levels of adult ADHD. The reason why the findings of this study are not in line with the literature may be because mothers with higher education levels may have higher expectations regarding their children's achievements. This kind of approach may manifest as or worsen ADHD symptoms in their offspring. Therefore, it might be stated that maternal approach containing

higher expectations towards the child may work as a mediator between maternal education level and ADHD symptoms, a question that has to be clarified in prospective researches. Similarly, the present study showed that students whose fathers were graduate of university or above exhibited higher levels of current ADHD symptoms than those whose fathers were graduate of high school or below. Although any research linking paternal education and ADHD symptoms was failed to find, researches generally support an association between higher parental education and less severe symptoms of ADHD in children (Gimpel, & Khun, 1998). However, no research provided such finding for university students, which may mean that this link may not be accurate for college students. As stated above for mothers, higher expectations towards the child may also mediate between higher paternal education and ADHD symptoms in children. Plus, this mediation effect may be more accurate when children already have a higher enough capacity to be able to pursue a college education. The association between parental education and ADHD symptoms in college students should be illuminated by considering possible mediating variables.

4.1.1.3. Findings Regarding the Differential Roles of Demographic Variables on CD

In the present study, male college students were found to exhibit significantly higher degrees of CD between the ages of 5 to 18 compared to females. This finding is consistent with the literature stating that males are in a riskier position than females for showing CD symptoms (Moffitt, 2001).

4.1.1.4. Findings Regarding the Differential Roles of Demographic Variables on ND

The findings of the present study showed that gender had an effect on ND and male college students tended to develop ND at greater levels than females. There are controversial findings about the association between sex and ND, where some reported that there is no gender difference in ND (Berlin et al., 2003; Torchalla, Okoli, Malchy, & Johnson, 2011) and others suggested that men are more inclined to

become dependent on nicotine at greater levels compared to women (Bohadana, Nilsson, Rasmussen, & Martinet, 2003; Gallus et al., 2005; John et al., 2005). Bohadana et al. (2003) stated that, men are more tended to develop ND whereas women were under a greater risk to develop behavioural dependence on smoking cigarettes. This term refers to being dependent on behavioural aspects of smoking activity as distinct from ND that has a biological base. For instance lighting up a cigarette routinely (without craving) or holding a cigarette to feel confident and secure in a restaurant, bus terminal, party etc. are all behavioural aspects of smoking. Although the literature supported sex differences in the rates of developing ND, the reason of this difference was not investigated clearly; therefore more research should shed light on this question.

According to the findings of the present study, the education level of fathers had an effect on ND. To explain further, college students whose fathers were graduate of high school or below exhibited greater levels of ND than those whose fathers were graduate of university or above. There are several studies linking low parental educational level and higher rates of smoking. For instance a study found that low parental educational level was linked with the progress from smoking initiation to the daily smoking (Rohde, Kahler, Lewinsohn, & Brown, 2004). Wallace et al. (2009) studied the effect of a variety of socioeconomic status factors among 8th grade girls and found parental education as one of the strongest predictors of high levels of smoking. Similarly, a study conducted among students from various multi-ethnic backgrounds found that low parental education was the strongest risk factor for smoking among White students (Bachman, O'Malley, Johnston, Schulenberg, & Wallace, 2011). In line with these findings, a longitudinal study found that low parental education predicted higher levels of smoking among children (Agrawal et al., 2005). Another study showed that high smoking rates were correlated with low parental education level, which was considered as one of the indicators of socio-economic disadvantage (Fergusson, Horwood, Boden, & Jenkin, 2007). They claimed that lower parental IQ, elevated rates of children's conduct

problems and parental smoking mediated between socio-economic disadvantage and later smoking rates among children. Besides, it was suggested that low parental education was correlated with passive smoking at homes and cars (Zaloudikova, Hruba, & Samara, 2012), which may be one of the important mediators between low parental education and high smoking rates afterwards. Another explanation is that when parents are not educated, they are less likely to transmit their knowledge about the negative sides of smoking to their children (Madden, 2007), which may also increase tobacco use. Furthermore, Fagan, Brook, Rubenstone and Zhang (2005) found that low education of parents had a predictor value on the smoking rates of their offspring and this effect was suggested to be mediated via children's own educational achievement or the quality of parent-child relationship.

4.1.1.5. Findings Regarding the Differential Roles of Demographic Variables on Internet Addiction

The findings of the present study suggested that there was a significant effect of paternal education on IA among college students. To be clearer, students' whose fathers were graduate of university or above exhibited greater levels of IA than those whose fathers were graduate of high school or below. Few researches on the relationship between parental educational level and IA reported inconsistent findings. For instance a recent study showed no significant relationship between parental education and IA among high school students (Üneri & Tanıdır, 2011) and another one conducted among Korean high school students reported that low parental education was linked to addictive internet use only for boys (Heo, Oh, Subramanian, Kim, & Kawachi, 2014) and some suggested that students with parents having higher education have higher rates of computer and internet use (DeBell & Chapman, 2006).

Parental educational level is a strong indicator of family income. Students whose parents have a higher education and higher income have an easier access to advanced technologies such as computer and internet compared to students whose parents have a lower education and income, a concept that can be labelled as 'digital

divide' (DeBell & Chapman, 2006). Unlike cigarette use that can also turn into an addiction, accessing internet is not possible for every SES group and one can develop an addiction to a substance or a behavior only if it is available. Considering this logic, reporting that college students whose parents have a high education develop a higher addiction on internet is plausible. Nevertheless, this relationship should be replicated by prospective researches.

4.1.1.6. Findings Regarding the Differential Roles of Demographic Variables on Psychopathology

In this study, father's smoking status had an effect on general psychopathology, negative self-concept, hostility, depression and somatisation; where college students whose fathers were currently smoking had higher rates of general psychopathology, negative self-concept, hostility, depression than those whose fathers were non-smoker. Second, students whose fathers smoked at one point in their life and quitted had higher rates of general psychopathology, negative self-concept, hostility and depression levels than those whose fathers were non-smokers. Plus, somatization of students having fathers who currently do smoke was higher than students whose fathers were non-smokers.

The contribution of parental smoking status to the psychopathology, depression, somatisation and negative self-concept of offspring is not a well studied subject and up to now, only one study reported that parental smoking status was related to elevated levels of depression and anxiety among offsprings (Kardia, Pomerleau, Rozek, & Marks, 2003). Family history acts as a sign of both genetic and shared social conditions; therefore it is one of the most powerful indicators of risk in common diseases (Higgins, 2000; Kardia et al., 2003). The effect of parental smoking on experimental and regular type of smoking activity among their children is robust (Foshee & Bauman, 1992; Foster et al., 2007; O'Byrne, Haddock, & Poston, 2002). Furthermore, the increase in the possibility to smoke among offsprings is closely related to the number of parents who do smoke and their smoking status (i.e., never smoked, smoked and quitted and currently smoking)

(Farkas, Distefan, Choi, Gilpin, & Pierce, 1999; O'Byrne et al., 2002). Genetics, modelling, parental control rules, parent-child relationship and attachment are named among some of the mechanism that accounts for the close link between parent and child tendency to smoking (Brook & Whiteman, 1997; Kandel & Wu, 1995; White, Johnson, & Buyske, 2000).

There is a vast body of literature stating that general psychopathology, depression; somatization and the concept of negative-self are all closely related to smoking activity (Bunde & Suls, 2006; Fergusson et al., 1996; Fernander et al., 2006; Kahler et al., 2009; Hollifield, Paine, Tuttle, & Kellner, 1999; Kendler et al., 1993; Prochaska et al., 2014; Veselska et al., 2009). Taken together, it can be hypothesized that parental smoking might influence smoking activity among offsprings, which in turn may affect their psychopathology levels.

4.1.1.7. Findings Regarding the Differential Roles of Demographic Variables on Negative Life Events

It was found that family income level had an effect on negative life events experienced by college students in the last 2 months. To be more specific, students who had low levels of familial income (i.e., 3000 TL or less per month) had more negative life events than those whose familial income was high (i.e., higher than 3000 TL per month). Negative life events and stress rates were found to be distributed unequally among different SES groups who have different levels of income; where lower SES groups are more disadvantaged (Marmot el al., 1991; Stronks, Van De Mheen, Looman, & Mackenbach, 1998) and higher SES groups have lower amount and severity of stress compared to low SES groups (Thoits, 2010; Turner, 2010). Low income levels are shown to be related to higher degrees of life problems related to finance and housing (Gallo et al., 2012) and may lead to a variety health problems, functional impairments, higher rates of morbidity and premature mortality (Gallo, Monteros, & Shivpuri, 2009). Taken together, the result of the present study is in line with the literature. Plus, it extends the previous findings by

illustrating that the statement 'low income levels are associated with higher negative life events' is also accurate for college students.

4.1.2. Findings Regarding the Differential Roles of Questions Related to Substance Use on Study's Measures

Another aim of the present study was to find out the differences of ever using alcohol, cigarette, marijuana and the frequency of alcohol, cigarette and marijuana use on Childhood ADHD, Adult ADHD, Conduct Disorder, Nicotine Dependence, Internet Addiction, Psychopathology and Negative Life Events. The analysis revealed several significant results that will be discussed below.

4.1.2.1. Findings Regarding the Differential Roles of Questions Related to Substance Use on Childhood and Adult ADHD

In this study, findings related to the effect of substance use on childhood and adult ADHD were similar except for minor differences. This is an expectable situation by considering that although ADHD is a disorder that first occurs in childhood years, an important number of children (i.e., fifty to eighty percent) convey their symptoms into adulthood (Frank-Briggs, 2011; Nair et al., 2006).

It was found that frequency of alcohol use in the previous 6 months had an effect on behavioral problems and impulsivity domain of childhood ADHD; where college students who had a high frequency of alcohol use reported to have exhibited significantly higher behavioural problems and impulsivity in their childhood related to ADHD than students who had a low frequency of alcohol consumption. This finding was replicated for adult ADHD; where students with high frequency of alcohol use reported to have significantly higher degrees of current ADHD symptoms and characteristics related to ADD/ADHD than those who had a low frequency of alcohol use.

The emergent literature stating the link between ADHD symptoms and alcohol use provided conflicting results. For instance some studies found no link between ADHD and alcohol use (Disney et al., 1999; Weiss & Hechtman, 1993); where others provided evidence for an association (Charach et al., 2011; Lee et al.,

2011). To put it more clearly, Disney et al. (1999) claimed that ADHD and alcohol use were not associated among adolescents if a co-morbid CD was taken into account. Weiss and Hechtman (1993) reported that alcohol use rates were similar between young people with and without ADHD, although the first group exhibited more problems as a result of alcohol use. On the other hand, a recent meta-analytic study showed that childhood ADHD was linked with alcohol use disorder in adulthood (Charach et al., 2011). In a meta-analytic study, Lee et al. (2011) examined several longitudinal studies that followed children with and without ADHD into adolescence or adulthood and their results showed that children with ADHD were 1.7 times more likely to develop alcohol abuse or dependence than children without the disorder. However, they found no difference in terms of ever trying alcohol between children with and without the disorder.

The findings of this study are in line with statements of Charach et al. (2011) and Lee at al. (2011) who claimed that ADHD symptoms and alcohol use as well as abuse are closely associated. Plus, in the present study no link between ever trying alcohol and ADHD symptoms was found, which is also congruent with the findings of Lee at al. (2011). It is possible to determine a cause-effect relationship between ADHD symptoms and alcohol use, by considering the timing that ADHD and alcohol use first occur. That is, ADHD is a disorder starting in childhood, and the problems should be evident before the age of 7 and the first alcohol intake almost never occurs before this age. Therefore, it can be easily said that ADHD precedes alcohol use (Smith et al., 2002). One of the explanations of the link between ADHD and alcohol use is the dopamine hypothesis (Smith et al., 2002; Solanto, 2002). According to this hypothesis, a low level of dopamine in the forebrain is responsible for inefficient executive functions that are closely related to inattentiveness and poor impulse control. Alcohol was shown to trigger dopamine release in the brain's reward system (Koob & Le Moal, 1997; Robbins & Everitt, 1996). Therefore, the 'healing' effect of alcohol on executive functions may explain the association between ADHD and alcohol use disorders. Another explanation is that individuals might consume alcohol

as a way to cope and self-medicate the distress caused by ADHD and other conditions related to it (Wilens, 1998).

Even so, to confidently affirm that ADHD symptoms cause alcohol use is not possible as other factors might also lead to alcohol intake. In this respect, co-morbid conditions such as CD deserve considerable attention. Some studies suggested that the link between ADHD and alcohol use no longer exists when a comorbid CD is taken into account (Flory & Lynam, 2003). However, the relationship between CD, ADHD and alcohol use problems is complicated, and some even suggest that ADHD may be the cause of both CD and alcohol use, therefore, still be a leading factor of alcohol use (Smith et al., 2002). Longitudinal researches that might enlighten the relationship between CD, ADHD and alcohol use are warranted.

The contribution of ADHD symptoms to the emergence and maintenance of smoking has gained considerable attention. Although some argued that the relationship between ADHD symptoms and smoking rate is no longer significant when CD is taken into account (Burke et al., 2001; Greene et al., 1997), there are robust findings that even independently of CD, the association between ADHD and smoking still exists (Flory et al., 2003; Kollins et al., 2005; Wilens et al., 2008)

Milberger (1997) suggested that children with ADHD start smoking earlier than controls (i.e., rate before age 15: ADHD, 25%; non-ADHD, 9%), and their possibility of becoming a smoker is higher. Similarly, Kollins at al. (2005) stated that there is an elevated risk of smoking regularly across life span associated with ADHD symptoms even after controlling the effect of CD. Biederman et al. (2006) provided similar findings, by stating that individuals diagnosed with ADHD in their childhood had higher possibilities to become dependent on nicotine across one year than people without an ADHD diagnoses. Another study conducted among high school sophomores put evidence that adolescents suffering from inattention problems had higher rates of smoking and had higher risk of becoming regular smokers (Tercyak et al., 2002). The findings of Wilens et al. (2008) are consistent with the previous statements, they found that individuals with ADHD had a higher tendency to develop

dependency on nicotine and other drugs than non-ADHD people. A recent meta-analytic study that observed children with and without ADHD into adolescence and adulthood also reported that the likelihood of having ever using nicotine and developing a dependence on nicotine in future was higher among children with ADHD compared to those without the disorder (Lee et al., 2011). Plus, Upadhyaya and Carpenter (2008) stated that the severity of ADHD symptoms correlated with smoking in the past month as well as in the past year among college students.

The findings of the present study replicated previous work by showing that an association between ADHD symptoms and ever trying cigarette as well as the frequency of cigarette use among college students exists. Specifically, the findings of this study stated that college students who ever smoked reported to have higher degrees of ADHD in their childhood compared to students who did not have any experience of smoking. Besides, students who ever tried cigarette had higher scores on sub-scales of childhood ADHD; that are depression, problems related to school, behavioral problems/impulsivity and inattention compared to those who never tried cigarette. Students who tried and never tried cigarette did not differ only on irritability sub-scale of childhood ADHD. In addition, students who tried cigarette had higher degrees of current ADHD symptoms, and its sub-scales that are hyperactivity/impulsivity and characteristics related to ADHD compared to students who never tried cigarette. Furthermore, among smokers, those with a higher frequency (i.e., everyday) of cigarette use reported to have higher levels of current ADHD and characteristics related to ADHD than those who had a low frequency (i.e., less frequent than every day).

Considering the developmental trajectories of ADHD and cigarette use, it can be stated that ADHD symptoms precede cigarette use. Nicotine has been reported to modulate dopaminergic pathways and ameliorate cognition, attention, working memory and other executive functions (Milberger et al., 1997; Wilens & Decker, 2007). In a similar way, clinical researches showed an improving effect of nicotine on ADHD symptoms (Levin et al., 1996). Therefore, it has been suggested that,

because of its stimulation effects, individuals with ADHD self-medicate themselves with nicotine to manage their symptoms such as inattention and concentration (Milberger et al., 1997). In the future, more research should be conducted on the neurobiological and environmental contributing factors as well as the underlying mechanism between cigarette use and ADHD symptoms.

In the present study, college students were compared in terms of their odds of ever trying marijuana and marijuana use frequency. Results stated that college students who ever tried marijuana had higher scores in behavioral problems and impulsivity domain of childhood ADHD compared to those who never tried marijuana. Regarding adult ADHD, it was found that college students who tried marijuana exhibited greater levels of current ADHD symptoms and characteristics related to ADHD than those who have never tried. Plus, college students who had a high frequency of marijuana use exhibited greater levels of current ADHD symptoms and characteristics related to ADHD than those who had a low frequency of marijuana use.

The findings of the present study were highly compatible with the existing literature that offers consistent results regarding the association between ADHD and marijuana use. For instance, Murphy et al. (2002) found that students with ADHD were more likely to develop marijuana abuse than their peers without the disorder. Likewise, Upadhyaya et al. (2005) suggested that college students with ADHD used higher amounts of marijuana in the previous year compared to their non-ADHD peers and the more severe ADHD symptoms were related to the more frequent marijuana use in the past month as well as in the past year. Another study put evidence that students with self-reported ADHD had higher probability to use marijuana than non-ADHD students in the first semester of college (Rabiner et al., 2008). Congruently, Blase et al. (2009) reported that marijuana use was 2 to 2.5 times more common among students with ADHD compared to non-ADHD ones. Lastly, ADHD was found to be associated with an earlier first trial and a higher probability of having ever using it (Rooney et al., 2012).

Marijuana is the most commonly used psychoactive substance around the world after alcohol and cigarette (Aksoy, Aksoy, Akpınar, & Maner, 2012). The rate of marijuana use was shown be between 1.2% and 4.0%, among primary and secondary school students respectively (Ögel et al., 2003). Although no epidemiologic study conducted in Turkey about rates of marijuana consumption among general population as well as college students, it was shown to be a serious problem in university campuses in United States where one third of all college students reported a marijuana use for the past year (Rooney et al., 2012). Marijuana was shown to have a similar effect as nicotine in the rise of dopamine levels in limbic areas of the brain (Pierce & Kumaresan, 2006). Dopamine plays a crucial role in cognitive abilities, such as attention, concentration and motivation (Arnsten, 2011) and antidepressants as well as central nervous system stimulants that increase dopamine levels have been reported to ameliorate ADHD symptoms (Aksoy et al., 2012). In this respect, the common marijuana use and increased odds of ever using marijuana among college students with past and current ADHD symptoms may be explained by an amelioration of these symptoms due to an increase in dopamine levels. More research is needed to understand the underlying mechanism for the association between ADHD and marijuana use.

4.1.2.2. Findings Regarding the Differential Roles of Questions Related to Substance Use on CD

The findings of the present study showed that, college students who ever tried cigarette had higher degrees of CD between ages of 5 and 18 compared to those who never tried cigarette. Similarly, college students who had a high frequency of cigarette use in the last 6 months exhibited significantly higher levels of CD than those who had a low frequency of cigarette use. Moreover, college students who ever tried marijuana exhibited significantly higher levels of CD than those who never tried marijuana. These findings established a close link between smoking and CD symptoms that is well-documented by the relevant literature. Both in population based and clinical samples, CD was consistently an important precursor for

substance use, abuse and dependency. In a recent study, CD was found to constitute a risk factor for the age of first trial of cigarette, alcohol, marijuana and other substances (Hopfer et al., 2013). Plus, the same research stated that young people with CD were more likely to have ever used any substance and develop a substance use disorder (SUD) according to the experienced substance. Elkins et al. (2007) reported similar results by stating that being diagnosed by CD between the ages of 11 and 14 predicted SUD related to tobacco by the age of 18. Breslau (1995) also stated that the history of past conduct problems was linked to the early onset of cigarette use, particularly trying the first cigarette before the age of 14. Another study suggested that when attentional problems were controlled, conduct problems in childhood as well as in adolescence were associated with a later substance use related to tobacco (Fergusson et al., 2007). Literature also suggests a strong link regarding the relationship between CD and ND, which generally is a consequence of frequent cigarette use. For instance externalizing behavior, a close associate of CD, by the age of 14 and 21 were positively related to ND at 21 (Fischer et al., 2012). CD and ODD were both found to be associated with ND among adolescent psychiatric inpatients (Hakko et al., 2006) and adolescents (Disney et al., 1999). The close link between CD and cigarette smoking was explained by the statement that exhibiting deviant behaviors, which are also included in the diagnostic criteria of CD, are risk factors for early experimentation of different substances (Abrantes et al., 2005). However, prospective researches should shed light on the reasons of this association.

4.1.2.3. Findings Regarding the Differential Roles of Questions Related to Substance Use on Nicotine Dependency

In the present study, it was found that smoking frequency in the last 6 months had a significant effect on ND among college students; where students who had a high frequency of smoking developed ND at greater levels than those who had a low frequency. Similarly, it was found that alcohol use frequency in the last 6 months had an effect on ND among college student population; where people who had a high frequency of alcohol use were found to have ND at significantly greater levels than

those who had low frequency of alcohol consumption. Besides, ever trying marijuana had an effect on ND and students who did try marijuana showed significantly greater dependency on nicotine than those who did not try marijuana.

These findings are highly expectable as similar associations were established by earlier studies. A study that was conducted to assess the relationship between ND and Axis I and II psychiatric disorders based on DSM-IV revealed a close link between ND and alcohol as well as illicit drug abuse in the US population (Grant et al., 2004). Similarly, Breslau (1995) stated that compared to non-smokers and non-dependent smokers, people with ND exhibited higher levels of alcohol and illicit drug disorders. These linkages were supported by a recent research, which examined the prevalence and correlates of ND among substance abusers. According to their results, earlier age of starting to smoke and single substance use such as alcohol and any illicit drug were all correlates of ND (Ward et al., 2012).

The 'drug sequencing model' suggests that there is a flow from the dependence on licit substances (e.g., cigarette) to illicit ones (e.g., marijuana) (Breslau, 1995). Alcohol and cigarette are named as the 'gateway drugs' because they play an early role in the occurrence of other types of substance use (e.g., marijuana) (Breslau, 1995), which might explain the co-occurrence of several types of substance abuse. Although inferring a causal relationship is not possible in the present study, it may be suggested that the use of cigarette, the most socially acceptable and available substance in Turkey, precedes other substance use problems. Besides, the similar underlying mechanisms (familial and genetic factors) responsible for the appearance and continuation of cigarette, alcohol and illicit drug abuse might explain the close association between different types of substance abuse (Heath, Madden, Slutske, & Martin, 1995). Prospective researches should focus on the reasons of the link between abuses of various types of substances.

4.1.2.4. Findings Regarding the Differential Roles of Questions Related to Substance Use on Internet Addiction

According to the findings of the present study, marijuana use history had an effect on IA; more specifically, college students who ever tried marijuana showed greater degrees of IA than those who did not try marijuana.

Internet turned into one of the most desirable and preferable tool for recreational and academic purposes because of its availability and easy accessibility particularly for college students. Young adults whose ages vary between 18 and 32 constitute the majority of those who are online (Jones & Fox, 2009) and IA is observed among 8–13 % of undergraduate students (Morahan-Martin & Schumacher, 2000; Sherer, 1997). There are very few researches about the link between IA and other substance use problems among college students. For instance, Yen et al. (2008) suggested that there was a link between IA and harmful alcohol use among college students when gender, age and depression levels were controlled. Frangos et al. (2011) found that, problematic internet use was linked to other potential addictive personal habits such as cigarette use, alcohol and coffee consumption as well as taking drugs.

Research on the link between IA and the use of other substances among populations other than college students is also scarce (Hollander, 2009). One of these researches was conducted by Yen et al. (2008), who stated that adolescents with IA exhibited increased scores on items related to substance use on BSI. Another research conducted among a high number (i.e., 2114) of high school students revealed an association between IA and problematic alcohol use (Ko et al., 2008). To date, there is only one study assessing the relationship between substance use experience (e.g., ever using marijuana) and IA and their findings showed that IA was more common among high-school students who had an earlier experience with different substances including marijuana (Yen, Yen, Chen, Chen, & Ko, 2007).

There are many appealing features of internet, including a pleasure of control and fluidity of identity (Leung, 2004). Spending time online, specially playing online games are reported to satisfy sensation seeking needs, which render a person vulnerable to develop IA (Ko et al., 2008). More specifically, fun-seeking, which is a

personality characteristic, has been reported to be associated with IA (Ko et al., 2008) and predict substance use (Franken & Muris, 2006). In the present study, although there was no association between substance use frequency and IA, a link between the history of marijuana use and IA was found; where college students who ever tried marijuana had higher degrees of IA. Considering the related literature, this link might be explained by the statement that college students who had a personality with fun and sensation seeking feature, might be at the same time under a greater risk to develop IA and have an earlier experience with marijuana. The association between IA and an early experience with marijuana might also be explained by 'problem behavior theory'. This theory suggested that the problem behaviors reflect a person's unique lifestyle and that they are interdependent (Ko et al., 2008). Both IA and substance use can be classified under the title of 'behavioral problems' (Yen et al., 2007) and they might share similar underlying factors such as social environment, familial risks, personality characteristics and genetic tendencies (Ko et al., 2008). Prospective theories should provide more robust statements along with the reasons that account for the relationship between IA and substance use. Plus, researches should provide findings that might elucidate the relationship between the experience with marijuana and IA.

4.1.2.5. Findings Regarding the Differential Roles of Questions Related to Substance Use on Negative Life Events

In the last thirty-five years, the interaction between negative life events and substance use has been a subject of interest and researches focused mostly on adolescent samples. Nearly all researches assessing the link between negative life events and substance use provided a positive association. For instance, Nordfjaern et al. (2010) reported that negative life events facilitated and predicted substance use (i.e., alcohol and illicit substances) among patients who were recruited from substance use disorder treatment facilities. Similarly, Taylor (2006) stated that negative life events placed college students in a risky position for the occurrence of a substance use problem. The type of the life events was also depicted to be important

in their association with specific types of substance use (Low et al., 2012). Another study found an association between stressful life events and smoking, where this association was stronger for men than for women (Frone et al, 1994). Todd (2004) stated that increased number of negative events and perceived stress were correlated with more smoking and greater urges to smoke and this statement was true particularly for women. Another research supported this claim by providing evidence for the association between negative life events and initiation as well as the frequency of tobacco use among adolescents (Wills et al., 2001). A longitudinal study also showed that negative life events and smoking were correlated, even when smoking was measured by a questionnaire along with a biochemical measure (Wills et al., 2002). A study conducted with over 18.000 smokers from the 2001–2002 data set of the National Epidemiological Survey on Alcohol and Related Conditions reported that stressful life events experienced during the previous year were associated with a diagnosis of ND in the same year. Plus, this effect was accurate independently from a prior history of ND, psychiatric diagnoses, alcohol abuse or dependence (Balk et al., 2009).

The findings of the present study are congruent with those from other studies. In the present study, history of cigarette use (i.e., ever trying or not trying cigarette) had a significant effect on negative life events experienced by college students within the last 2 months. That is, college students who did try cigarette reported to experience higher degrees of negative life events in the previous 2 months compared to those who never smoked. Plus, smoking frequency had a significant effect on negative life events experienced. This means that college students who had a high frequency of smoking within the last 6 months reported to experience significantly greater levels of negative life events than those who had a low frequency. Plus, there was another significant finding related to marijuana use, that is, the history of marijuana use (i.e., ever trying or not trying marijuana) had a significant effect on negative life events experienced in the previous 2 months by college students. Specifically, students who did try marijuana reported to have experienced

significantly higher negative life events in the previous 2 months than those who did not try marijuana. However, no relationship was found between alcohol use and negative life events experienced.

Because of the cross-sectional nature of this study, it is not possible to infer a causal relationship between substance use and negative life events experienced. Although it is more plausible that negative life events that one experiences trigger the experimentation with cigarette and marijuana, it may also be that a prior trial with cigarette and marijuana contribute to the occurrence of negative life events. For example, smoking activity may act as an economical burden that might turn into an important component of life stress. For instance, some studies suggested that after an increase of cigarette taxes, smokers experienced economical problems (Cantreill, Hung, Fahs, & Shelley, 2008). Plus, nowadays, people are aware of the negative effects of cigarette and marijuana. Therefore, smokers may be exposed to a social pressure due to the efforts for convincing them to quit smoking, which may be a cause of relational problems (Balk et al., 2009). It may also be true that social pressure would be higher for college students, as they are more likely to be surrounded by educated people. There are also hypothesis that ND constitutes a risk factor for experiencing negative life events (such as traumatic experiences); however this mechanism is not well defined (Al'absi, 2006).

On the other hand, negative life events and subsequent stress render a person more susceptible to use any kind of substance (Chassin, Curran, Hussong, & Colder, 1996; Wills et al., 2001). It has been hypothesized that people who are experiencing negative life events self-medicate themselves with nicotine to drift apart their problems (Balk et al., 2009) and to regulate their negative affect (i.e., anger, anxiety and sadness) (Delfino, Jamner, & Whalen, 2001). Unger et al. (2001) found that depressive symptoms mediated the relationship between negative life events and substance use, which may also support the hypothesis of self-medication. College students, a population which is under a constant risk of experiencing negative life

events and a subsequent stress, may also self-medicate with cigarette or marijuana to cope with their problems.

4.1.2.6. Findings Regarding the Differential Roles of Questions Related to Substance Use on Psychopathology

According to the findings of this study, the history of trying cigarette (i.e., ever trying or not trying cigarette) had a significant effect on general psychopathology. Specifically, college students who ever tried cigarette showed higher degrees of general psychopathology than those who never tried. Plus, the frequency of smoking in the last 6 months had an effect on general psychopathology and some sub-domains of psychopathology such as depression, somatisation and hostility; where college students who had a high (i.e., everyday) frequency of smoking exhibited greater levels of general psychopathology, depression, somatisation and hostility than those who had a low (i.e., less frequent than every day) smoking frequency.

A large body of literature demonstrated a positive relationship between psychopathology and substance use among a variety of samples (Angold et al., 1999; Gregg, et al., 2013; Saban, & Flisher, 2010; Saban et al., 2010). A high number of researches proved that cigarette use and depression are correlated. For instance Kendler et al. (1993) reported that there was a strong link between the average daily smoking amount during lifetime and the prevalence of major depression across lifetime and previous one year among women. Similarly, Fergusson et al. (1996) suggested that compared to teenagers without a depressive disorder, 16 years old teenagers with a depressive disorder were 4.6 times more likely to develop ND, demonstrating a close link between depression and smoking. A research on young adults found that a history of major depressive disorder and ND preceded the occurrence of each other, providing proof for a close link (Breslau et al., 1993). Fernander et al. (2006) suggested that depression was revealed to be a risk factor for ever smoking and becoming a smoker among young girls. Niemela et al. (2009) stated that depression and other types of psychopathologies preceded cigarette use,

by stating that depressive symptoms along with a variety of psychopathology in childhood were correlated with an increased prevalence of daily cigarette use at the age of 18. However, a recent follow-up study suggested that tobacco smoking was preceded by other measures of psychopathology (e.g., aggression, delinquency and attention problems) but not by depression and anxiety (Fischer et al., 2012). Other studies reported that both somatization and hostility were associated with tobacco use (Hollifield, 1999; Whiteman, Fowkes, Deary, & Lee, 1997).

The results of this study are highly congruent with the literature. Although the cross-sectional nature of this study does not allow inferring a causal relationship, it might be hypothesized that smoking contributes to depression, somatization and hostility and several other measures of psychopathology. For instance, Fischer et al. (2012) suggested that smoking activity renders people more vulnerable to develop anxiety and depression. On the contrary, general psychopathology, depression, somatization and hostility may also contribute to smoking behavior. The findings of Niemela et al. (2009) supported this claim; specifically they showed that childhood depression predicted smoking at the age of 18. Upadhyaya, Deas, Brady, and Kruesi (2002) provided a more plausible explanation for the relationship between tobacco use and psychopathology, by pointing out a bidirectional relationship in which one variable can change or exacerbate the other condition.

Regarding marijuana use, there were also some significant findings. That is, the frequency of marijuana use in the last 6 months had an effect on general psychopathology and depression domain of psychopathology; where college students who had a low (i.e., never in the last 6 months) level of marijuana use showed significantly lower degrees of general psychopathology and depression than those who had a high (i.e., more frequent than never in the last 6 months) frequency. The results of the present study are highly in line with the literature linking psychopathology and marijuana use. The data on the association between marijuana use and psychopathology is considerably robust and researches hitherto focused particularly on depression, anxiety and aggression.

Linn (1972) stated that students showing more psychiatric symptoms had higher probabilities of involving with marijuana use. A large scale study conducted in a birth cohort of 3239 people revealed that marijuana use before 15 years of age and frequent use at 21 was linked to higher levels of anxiety as well as depression symptoms in early adulthood (Hayatbakhsh et al., 2006). Troisi et al. (1998) suggested a close link between marijuana use and Axis I and Axis II disorders, particularly affective disorders. Besides, the increase in depression, anxiety and alexithymic symptoms were correlated with the level of engagement with marijuana. A follow-up study of 7 years suggested that marijuana use on a daily basis was linked to a 5 times increase in anxiety and depression; whereas marijuana use on a weekly basis resulted in a 2 fold increase (Patton et al., 2002). Extra evidence for the association between depression and marijuana use was also demonstrated by other studies (Degenhardt & Hall, 2001; Rey et al., 2004).

Regarding the association between marijuana and depression, there are several assumptions. One hypothesis is that marijuana use occurs as a result of psychopathology, which implies a pathway from psychopathology to marijuana use. Marijuana use was reported to pave the way for negative social and psychological outcomes (e.g., educational or job related failure, school drop-out, and involvement in crime), that are linked with a possible mental health deterioration (Degenhardt, Hall, & Lynskey, 2003; Kandel, Davies, Karus, & Yamaguchi, 1986). In a reserch conducted by Fergusson et al. (1996), early trial of marijuana was also found to predict educational and police related problems, which may be a risk factor for adverse psychopathological outcomes. Moreover, it may be that, people who use marijuana have relatively few friends and social support, which may render them more vulnerable to develop any kind of psychopathology. Plus, as stated above, the use of different substances are related to each other (Breslau, 1995; Grant et al., 2004) and the combined effect of more than one substance may be a risk factor for mental health impairments.

On the contrary, stating that psychopathology precedes marijuana use also deserves considerable attention. Hayatbakhsh et al. (2006) suggested in their study that, anxiety and depression at the age of 14 were associated with early initiation and greater frequency of marijuana use at the age of 21. One plausible explanation is that long-term exposure to marijuana has an influence on neurotransmitters by triggering depressive symptoms (De Fonseca et al., 2005). Nearby the hypothesis above, psychopathology and marijuana use may be associated due to an overlap in genetic factors that predisposes a person both to marijuana use and mental health impairments. For instance the association between marijuana use and depression was explained by the hypothesis of 'shared risk factors' by Sullivan, Neale, and Kendler (2000). Overall, more researches are needed to understand in which direction cigarette and marijuana use are associated with psychopathology, to elucidate the dynamics of these relationships and psychosocial as well as genetic factors that might contribute.

4.2. Findings Regarding Correlation Coefficients Between Measures of the Study

Correlational analyses between the measures of the study indicated several significant results, and some of them were already discussed above. One of the association besides those explained above is between negative life events and IA, indicating a positive direction. This result is consistent with the relevant literature which stated that negative life events were closely linked with IA and problematic internet use among adolescents, high-school and college students (Jie et al., 2014; Li et al., 2009; Li et al., 2010; Wang et al., 2011; Yan et al., 2013).

Besides, negative life events were positively associated with psychopathology and sub-domains of psychopathology (i.e., anxiety, depression, negative self-concept, somatization and hostility). This finding is also congruent with the researches stating a robust association between negative life events and various types of psychopathology and psychiatric disorders among clinical and non-clinical samples (Flouri & Tzavidis, 2008; Gunther et al., 2007; Liu, & Tein, 2005; Low et

al., 2012; Michl et al., 2013; Pine et al., 2002; Tsakanikos et al., 2007; Visser et al., 2013).

Results also pointed out that adult ADHD was positively correlated with childhood ADHD. Besides, adult ADHD was also found to be positively correlated with four sub-domains of childhood ADHD (i.e., irritability, depression, behavioral problems/impulsivity, problems related to school and inattention). Plus, childhood ADHD was positively correlated with three sub-domains of adult ADHD (i.e., inattention, hyperactivity/impulsivity, characteristics related to ADD/ADHD). These results are highly expectable considering the high rate of continuity of ADHD. It has been stated by several researches that a crucial number (fifty to eighty percent) of children diagnosed with ADHD in childhood convey their symptoms into adulthood (Frank-Briggs, 2011; Nair et al., 2006).

Associations were also noted between psychopathology and ADHD (i.e. childhood and adult). That is, psychopathology was positively correlated with adult ADHD and its three sub-domains (i.e., inattention, hyperactivity/impulsivity, characteristics related to ADD/ADHD). Sub-domains of psychopathology (i.e., anxiety, depression, negative self-concept, somatization and hostility) were also positively correlated with adult ADHD. Moreover psychopathology was positively associated with childhood ADHD and its four sub-domains (i.e., irritability, depression, behavioral problems/impulsivity, problems related to school and inattention). Besides, sub-domains of psychopathology (i.e., anxiety, depression, negative self-concept, somatization and hostility) were positively correlated with childhood ADHD. These findings are in line with relevant literature. Both cross-sectional and longitidunal studies provided robust findings for the positive correlation between ADHD and psychopathology, psychiatric symptomatology as well as dysfunctions in several areas of life (Babinski et al., 2011; Biederman et al., 2006; Biederman et al., 2010; Costello et al., 2003; Fischer et al., 2002; Mannuzza et al., 2003; Mannuzza et al., 2004; Mannuzza & Klein, 2000; Rutter et al., 2006).

Another significant association was found between IA and ADHD (i.e., childhood and adult). Specifically, IA was depicted to be positively correlated with adult ADHD and two sub-domains of adult ADHD (i.e., inattention and characteristics related to ADD/ADHD). Besides, IA was also positively correlated with childhood ADHD and two sub-domains of childhood ADHD (i.e., depression and inattention). This finding is in line with the relevant literature, which claimed that ADHD is one of the close associates of IA. Both follow-up and cross-sectional studies reported that ADHD was highly related to IA among high-school and college students as well as other samples (Dalbudak & Evren, 2013; Ko et al., 2009; Ozgun et al., 2013; Tahiroğlu et al., 2010; Weinstein & Lejoyeux, 2010; Wu et al., 2013; Yen et al., 2007; Yoo et al., 2004).

Regarding CD, it was found to be positively correlated with adult ADHD and two sub-domains of adult ADHD (i.e., hyperactivity/impulsivity and characteristics related to ADD/ADHD). Besides, CD was positively correlated with childhood ADHD and two sub-domains of childhood ADHD (i.e., irritability and behavioral problems/impulsivity). These findings are highly expected because CD was shown to accompany ADHD at higher rates (30% to 50%) (Pliszka, 2000; Thapar, Harrington, & McGuffin, 2001; Wilens & Biederman, 1993). The overlap between these two disorders was reported to occur because of a common genetic aethiology (Faraone, Biederman, Keenan, 1991; Silberg et al., 1996).

Maternal and paternal educational levels were found to be positively correlated. This result is highly expected in the sense that people of similar education level may have more chances to meet each other, to get along with each other and to get marry.

Familial income was found to be positively correlated with father's education level. This is a very expectable finding considering the fact that the increase in education level brings up more opportunities to find well-paid jobs. However, there was no relationship between maternal education level and familial income, which

may be due to the fact women have lower employment rates and they do not contribute to familial income as much as men do.

The history of marijuana use was correlated with alcohol use frequency, where high rates of ever using marijuana were positively associated with higher degrees of alcohol use frequency. This finding is in line with former researches. The co-occurence of several substance use is noted in the literature (Breslau, 1995), which may be due to a similar underlying mechanism as well as familial and genetic factors (Heath et al., 1995).

Negative life events were found to be positively associated with adult ADHD and two sub-domains of adult ADHD (i.e., inattention and characteristics related to ADD/ADHD). Plus, negative life events were positively associated with childhood ADHD and four sub-domains of childhood ADHD (i.e., irritability, depression, inattention and behavioral problems/impulsivity). The association between several types of negative life events and high levels of ADHD is well-documented (Counts, Nigg, Stawicki, Rappley, & Von Eye, 2005; Ford, Goodman, & Meltzer, 2004; Rydell, 2010); therefore, the finding of this study is congruent with the existing literature.

Lastly, IA was positively correlated with psychopathology and four sub-domains of psychopathology (i.e., anxiety, depression, negative self-concept, hostility). These findings are in line with the emergent literature which provided robust findings about the positive relationship between IA and different types of psychopathology (Carli et al., 2012; Dalbudak et al., 2013).

4.3. Findings Regarding Regression Analysis

In order to find out the factors associated with psychopathology, IA and ND among college students, three stepwise hierarchical regression analyses were conducted.

4.3.1. Findings Regarding the Associated Factors of Psychopathology

4.3.1.1. CD as an Associated Factor of Psychopathology

Looking at the literature, CD was found to be associated with a future antisocial personality (Hill, 2003) and substance use disorders (McGue et al., 2006). Plus, a study found that conduct problems displayed at the ages of 11 to 15 were associated with an increased probability of having all psychiatric disorders (e.g., disorders related to schizophrenia, mania, substance abuse disorders and internalizing problems) at the age of 26 (Kim-Cohen et al, 2003). Another study conducted among 34,000 adults whose minimum age was 18 found that CD was associated with both axis I and axis II disorders, particularly with antisocial personality and substance use disorders in adulthood when sociodemographic features and psychiatric co-morbidity were controlled (Morcillo et al., 2012). In the same study, it was noted that the elevation in CD symptoms was related to an increase in psychiatric disorders. In line with these statements, Gyllenberg et al. (2010) reported that anxiety and depression at the age of 8 were associated with an increased risk of later psychiatric hospital treatment among females; whereas among males, childhood conduct, attention and emotional problems at the age of 8 had a prediction value on later psychiatric conditions. Consistently, Robins (1986) reported that among women, childhood CD was the predictor of various psychiatric disorders in adult life, such as drug and alcohol use, antisocial problems and emotional disorders. Another study supported these claims by showing that CD in youth was positively related to psychosocial outcomes and psychopathology at the age of 30 (Olino et al., 2010).

According to the results of hierarchical analyses conducted to reveal the associates of psychopathology, CD (between the ages of 5 to 18) was found to be significantly associated with current psychopathology among college students. This result is consistent with the literature stating that CD and conduct problems pave the way for a variety of adult psychiatric conditions and various forms of psychopathology. CD is disorder that occurs between the ages of 5-18. Therefore, although regression analyses do not reflect a causal relationship, it might be plausible to suggest that CD precedes current psychopathology among college students.

As stated above, many studies found that early CD (i.e., in childhood and adolescence) was associated with future psychopathology and psychiatric disorders in adulthood, especially antisocial personality disorder, substance use disorders, schizophrenia and internalizing psychopathology such as mood and anxiety disorders (Gyllenberg et al., 2010; Kim-Cohen et al., 2003; Morcillo et al., 2012). It is not possible to name only one specific cause to explain the contribution of CD to a variety of psychopathological conditions. However, genetic, environmental as well as developmental and psychosocial factors may be responsible for this phenomenon (Morcillo et al., 2012). Kendler et al. (2011) made a difference between the heterotypic and homotypic patterns in continuity of psychopathology, and stated that the continuity of externalizing psychopathology may be caused by genes whereas the link between externalizing and internalizing psychiatric conditions may be explained by similar environmental risk factors. Besides, it may be possible that CD contributes to a future internalizing psychopathology via some externalizing psychopathology. For instance, CD, a disorder that includes serious violation of laws and social norms and rules, may easily trigger lifelong negative outcomes such as substance abuse (Elkins et al., 2007; Hopfer et al., 2013). These adverse outcomes, in turn, may increase the risk for internalizing disorders (e.g., anxiety, depression). For instance, CD was shown to predict later marijuana use (Boyle et al., 1993; Elkins et al., 2007; Heron et al., 2013) and marijuana use has been shown as one of the cause for mental health deterioration including internalizing conditions (Degenhardt et al., 2003; Kandel et al., 1986). Further studies regarding the predictor value of CD on different psychopathologic conditions should be conducted for a better understanding of this issue.

4.3.1.2. ADHD as an Associated Factor of Psychopathology

After controlling the effect of CD, the second step of the regression analyses showed that childhood ADHD was positively associated with psychopathology. Moreover, when the effect of CD and childhood ADHD were controlled, adult ADHD was also found to be positively associated with psychopathology.

The association between ADHD in childhood and later psychopathology as well as psychiatric symptomatology is well-documented. Plus, literature stated that adult ADHD and general psychopathology go hand in hand. For instance Fischer et al. (2002) reported that later major depression and several personality disorders were more common among children with hyperactivity compared to control group. Another study sought to evaluate the adolescent and young adult outcomes of girls diagnosed with ADHD and found that they exhibited higher levels of depressive symptoms compared to control group (Babinski et al., 2011). Similarly, Biederman et al. (2010) conducted a follow-up study among girls with ADHD to evaluate their psychopathological progress at 11 years old up to young adulthood period. The risks for showing symptoms of ADHD, antisocial, addictive, mood, anxiety and eating disorders were significantly high among girls with ADHD compared to a control group. A follow-up study which lasted 10 years put more evidence that at the age of 21, young individuals with ADHD had higher risks of exhibiting symptoms of antisocial, addictive, mood and anxiety disorders (Biederman et al., 2006). Another study assessed the adolescent outcome of children with ADHD and found that childhood ADHD was a significant predictor of a later oppositional defiant disorder (Costello et al., 2003). In a similar way, Mannuzza et al. (2004) suggested that, independently of co-morbid ODD or CD, childhood ADHD was a predictor of antisocial disorder in adulthood. Other researches also supported these findings by claiming that childhood ADHD was a risk factor for a higher frequency of adult psychopathology, particularly antisocial personality disorder and substance abuse (Mannuzza & Klein, 2000; Mannuzza, et al., 2003; Rutter et al., 2006). Taken together, the results of this study replicated and extended the previous findings by showing that an association exits between ADHD and a wide range of psychopathology, also among college students.

There is no one specific cause of the association between ADHD and a variety of psychopathological conditions. ADHD is a neurobiological disorder that is known to have an important genetic base. It may be hypothesized that the link

between ADHD and other areas of psychopathology is caused by a genetic liability, as in the case of the association between CD, ODD and ADHD (Tuvblad, Zheng, Raine, & Baker, 2009). ADHD is known to be an important cause for the development of a variety of substance use disorders (Biederman et al., 1998, Gudjonsson et. al, 2012; Katusic et al., 2005; McGough et al., 2005) and substance use may predict the onset of different psychopathologies. For instance marijuana use was shown to be a risk factor for prospective adverse social and psychological outcomes (e.g., educational or job related failure, school drop-out, and involvement in crime) that are linked with a possible mental health deterioration (Degenhardt et al., 2003; Kandel et al., 1986). Therefore, it may be hypothesized that substance use work as a mediator between ADHD and other types of psychopathology. More researches are needed to understand the dynamics of the relationship between ADHD and specific types of psychopathology.

4.3.1.3. Negative Life Events as Associated Factors of Psychopathology

In the last step of the regression analyses, when the effects of previous variables (i.e., CD, childhood ADHD and adult ADHD) were controlled, current negative life events (i.e., experienced in the last two months) were found to be positively associated with psychopathology. This finding is consistent with previous researches, noting a relatively robust association between negative life events and various types of psychopathology and psychiatric disorders among clinical and non-clinical samples.

For instance, Gunther et al. (2007) suggested that adverse life events had an important impact on the severity of psychopathology and that, family related life events were stronger predictors of psychopathology than school-related ones. In line with the findings of this research, a study conducted among children from 11 to 18 years old suggested that the number of negative life events experienced was a risk factor for broad and externalizing psychopathology; where stressful life events experienced in the closest past were better predictors (Flouri & Tzavidis, 2008). Pine et al. (2002) contributed to the literature by stating that negative life events being

exposed during adolescence were predictors of major depressive and generalized anxiety disorders in adulthood, although the second relationship was only accurate for females. A meta-analytic study of researches published between 1980 and 2001 found that negative life events experienced in the present as well as in the past were positively associated with depressive symptoms (Tennant, 2002). A recent study conducted among young adolescents suggested that a link existed between negative life events and various forms of psychopathology (Low et al., 2012). Another recent study stated that there was an association between stressful life events and an increase in anxiety and depression symptoms among adults and increased rumination mediated this relationship (Michl et al., 2013). The association between stressful life events and depression was also replicated among college students and 'trait hope' was detected to moderate this relationship. That is, students with lower degrees of trait hope exhibited a stronger association between stressful life events and depressive symptoms (Visser et al., 2013). These findings were also replicated among Chinese adolescents, and negative life events were found to constitute a higher risk for internalizing (i.e., depression and anxiety) and externalizing problems (i.e., aggression and delinquent behaviour) (Liu & Tein, 2005). Negative life events were also found to be correlated with psychopathology (i.e., especially schizophrenia, personality disorders and depression) among individuals with intellectual disability (Tsakanikos et al., 2007).

Negative life events induce a certain amount of stress in indivuals who experience these events. Decades of researches consistently reported the adverse and deleterious effects of stress (Tennant, 2002), which may render a person vulnerable to develop different kinds of psychopathologies. College students are under the risk of elevated rates of negative life events due to the academic and vocational requirements, adaptation problems, concerns about the futur (i.e., plans to apply for a gradute school or job) and financial challenges (Misra & McKean, 2000; Visser et al., 2013), that are important stress-inducers. Plus, the timing of data collection of the present study and 'Gezi Protests', a movement in which college students were highly

involved, overlapped. This may also be a potential contributor to perceived stress among college students at data collection time.

Literature provided different ideas about the mechanism that links stress to psychopathology. Michl et al. (2013) reported that rumination mediated the longitudinal relationship between stress and symptoms of anxiety and depression; where increased rumination was related to elevated levels of anxiety and depression. In their research conducted among college students, Visser et al. (2013) found that, 'trait hope' moderated the relationship between life events and depressive symptoms where students who had greater levels of trait hope reported less depressive symptoms and lower levels of trait hope claimed to have more depressive symptoms. This result emphasized the protective role of maintaning hope in the time of stress.

When looking at the researches that examined the relationship between life events and psychopathology, there is a general tendency to study how specific life events (e.g., academic failure, loss of a parent etc.) are associated with specific forms of psychopathology (e.g., depression, anxiety, agression etc.). A meta-analysis highlighted the importance of equifinality (i.e., multiple stressful experiences can lead to the same outcome) and multifinality (i.e., similar stressors can lead to multiple outcomes) in the relationship between stress and psychopathology in children and adolescents (McMahon, Grant, Compas, Thurm, & Ey, 2003). However, the present study failed to produce specific pathways that link life events to various forms of psychopathology among college students. The complex relationship between negative life events and various types of psychopathologies deserves further attention by taking into account specific pathways and possible mediators as well as moderators.

4.3.2. Findings Regarding the Associated Factors of Internet Addiction

4.3.2.1. CD as an Associated Factor of Internet Addiction

Internet use has been mostly studied under the title of 'internet addiction' and 'problematic internet use' in its relation with CD and the majority of researches provided evidence for a close link. The findings of the present study indicated that

CD was positively associated with IA therefore this result is consistent with the existing literature. In their research conducted among 11,000 adolescents, Durkee et al. (2013) showed that problematic internet use was associated with conduct problems. Kormas et al. (2011) also showed that conduct problems were observed 8 times more often among adolescents with problematic internet use compared to adolescents with normal levels of internet use. Similarly, a study conducted among Chinese adolescents demonstrated that those with internet addiction had elevated rates of conduct problems compared to adolescents with no internet addiction (Cao & Su, 2007). Likewise, in their recent study, Ozgun et al. (2013) showed that there was a positive correlation between conduct problems and IA among high school students.

Although it is not possible to infer a causal relationship because of the cross-sectional nature of this study, considering the timing of CD (i.e., a disorder that occurs between 5-18 ages) and current IA, it can be claimed that CD precedes IA. In their research conducted among high-school students, Cao and Su (2007) hypothesized that students who had conduct problems were exposed to constant criticism and disapproval of their elders, teachers and parents. Therefore, they may use the internet as a way to project their anger. Plus, they may feel a sense of achievement and self-satisfaction, which they obviously cannot achieve easily in their non-virtual life. This might also be true for college students showing higher rates of CD. Moreover, internet offers a wide range of facilities on virtual-communication, via some web-sites such as 'Facebook', 'MSN' or 'Twitter'. As people with conduct problems have impairments in communication skills, they might find virtual-communication more appealing, which in turn may increase the time they spend online. The underlying mechanism between CD and IA should be elucidated more in detail in future studies.

4.3.2.2. ADHD as an Associated Factor of Internet Addiction

In the present study, childhood ADHD was found to be positively associated with IA when the effect of CD was controlled. Moreover, when CD and childhood ADHD were controlled, adult ADHD was found to be positively related to IA among

college students. This result is congruent with the relevant literature stating that ADHD is one of the close associates of IA.

There is a large body of researches linking ADHD to IA. Ko et al. (2009) conducted a 2 year follow-up study among 2,293 adolescents studying in 10 different high schools of Taiwan. According to their findings, there was a positive correlation between ADHD and IA. Specifically for adolescent girls, ADHD was the leading predictive factor for IA; whereas for adolescent boys, ADHD constituted the second most important predictive factor after hostility (Ko et al., 2009). Cao and Su (2007) supported these findings by reporting that high school students with IA exhibited higher numbers of hyperactivity-inattention symptoms than their age-mates with a normal use of internet. Moreover, ADHD symptoms were shown to be closely linked to IA among high school students (Yen et al., 2007); and ADHD, along with depression, was the only variable predicting IA both for male and female students. Congruent with previous statements, a study conducted by Yoo and his colleagues (2004) found a significant association between childhood ADHD and IA among Korean children.

Existing data on the link between ADHD and IA noted that, not only ADHD in general but both inattention and hyperactivity-impulsivity domains alone were predictors of later IA. In a recent research, Wu et al. (2013) reported that students with IA displayed a higher severity of hyperactivity-impulsivity symptoms than students with normal levels of internet use. In a review of publications between 2000 and 2009, Weinstein and Lejoyeux (2010) provided extra evidence for the high co-morbidity between IA and ADHD. Along with IA, problematic internet use was showed to correlate with ADHD symptoms at greater levels (Carli et al., 2012).

The researches conducted in Turkey were in line with previous findings. In their research conducted among Turkish college students, Dalbudak and Evren (2013) found that ADHD predicted IA independently of personality traits, depression and anxiety symptoms. Plus, they highlighted that particularly hyperactivity/impulsivity symptoms were closely linked with IA. Tahiroğlu et al.

(2010) supported these findings by reporting that the use of internet more than 8 hours per week was the most common among ADHD group, just after mood disorder group among a variety of psychiatric disorders. Ozgun et al. (2013) supported these findings by claiming that IA was associated with ADHD among Turkish high school students.

The cross-sectional nature of this study does not clarify whether it is excessive internet use that leads to an increase in ADHD symptoms, or people with ADHD symptoms have an elevated tendency to become addicted to internet. However, as ADHD is a pervasive mental disorder starting before the age of 7, it can not be caused by IA. Therefore, it might be claimed that ADHD is a risk factor for IA. In a research conducted by Dalbudak and Evren (2013), only hyperactivity and impulsivity symptoms predicted IA. They reported that people with hyperactivity and impulsivity might be pleased with the pace that internet offers and this might be the cause of their vulnarability to develop IA. This statement may also be true for college students showing symptoms of hyperactivity and impulsivity. Besides, impulsivity has been shown to be closely related to 'delay aversion' (i.e., extreme dislike of delay and preferance for an immediate reward) (Yen et al., 2007). Internet provides immediate response and rapid reward (Yen et al., 2007; Yen et al., 2009); therefore might be appealing for college students experincing problems related to impulsivity.

Moreover, one of the characteristics of impulsive people is that they have deficiencies in self-control. Internet provides an environment where people can fulfill their desires without any inhibition. As a result, students with impulsivity may tend to use internet at elevated rates. Plus, once they are online, they cannot easily stop using internet because of a deficit in controlling themselves, which might explain how internet use may be transformed into an addiction. Moreover, people with ADHD enjoy stimulative activities because of their cognitive style (Yoo et al., 2004). Internet provides continually changing stimuli, multiple windows with various activities and virtual entertainment, which might be a reason for elevated rates of internet use among these populations.

Yen et al. (2009) supported that inattention symptoms were better predictors of future IA among college students. They claimed that hyperactivity/impulsivity tend to dissappear in early stages of life; whereas the inattention symptoms tend to persist over time. One of the important features of inattentive type of ADHD is getting easily bored (Diamond, 2005). As stated above, internet offers a rapidity and multiple activities at the same time, which might render virtual life interesting enough to not to be bored for ADHD population. Additionally, it is very likely that college students with ADHD face difficulties related to interpersonal relations in real life. Therefore, they may find 'virtual communication' less problematic, which may also account for their severe levels of internet use. More researches are needed to determine specific domain's (i.e., impulsivity, inattention, hyperactivity) impact on IA among college students.

4.3.2.3. Negative Life Events as Associated Factors of Internet Addiction

In the last step of the regression analysis, current negative life events (within the last 2 months) were found to be positively associated with IA even when the effect of CD, adult and childhood ADHD were controlled. These results were congruent with the related literature reporting a close link between negative life events and IA among a variety of samples.

Yan et al. (2013) stated that stressful life events were associated with IA; where IA was mostly predicted by health and adaptation problems. Moreover, Jie and his colleagues (2014) reported that stressful life events about interpersonal relationships and school were associated with IA among students in China. Another study conducted in China among 14,296 high-school students showed that conflictive relations with family members along with study-related stress and poor interaction with classmates and teachers at school were all predictors of problematic internet use (Wang et al., 2011). In line with these suggestions, Li et al. (2010) provided evidence for the link between stressful life events and problematic internet use among adolescents. Li et al. (2009) supported these findings by proving that stressful life events predicted generalized problematic internet use. Stressful life events and

adolescents' internet use was also shown to be correlated by Leung (2006). Perceived stress was also found to be an important predictor of internet abuse, especially for sexual purposes among college students (Velezmoro et al., 2010).

Although the nature of the present study does not imply any causality between negative life events and IA, stating that experiencing negative life events constitute a risk factor for further development of IA is more plausible than an inverse relationship. Jie et al. (2014) reported that certain life events (e.g., interpersonal relationship and school problems) have a greater contribution to IA than others. The effect of different types of life events was not investigated in this study; therefore it is impossible to state the impact of specific types of life events on IA. Leung et al. (2006) noted that motives for internet use (i.e., social compensation and mood management) deserve considerable attention in explaining the link between negative life events and IA. Li et al. (2009) suggested that coping mechanisms used to deal with stressors cognitively and emotionally are especially important in explaining the pathway from negative life events to IA. Specifically, avoidant coping style (i.e., a maladaptive affect regulation including self-blame, fantasy, withdrawal or rationalization as a response to stress) contributed to problematic use of internet (Li et al., 2009). Velezmoro et al. (2010) suggested that, stress directly predicted internet abuse for sexual purposes; whereas 'perceived hopelessness' as a result of stress predicted internet abuse for non-sexual purposes among college students. Lastly, further studies mostly focus on the mediators between negative life events and IA to understand the mechanism of this relationship in more detail.

4.3.3. Findings Regarding the Associated Factors of Nicotine Dependency

4.3.3.1. CD as an Associated Factor of Nicotine Dependency

The results of the third regression analysis indicated that CD was positively associated with ND. Both in population based and clinical samples, CD was found to be an important risk factor for smoking and early age of experimentation with cigarette use as well as for ND. For instance Lambert (2005) provided evidence for

the association between conduct problems in childhood and ND. Similarly, a study conducted among adolescents from an outpatient clinic found that the likelihood of smoking in patients with a history of CD was higher than others without such a history; however no such difference was detected between smoking and non-smoking adolescents in relation to ADHD symptoms (Ditchburn & Sellman, 2013). The findings of Elkins et al. (2007) were parallel to the statements above; even after adjusting the effect of ADHD, a diagnosis of CD at 14 years of age was linked to an elevated risk of having ND at 18. Consistently with previous researches, in a long-term longitudinal study, Biederman et al. (2008) found that CD predicted an increased degree of smoking rate among youths, and the effect of ADHD symptoms on smoking was not significant.

CD is a disorder which is closely related to externalizing behaviors that are social aggression, disruptive behavior, perceived lack of constraint and risky behaviors. A research by Fischer et al. (2012) showed that externalizing behavior by the age of 14 and 21 were positively related to ND at 21. CD was also found to be associated with ND among adolescent psychiatric inpatients (Hakko et al., 2006) and among adolescents (Disney et al., 1999).

The relationship between CD and ND is explained by a pattern of deviant behavior that includes both externalizing behaviors and cigarette use (Ditchburn & Sellman, 2013; Hakko et al., 2006). Riala et al. (2011) stated that ND was only related to non-aggressive symptoms of CD that are mainly displayed in peer groups. They claimed that, the genetic contribution of CD to smoking behavior may be explained by non-aggressive symptoms (e.g., not caring about the familial rules etc.), rather than aggressive ones (e.g., behaving aggressively towards animals, forcing someone to have a sexual contact etc.). They also suggested that high levels of novelty seeking as well as low levels of harm avoidance are some of the characteristics of CD, which may be a cause for smoking initiation and continuation (Riala et al., 2011). Similarly, Burke et al. (2001) suggested that the relationship between CD and ND can be explained by a need to identify with deviant peer groups

or exhibition of behaviors that are norm-violating. More researches are needed to elucidate the dynamics of the relationship between CD and ND.

4.3.3.2. ADHD as an Associated Factor of Nicotine Dependency

The results of the second step of the third regression analysis indicated that, when the effect of CD was controlled, the association between childhood ADHD and ND was not significant. Similarly, when CD and childhood ADHD was controlled, adult ADHD was not found to be significantly related to ND.

As stated earlier, the literature suggested a close link between ADHD and ND (Disney et al., 1999; Gudjonsson et al., 2012; Lambert, 2005; Lee et al., 2011; Upadhyaya & Carpenter, 2008; Wilens et al., 2008). Moreover, there is high number of researches proving that ADHD and ND are related to each other even when the effect of CD is controlled.

For instance, Wilens et al. (2008) showed that an association existed between ND and the symptoms of ADHD and these results were not due to CD. These findings concurred with the results of a large national epidemiological study conducted among adolescents, showing that ADHD symptoms, especially hyperactivity/impulsivity sub-type of the disorder, were related to the lifetime regular smoking and the severity of cigarette use was proportional to the severity of ADHD symptoms when the effect of the overlap between ADHD and CD was taken into account (Kollins et al., 2005). Consistently, Flory et al. (2003) stated that ADHD was related to tobacco use regardless of the effect of a co-occurring CD. In line with these statements, Elkins, et al. (2007) stated that hyperactivity-inattention sub-type of ADHD was correlated with ND, independently of CD.

However, some researchers suggested that, if CD is taken into consideration, the effect of ADHD on ND is not significant anymore. For instance Burke et al. (2001) claimed that the relationship between ADHD and cigarette smoking in adolescence disappeared when a co-morbid CD existed. Greene et al. (1997) compared the cigarette use of adolescent boys with ADHD and social disability, those with only ADHD and those without neither ADHD nor social disability. Their

results showed that the first group had higher rates of smoking than the two other groups and when CD was included in the analysis, only CD and social disability predicted cigarette use. Other researches claimed that the combination of ADHD and CD are the most powerful risk factor for smoking and ND (Groenman et al., 2013; Milberger et al., 1997).

The results of this study are in line with the statements provided by Burke et al. (2001) and Greene et al. (1997), who stated that when a co-morbid CD is taken into consideration, the relationship between ADHD and ND is not significant anymore. Literature suggested that three different sub-types of ADHD may contribute differently to smoking behavior and to the subsequent ND. Considering the high overlap between hyperactivity-impulsivity and conduct problems (Babinski, Hartsough, & Lambert, 1999), it may be hypothesized that smoking and ND may be results of these overlapping conditions, and can even be explained better by conduct problems (Burke et al., 2001). On the other hand, the well-defined relationship in the existing literature between ND and ADHD may be attributed to inattention problems; however in this study, the effect of different sub-domains of ADHD on ND were not calculated. Therefore, it is not possible to make any domain specific inference. Further research should be conducted to replicate the findings of this study and to understand the contribution of the combined effect of ADHD and CD on smoking as well as on ND.

4.3.3.3. Negative Life Events as Associated Factors of Nicotine Dependency

When the effect of previous variables (i.e., CD, adult and childhood ADHD) were controlled, current negative life events experinced within the last 2 months were found to be positively associated with ND. Despite the considerable interest devoted to negative life events and smoking separately concerning their association to other variables, the literature about their relationship is very limited. As for the association between negative life events and ND, researches are even scarcer. Nevertheless, nearly all researches provided evidence for a positive relationship,

which means that the findings of this study are congruent with those from other studies.

A study conducted with over 18.000 smokers from the 2001–2002 data set of the National Epidemiological Survey on Alcohol and Related Conditions reported that stressful life events experienced during the previous year were associated with a diagnosis of ND in the same year. Plus, this effect remained independently of a prior history of ND, psychiatric diagnoses and alcohol abuse or dependence (Balk et al., 2009). In line with these findings, Nordfjaern et al. (2010) suggested that there was a positive relationship between negative life events and substance use among substance use patients. Wills et al. (2001) supported these claims by showing an association between negative life events and initiation as well as elevation of tobacco use among adolescents. Moreover, in a longitudinal study by Wills et al. (2002), a correlation was found between negative life events and smoking, which was measured by a questionnaire along with a biochemical measure. (See section 4.1.2.5 for a detailed explanation for the relationship between ND and negative life events).

4.4. Limitations and Strengths of the Present Study

The main limitation of the present study is its cross-sectional nature, which does not allow establishing causative associations between the studied variables. However, for some variables, the timings were clear (e.g., ADHD symptoms and alcohol use), which may be interpreted as cause-effect relationships. Therefore, longitudinal studies are needed to investigate the possible pathways between different variables aforesaid in this study.

The second limitation of the study is the reliance on self-report for all measures included in this study. Self-report may be linked with the sided self-reflection and recall of college students. In this study, data was collected about substance use, such as alcohol and marijuana, which participants might not be reluctant to answer truly. However, it was shown that when anonymity and confidentiality are guaranteed, data based on self-report is a reliable and valid source of information for illicit drug use (Torok, Darke, & Kaye, 2012). Nevertheless,

prospective researches might collect data by other techniques, such as using a biochemical measure to assess ND and smoking rates, or a web-based program to measure inattentiveness symptoms.

This is the first study assessing the associations between a large set of variables (i.e., childhood ADHD, adult ADHD, CD, substance use, ND, IA, negative life events, psychopathology) among university students. The relevance of ADHD and CD symptoms to the use of different substances and internet use was largely studied in the literature; however, none of these researches studied different aspects of the addiction (cigarette, marijuana, alcohol and internet) in the same study. Plus, in this study, negative life events predicted ND, psychopathology and IA, even when the effects of CD and ADHD (i.e., childhood and adult) symptoms were controlled. Therefore, this study revealed the crucial influence of negative life events on college students. Additionally, this study found that, when CD was controlled, there was no significant effect of ADHD symptoms (both childhood and adult types) on ND. Considering the controversial opinions about the predictive value of ADHD symptoms on ND independently of CD, the findings of this study makes an important contribution to the relevant literature.

Moreover, this study revealed the risk factors related to ADHD and CD symptoms. In order to prevent children and adolescentes showing these symptoms from developing unwanted conditions in the future, some precautions may be taken. For instance, families and teachers can be informed about prospective risky conditions that children and adolescentes with ADHD and CD symptoms may develop. Plus, the teachers and parents may be taught about the ways to control or treat ADHD and CD symptoms when it is still possible to prevent other negative conditions. In that sense, this study highlightes the crucial importance of preventive strategies.

4.5. Clinical Implications and Future Directions

First of all, the current study brings evidence for the possible contribution of ADHD symptoms to alcohol, cigarette and marijuana use and addiction on internet

among college students. Additionally, the present study showed that CD was positively related to IA. Besides, CD was positively associated with cigarette use and ND, even when the effects of ADHD symptoms were controlled. As stated above, considering the time gap between the occurrence of ADHD symptoms and first trial of licit and illicit substances, as well as first internet use, it might be stated that ADHD precedes cigarette, alcohol and marijuana use. With a similar logic, CD can be stated to be a precursor of cigarette use, a subsequent ND and IA. Considering a pathway from ADHD symptoms into the use of different substances and IA; and from CD into the use cigarette and IA, efforts to treat or wane ADHD and CD symptoms early enough is of crucial importance. For instance, children with ADHD and CD may receive specific interventions and may participate to education programs in order to prevent substance use problems and IA in the future.

Additionally, in the present study, ADHD and CD were found to be associated with current psychopathology of college students, which may attract attention to the morbidity and disability associated with ADHD and CD from childhood into the adulthood years. These results imply that intervention and prevention strategies targeting ADHD and CD may decrease the rates psychopathology in following years among college students.

Furthermore, negative life events experienced within the last 2 months were found to be positively correlated with IA, ND and current psychopathology even after the effects of CD and ADHD (i.e., childhood and adult) were controlled. Therefore, the current study demonstrated the crucial effect of negative life events on college students' internet use and smoking behaviors. Considering these findings, it might be helpful to offer them specific interventions about adaptive coping styles and the way to implement the healthy styles in their life, which might substitute for the excessive use of internet and cigarette.

As for future directions, apart from what was stated above, studies should use biological or interview based assessments when studying the effect of ADHD and CD on substance use, ND and IA, which may produce more reliable results.

Moreover, longitudinal studies should be conducted as they provide better findings when studying the relationships between CD, ADHD, ND, IA, psychopathology and substance use considering their developmental trajectories. Additionally, future studies should investigate different dimensions of ADHD (i.e., hyperactivity, impulsivity and inattention) when researching its effect on substance use, ND, IA. This is particularly important to find out whether any dimension of ADHD has a unique predictor value on ND, IA and use of different substances, independent from CD symptoms. Moreover, when studying the associates of psychopathology, it may be better to refer to more specific forms of psychopathology, which may result in more tangible findings. Plus, considering important influence of negative life events experienced by college students, prospective researches should focus on the unique relationship between different types of negative life events (e.g., economical, social and academic) and different types of substance use (e.g., cigarette, alcohol, marijuana) as well as ND and IA, whether these relationships differs among men and women and possible mediating factors between these variables.

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APPENDICES

APPENDIX A

INFORMED CONSENT

Gönüllü Katılım Formu

Bu çalışma, Prof. Dr. Tülin Gençöz danışmanlığında yüksek lisans öğrencisi Seda Meşeli Allard'ın tezi kapsamında yürütülmektedir. Çalışmanın amacı, üniversite öğrencilerindeki dikkat eksikliği ve hiperaktivite belirtilerinin çeşitli psikolojik semptomlar ile internet, alkol, sigara ve madde kullanımı üzerindeki etkisini araştırmaktır. Çalışmaya katılım tamamen gönüllülük temelinde olmalıdır. Ankette, sizden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplarınız tamamen gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir; elde edilecek bilgiler bilimsel yayımlarda kullanılacaktır. Araştırma sonuçlarının sağlıklı olabilmesi için verdiğiniz yanıtlarda samimi olmanız büyük önem arz etmektedir. Soruların başındaki yönergeleri okuyunuz ve size en uygun seçeneği işaretleyiniz. Lütfen cevaplandırılmamış soru bırakmamaya özen gösteriniz.

Anket, genel olarak kişisel rahatsızlık verecek soruları içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakıp çıkmakta serbestsiniz. Anket sonunda, bu çalışmayla ilgili sorularınız cevaplanacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için Psikoloji Bölümü öğretim üyelerinden Prof. Dr. Tülin Gençöz (Oda: B239; Tel: 210 3131; E-posta: tgencoz@metu.edu.tr) ya da yüksek lisans öğrencisi Seda Meşeli Allard (Tel: 0535 955 28 43; E-posta: momentumorum@hotmail.com) ile iletişim kurabilirsiniz.

Değerli zamanınızı ayırıp çalışmaya katıldığınız için çok teşekkür ederiz...

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı

yayımlarda kullanılmasını kabul ediyorum. (Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

İsim Soyad Tarih İmza

APPENDIX B

DEMOGRAPHIC INFORMATION FORM

Aşağıdaki formu kişisel bilgilerinize göre doğru olarak doldurunuz. Araştırma sonuçları toplu olarak değerlendirileceğinden isminizi belirtmenize gerek yoktur. Araştırma sonuçlarının sağlıklı olabilmesi için verdiğiniz yanıtlarda samimi olmanız büyük önem arz etmektedir. Soruların başındaki yönergeleri okuyunuz ve size en uygun seçeneği işaretleyiniz. Lütfen cevaplandırılmamış soru bırakmamaya özen gösteriniz. Zamanınızı ayırıp araştırmama katıldığınız için çok teşekkür ederim.

1. Cinsiyetiniz
2. Yaşınız
3. Üniversiteniz
4. Bölümünüz
5. Sınıfınız
6. Genel not ortalamanız
7. Kaç kardeşiniz var?
8. Annenizin en son bitirdiği okul:

□ İlkokul
□ Ortaokul
□ Lise
□ Üniversite
□ Üniversite üstü
□ Diğer

9. Babanızın en son bitirdiği okul:

□ İlkokul
□ Ortaokul
□ Lise
□ Üniversite

□ Üniversite üstü

□ Diğer

10. Yaşamınızın çoğunu nerede geçirdiniz?

□ Büyük şehir (İstanbul, Ankara, İzmir)

□ Şehir

□ İlçe

□ Köy

11. Ailenizin gelir düzeyi nedir?

□ Yüksek (3.000 TL'den fazla)

□ Orta(1.000-3.000 TL)

□ Düşük (1.000 TL'den düşük)

12. Şu an kiminle/ kimlerle yaşıyorsunuz?

□ Anne ve babamla

□ Annemle

□ Babamla

□ Akrabaların yanında

□ Tek başına evde

□ Evde arkadaşlarla

□ Yurtta arkadaşlarla

□ Babamla

□ Eşimle

□ Eşimle ve çocuklarımla

13. Anneniz

□ Sağ

□ Sağ değil

□ Öz

□ Öz değil

14. Babanız

□ Sağ

□ Sağ değil

□ Öz

□ Öz değil

15. Anneniz sigara içiyor mu?

□ İçiyor

□ İçmiyor

□ İçiyordu bıraktı

16. Babanız sigara içiyor mu?

□ İçiyor

□ İçmiyor

□ İçiyordu bıraktı

17. Psikolojik bir rahatsızlığınız var mı?

□ Evet

□ Hayır

Varsa adını yazınız:

18. Psikolojik rahatsızlığınızdan ötürü tedavi alıyor musunuz?

□ Alıyorum

□ Almıyorum

APPENDIX C

FORM CONTAINING QUESTIONS ABOUT SUBSTANCE USE

1. Hiç alkollü içecek kullandınız mı?

□ Evet

□ Hayır

Cevabınız hayırsa 5. Soruya geçiniz.

2. Evetse hangi sıklıkta alkol alıyorsunuz? (Son altı ayı düşünerek cevap veriniz)

□ Her gün

□ Haftada bir gün

□ Haftada bir kaç gün

□ Ayda birkaç gün

□ Sadece özel günlerde

□ Hiçbir zaman

3. Geçen ayı düşünecek olursanız günde ortalama kaç kadeh (şarap, rakı gibi içecekler için) ya da kaç şişe (bira gibi içecekler için) alkollü içecek tükettiniz?

□ 1-2

□ 3-4

□ 5-6

□ 7-9

□ 0 ya da daha fazla

4. En çok aldığınız alkollü içki türü hangisidir?

□ Bira

□ Şarap

□ Rakı

□ Votka

□ Cin

□ Viski

□ Diğer

5. Hiç sigara kullandınız mı?

□ Evet

□ Hayır

Cevabınız hayırsa 7. Soruya geçiniz.

6. Evetse hangi sıklıkta sigara kullanıyorsunuz? (Son altı ayı düşünerek cevap veriniz)

□ Her gün

□ Haftada bir gün

□ Haftada bir kaç gün

□ Ayda birkaç gün

□ Sadece özel günlerde

□ Hiçbir zaman

7. Hiç esrar kullandınız mı?

□ Evet

□ Hayır

Eğer cevabınız hayırsa 9. Soruya geçiniz.

8. Evetse hangi sıklıkta esrar kullanıyorsunuz? (Son altı ayı düşünerek cevap veriniz)

□ Her gün

□ Haftada bir gün

□ Haftada bir kaç gün

□ Ayda birkaç gün

□ Sadece özel günlerde

□ Hiçbir zaman

9. Alkol, sigara, esrar ve kokain dışında en az bir kez kullandığınız başka madde var mı (ekstazi, LSD vs.)

□ Evet

□ Hayır

10. Evetse kullandığınız bu madde ya da maddelerin türü nedir?

11. Ne zamandır bu madde ya da maddeleri kullanıyorsunuz?

12. Bu madde ya da maddeleri ne sıklıkta kullanıyorsunuz?

APPENDIX D

YOUNG INTERNET ADDICTION SCALE (YIAS)

Aşağıdaki sorularda, size en uygun düşen şıkkı işaretleyiniz:

1. Ne sıklılıkla planladığınızdan daha fazla süre internette kalıyorsunuz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

2. Ne sıklıkla internette kalmak için günlük ev işlerini ihmal edersiniz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

3. Ne sıklıkla arkadaşlarınızla birlikte olmak yerine interneti tercih edersiniz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

4. Ne sıklıkla internet kullanan kişilerle yeni ilişkiler kurarsınız?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

5. Ne sıklıkla bir işe başlamadan önce e-postanızı (e-mail) denetlersiniz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

6. Ne sıklıkla okula devamınız internetten dolayı olumsuz etkilenir?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

7. Herhangi biri internette ne yaptığınızı sorduğunda ne sıklıkla kendinizi savunur ve ne yaptığınızı gizlersiniz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

8. Çevrenizdekiler ne sıklıkla internette harcadığınız zamanın fazlalığından şikayet eder?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

9. Ne sıklıkla okuldaki ders notlarınız ve ödevleriniz internette kalma sürenizden olumsuz yönde etkilenir?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık

6) Devamlı

10. Hayatınız hakkında sizi rahatsız eden düşünceleri dağıtmak için ne sıklıkla internete girersiniz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

11. Ne sıklıkla internete girmek için sabırsızlanırsınız?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

12. Ne sıklıkla internetsiz hayatın, sıkıcı, boş ve eğlencesiz olacağını düşünürsünüz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

13. Biri sizi internetteyken rahatsız ettiğinde ne sıklıkla kırıcı konuşur, bağırır veya kızgın davranışlar gösterirsiniz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

14. Gece geç saatlerde internet kullanmaktan ötürü ne sıklıkla uykunuz kaçar?

1) Hiçbir zaman
2) Nadiren

3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

15. İnternette olmadığınız zamanlarda ne sıklıkla interneti düşünür veya internete girmeyi hayal edersiniz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

16. Kendinizi ne sıklıkla internetteyken "yalnızca birkaç dakika daha" derken bulursunuz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

17. Ne sıklıkla internette harcadığınız zamanın miktarını azaltmaya çalışır ve başarısız olursunuz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

18. İnternette kaldığınız süreyi ne sıklıkla saklamaya çalışırsınız?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

19. Ne sıklıkla başkalarıyla dışarı çıkmak yerine internette daha fazla zaman geçirmeyi yeğlersiniz?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

20. Ne sıklıkla internette olmadığınızda kendinizi çökmüş, aksi veya sinirli hissedip, internete girince rahatlarsınız?

1) Hiçbir zaman
2) Nadiren
3) Arada sırada
4) Çoğunlukla
5) Çok sık
6) Devamlı

APPENDIX E

MEASURE OF CHILDHOOD CONDUCT DISORDER (CONDUCT)

Aşağıdaki davranış özellikleri bütün çocuklarda belli sıklıklarda görülebilir.
Aşağıdaki soruları, 5-18 yaşlarınız arasındaki halinizi düşünerek cevaplayınız.

1. Çoğu zaman başkalarına kabadayılık eder, gözdağı verir ya da gözünü korkuturdum.
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla
2. Çoğu zaman kavga-dövüş başlatırdım.
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla
3. Başkalarının ciddi bir biçimde fiziksel olarak yaralanmasına neden olacak bir silah kullanmıştım. (örn. bir değnek, taş, kırık şişe, bıçak, tabanca).
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla
4. İnsanlara karşı fiziksel olarak acımasız davranmıştım.
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla
5. Hayvanlara karşı fiziksel olarak acımasız davranmıştım.
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla
6. Başkasının gözü önünde çalmıştım. (örn. saldırıp soyma, çanta kapıp kaçma, göz korkutularak alma, silahlı soygun).
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla
7. Birisini cinsel etkinlikte bulunması için zorlamıştım.
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla
8. Ciddi hasar vermek amacıyla isteyerek yangın çıkarmıştım.
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla
9. İsteyerek başkalarının malına mülküne zarar vermiştim (yangın çıkarma dışında).
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla
10. Bir başkasının evine, binasına ya da arabasına zorla girmiştim.
Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla

11. Bir şey elde etmek, bir çıkar sağlamak ya da yükümlülüklerinden kaçınmak için çoğu zaman yalan söyledim. (yani başkalarını “atlatırdım”).

Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla

12. Hiç kimse görmeden değerli şeyler çalmıştım. (örn. kırmadan ve içeri girmeden mağazalardan mal çalma, sahtekârlık).

Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla

13. 13 yaşından önce başlayarak, ailemin yasaklarına karşın çoğu zaman geceyi dışarıda geçirmiştim.

Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla

14. Ana babamın ya da onların yerini tutan kişilerin evinde yaşarken en az iki kez geceleyin evden kaçmıştım. (ya da uzun bir süre geri dönmemişsem bir kez).

Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla

15. 13 yaşından önce başlayarak çoğu zaman okuldan kaçmıştım.

Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla

APPENDIX F

FAGERSTRÖM TEST OF NICOTINE DEPENDENCE (FAGER)

1. İlk sigaranızı sabah uyandıktan ne kadar sonra içersiniz?

□ Uyandıktan sonraki ilk 5 dakika içinde

□ 6-30 dakika içinde

□ 31-60 dakika

□ Bir saatten fazla

2. Sigara içmenin yasak olduğu örneğin otobüs, hastane, sinema gibi yerlerde bu yasağa uymakta zorlanıyor musunuz?

□ Evet

□ Hayır

3. İçmeden duramayacağınız, diğer bir deyişle vazgeçemeyeceğiniz sigara hangisidir?

□ Sabah içtiğim ilk sigara

□ Diğer herhangi biri

4. Günde kaç adet sigara içiyorsunuz?

□ 10 adet veya daha az -'den + ya

□ 11-20

□ 21-30

□ 31 veya daha fazlası

5. Sabah uyanmayı izleyen ilk saatlerde, günün diğer saatlerine göre daha sık sigara içer misiniz?

□ Evet

□ Hayır

6. Günün büyük bölümünü yatakta geçirmenize neden olacak kadar hasta olsanız bile sigara içer misiniz?

□ Evet

□ Hayır

APPENDIX G

BRIEF SYMPTOM INVENTORY (BSI)

Aşağıda insanların bazen yaşadıkları belirtiler ve yakınmaların bir listesi verilmiştir.Listedeki her maddeyi lütfen dikkatle okuyun.Daha sonra o belirtinin sizi bugün dahil, **son bir haftadır** ne kadar rahatsız ettiğini belirtin. Fikir değiştirirseniz ilk yanıtınızın üstünü karalayın.

Seçenekler: Hiç, Biraz, Orta Derecede, Oldukça Fazla, Ciddi Derecede

1. İçinizdeki sinirlilik ve titreme hali
2. Baygınlık, baş dönmesi
3. Bir başka kişinin sizin düşüncelerinizi kontrol edebileceği inancı
4. Başınıza gelen sıkıntılardan dolayı başkalarının suçlu olduğu düşüncesi
5. Olayları hatırlamada güçlük
6. Çok kolayca kızıp öfkelenme
7. Göğüs (kalp) bölgesinde ağrılar.
8. Meydanlık (açık) alanlardan korkma duygusu
9. Yaşamınıza son verme düşünceleri
10. İnsanların çoğuna güvenilmeyeceği düşüncesi
11. İştahta bozukluklar
12. Hiç bir nedeni olmayan ani korkular
13. Kontrol edemediğiniz duygu patlamaları

14. Başka insanlarla beraberken bile yalnızlık hissetme
15. İşleri bitirme konusunda kendini engellenmiş hissetme
16. Yalnızlık hissetme
17. Hüzünlü, kederli hissetme
18. Hiçbir şeye ilgi duymama
19. Ağlamaklı hissetme
20. Kolayca incinebilme, kırılma
21. İnsanların sizi sevmediğine kötü davrandığına inanmak
22. Kendini diğerlerinden daha aşağı görme
23. Mide bozukluğu, bulantı
24. Diğerlerinin sizi gözlediği ya da hakkınızda konuştuğu inancı
25. Uykuya dalmada güçlük
26. Yaptığınız şeyleri tekrar tekrar doğru mu diye kontrol etme
27. Karar vermede güçlükler
28. Otobüs, tren, metro gibi umumi vasıtalarla seyahat etmekten korkma
29. Nefes darlığı, nefessiz kalma
30. Sıcak, soğuk basmaları

31. Sizi korkuttuğu için bazı eşya, yer, etkinliklerden uzak kalmaya çalışma
32. Kafanızın birden bomboş kalması
33. Bedeninizin bazı bölgelerinde uyuşmalar, karıncalanmalar
34. Günahlarınız için cezalandırılmanız gerektiği düşüncesi
35. Gelecekle ilgili umutsuzluk duyguları içinde olmak
36. Konsantrasyonda (dikkati bir şey üzerinde toplamada) güçlük/zorlanma
37. Bedenin bazı bölgelerinde zayıflık, güçsüzlük hissi
38. Kendini gergin ve tedirgin hissetme
39. Ölüm ve ölmek üzerine düşünceler
40. Birini dövme, ona zarar verme, yaralama isteği
41. Bir şeyleri kırma/dökme isteği
42. Diğerlerinin yanındayken kendini çok fazla gözlemek, yanlış bir şeyler yapmamaya çalışmak
43. Kalabalıklarda rahatsızlık duymak
44. Bir başka insana hiç yakınlık duymamak
45. Dehşet ve panik nöbetleri
46. Sık sık tartışmaya girme

47. Yalnız bırakıldığında/kalındığında sinirlilik hissetme
48. Başarılarınız için diğerlerinden yeterince takdir görmediğiniz düşüncesi
49. Yerinde duramayacak kadar gergin ve tedirgin hissetme.
50. Kendini değersiz görme, değersizlik hissi
51. İzin verdiğiniz takdirde insanların sizi sömüreceği düşüncesi
52. Suçluluk duyguları
53. Aklınızda bir bozukluk olduğu düşünceleri

APPENDIX H

LIFE EVENTS INVENTORY FOR UNIVERSITY STUDENTS (LEIU)

Aşağıda günlük yaşantınızda size sıkıntı verebilecek bazı olaylar ve sorunlardan bahsedilmektedir. Her maddeyi dikkatli bir şekilde okuyarak, son iki ay içerisinde bu olay ya da sorunun size ne yoğunlukta bir sıkıntı yaşattığını ve ne kadar sıklıkla böyle bir olay ya da sorunla karşılaştığınızı maddelerin karşılarında bulunan seçeneklerden uygun rakamları işaretleyerek belirtiniz.

	Bu sorun size ne yoğunlukta bir sıkıntı yaşattı veya yaşatmakta?					Bu sorunu ne sıklıkla yaşadınız?				
	Hiç	Az	Orta	Fazla	Çok fazla	Hiç	Nadiren	Ara sıra	Sık sık	Her zaman
1. Derslerin ağırlığı ve yoğunluğu	1	2	3	4	5	1	2	3	4	5
2. Genel sağlık problemleri	1	2	3	4	5	1	2	3	4	5
3. Kız/erkek arkadaşımla olan problemler	1	2	3	4	5	1	2	3	4	5
4. Barınma ile ilgili sorunlar	1	2	3	4	5	1	2	3	4	5
5. Ulaşım sorunu	1	2	3	4	5	1	2	3	4	5
6. Zamanın sıkışıklığı	1	2	3	4	5	1	2	3	4	5
7. Anne ve babamla aramızdaki çatışmalar	1	2	3	4	5	1	2	3	4	5
8. Gelecekle ilgili kaygılar	1	2	3	4	5	1	2	3	4	5

9. Arkadaş ilişkilerinde yaşanan sorunlar	1	2	3	4	5	1	2	3	4	5
10. Ülkedeki olumsuz siyasi gelişmeler	1	2	3	4	5	1	2	3	4	5
11. Sevdiğim insanlardan ayrı olmak (Aile, arkadaşlar vs.)	1	2	3	4	5	1	2	3	4	5
12. Çevresel koşullardan (Gürültü, havalar, kirlilik vs.) dolayı yaşanan sorunlar	1	2	3	4	5	1	2	3	4	5
13. Okula uyum sağlayamamak	1	2	3	4	5	1	2	3	4	5
14. Maddi problemler	1	2	3	4	5	1	2	3	4	5
15. Sosyal faaliyetlere katılamamak (spor, sinemaya, tiyatroya gitmek vs.)	1	2	3	4	5	1	2	3	4	5
16. Öğretim görevlileri ile ilgili sorunlar	1	2	3	4	5	1	2	3	4	5
17. İnsanların birbirine karşı duyarsız olmaları	1	2	3	4	5	1	2	3	4	5
18. Yalnızlık kaygıları	1	2	3	4	5	1	2	3	4	5

19. Kişiliğimle ilgili kendimi sorgulamak	1	2	3	4	5	1	2	3	4	5
20.Yorgunluk	1	2	3	4	5	1	2	3	4	5
21. İçki, sigara ve benzeri alışkanlıkların verdiği rahatsızlıklar	1	2	3	4	5	1	2	3	4	5
22. Karar vermekte güçlük çekmek	1	2	3	4	5	1	2	3	4	5
23. Uykusuzluk	1	2	3	4	5	1	2	3	4	5
24. Beslenme problemi	1	2	3	4	5	1	2	3	4	5
25. Sorumluluklarımı yerine getirememek	1	2	3	4	5	1	2	3	4	5
26. Reddedilme korkusu	1	2	3	4	5	1	2	3	4	5
27. Fiziksel görünüşümle ilgili endişeler	1	2	3	4	5	1	2	3	4	5
28. Okulda başarısız olmak	1	2	3	4	5	1	2	3	4	5
29. Aileden birinin rahatsızlığı	1	2	3	4	5	1	2	3	4	5
30. Ödevler ya da projelerin verdiği rahatsızlıklar	1	2	3	4	5	1	2	3	4	5
31. Okuduğum bölümden memnun olmamak	1	2	3	4	5	1	2	3	4	5

32. Tüm ya da bazı konularda emeğimin karşılığını alamamak	1	2	3	4	5	1	2	3	4	5
33. Yeterince ders çalışamamak	1	2	3	4	5	1	2	3	4	5
34. Sınavların sıkışıklığı, sınav kaygısı	1	2	3	4	5	1	2	3	4	5
35. Okula devamsızlık problemleri	1	2	3	4	5	1	2	3	4	5
36. Yurt ya da ev arkadaşlarımla aramızdaki sorunlar	1	2	3	4	5	1	2	3	4	5
37. Kardeşim/lerimle ilgili sorunlar	1	2	3	4	5	1	2	3	4	5
38. Zamanımı yeterince iyi değerlendirememek	1	2	3	4	5	1	2	3	4	5
39. Kendimi insanlara yeterince ifade edememek	1	2	3	4	5	1	2	3	4	5
40. Ailevi problemler	1	2	3	4	5	1	2	3	4	5
41. Çalıştığım işle ilgili sorunlar	1	2	3	4	5	1	2	3	4	5
42. İş görüşmeleri ile ilgili kaygılar	1	2	3	4	5	1	2	3	4	5

43. Yayın organlarındaki kötü haberlerle ilişkili kaygılar	1	2	3	4	5	1	2	3	4	5
44. Derslerin İngilizce olmasından dolayı zorluk çekmek	1	2	3	4	5	1	2	3	4	5
45. Cinsel sorunlar	1	2	3	4	5	1	2	3	4	5
46. Kilomla ilgili kaygılar	1	2	3	4	5	1	2	3	4	5
47. Mezun olamama kaygısı	1	2	3	4	5	1	2	3	4	5
48. Hata yapma kaygısı	1	2	3	4	5	1	2	3	4	5
49. Eleştirilmekten duyduğum rahatsızlık	1	2	3	4	5	1	2	3	4	5
50. Tatmin edici ilişkiler kuramama / bulamama	1	2	3	4	5	1	2	3	4	5
51. Kız/erkek arkadaştan ayrılma	1	2	3	4	5	1	2	3	4	5
52. Ailemin beklentilerini yerine getirememe kaygısı	1	2	3	4	5	1	2	3	4	5
53. Tüm ya da bazı derslerde başarısız olma endişesi	1	2	3	4	5	1	2	3	4	5
54. Yaşadığım yere uyum sağlayamamak	1	2	3	4	5	1	2	3	4	5

APPENDIX I

WENDER UTAH RATING SCALE (WURS)

Aşağıdaki davranış özellikleri bütün çocuklarda belli sıklıklarda görülür. Siz kendi çocukluğunuzda nasıldınız?

Seçenekler: Hayır ya da çok hafif / Hafif / Orta derecede / Fazla / Çok fazla

BEN ÇOCUKKEN,

1. Dikkatimi toplama sorunum vardı, dikkatim kolayca dağılırdı.
2. Kaygılı, tasalı, sıkıntılıydım.
3. Asabi ve kıpır kıpırdım.
4. Dikkatsizdim, hayallere dalardım.
5. Kolayca kızar, öfkelenirdim.
6. Hemen tepem atardı, öfke nöbetlerim olurdu.
7. Başladığım bir işi sürdürmekte, takip etmekte ya da bitirmekte zorlanırdım.
8. Kararlı, sebatkar ve inatçıydım, iradem güçlüydü.
9. Mutsuz, çökkün, karamsardım.
10. Anne babamın sözünü dinlemez, onlara karşı gelir, isyankar davranırdım.
11. Kendimi küçük görürdüm.
12. Alıngandım, buluttan nem kapardım.
13. Huysuzdum, duygusal dalgalanmalar yaşardım.
14. Kızgındım, çabuk gücenirdim.
15. Düşünmeden hareket ederdim.
16. Çocuksu davranırdım.
17. Suçluluk duyardım, yaptıklarıma pişman olurdum.
18. Kontrolümü kaybederdim.
19. Akılsızca ya da mantıksızca davranırdım.
20. Popüler değildim, arkadaşlıklarım uzun sürmezdi, diğer çocuklarla anlaşamazdım.

21. Olayları diğerlerinin bakış açısından görmekte zorlanırdım.

22. Otoriteyle, okulla sorunlarım olurdu, müdür beni odasına çağırırdı.

BEN ÇOCUKKEN OKULDA,

23. Genel olarak başarısızdım, yavaş öğrenirdim.

24. Matematikle ve sayılarla aram iyi değildi.

25. Potansiyelime ulaşamadım.

APPENDIX J

ADULT ADD/ADHD DSM-IV BASED DIAGNOSTIC SCREENİNG AND RATING SCALE (AADSRS)

Aşağıdaki cümleleri dikkatle okuyup şu anki durumunuzu en iyi ifade eden rakamı işaretleyiniz.

Sorunun şiddeti ve sıklığı:

Seçenekler: Hemen hiç (0) / Biraz ya da bazen (1) / Sıklıkla (2) / Çok sık (3)

1. BÖLÜM

Dikkat eksikliği Bölümü

1. Ayrıntılara dikkat etmekte zorluk ya da okul, iş ve diğer etkinliklerde dikkatsizce hatalar yapma
2. Dikkat gerektiren işlerde dikkati sürdürme güçlüğü
3. Birisiyle yüz yüze konuşurken dinlemede güçlük çekme
4. Okul ödevlerini ya da iş yerinde verilen görevleri bitirmekte zorlanma, verilen yönergeleri izlemekte zorluk çekme
5. Görevleri ve etkinlikleri düzenleme/ organize etme güçlüğü
6. Uzun zihinsel çaba gerektiren işlerden kaçınma, bu işlerden hoşlanmama ya da bu işlere karşı isteksizlik
7. Görev ve etkinlikler için gereken eşyaları kaybetme
8. Dikkatin kolayca dağılması
9. Günlük etkinliklerde unutkanlık

2. BÖLÜM

Aşırı Hareketlilik/ Dürtüsellik Bölümü

1. El ve ayakların kıpır kıpır olması, oturduğu yerde duramama
2. Oturulması gereken durumlarda yerinden kalkma
3. Koşuşturup durma ya da huzursuzluk hissi
4. Boş zaman faaliyetlerini sessizce yapmakta güçlük

5. Sürekli hareket halinde olma ya da sanki motor takılıymış gibi hareket etme
6. Çok konuşma
7. Sorulan soru tamamlanmadan yanıt verme
8. Sıra beklemekte zorluk çekme
9. Başkalarının işine karışma ya da konuşmalarını bölme

3. BÖLÜM

DEB/DEHB ile ilişkili özellikler

1. Hedeflerine ulaşamama ve başarısızlık hissi
2. Başlanan bir işi bitirememe ya da işe başlama güçlüğü
3. Aynı anda pek çok işle/projeyle uğraşma; bu işleri takipte ve tamamlamakta güçlük
4. Zamanı ve yeri uygun olmasa da aklına geleni o anda söyleme eğilimi
5. Sık sık büyük heyecanlar peşinde koşma
6. Sıkılmaya tahammül edememe
7. Herkes tarafından izlenen yolları ve kuralları uygulamamak
8. Sabırsızlık; engellenme eşiğinin düşük olması
9. Dürtüsellik (düşünmeden hareket etme)
10. Kendini güvensiz hissetme
11. Duygu durumda sık görülen oynamalar
12. Aniden parlama, tepki gösterme
13. Düşük benlik değeri
14. Parmaklarla tempo tutma, ayak sallama ya da ayak vurma
15. Sık sık iş değiştirme
16. Strese karşı aşırı duyarlılık, dayanamama
17. Zamanı ayarlamakta güçlük
18. Unutkanlık
19. Sözel saldırganlık
20. Fiziksel saldırganlık
21. Alkol kullanımı

22. Madde kullanımı
23. Yasal güçlük ve sorunlar
24. Çökkünlük (depresyon)
25. Kendine zarar verecek davranışlarda bulunma
26. Sebepsiz yere sinirli ve gergin olma (kaygı)
27. İşinden zevk alamama
28. Hayal kırıklığı ve cesaretsizlik hissi
29. Uzun süredir devam eden mutsuzluk hissi
30. Kapasitesiyle uyumlu bir düzeye ulaşamama

APPENDIX K

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü	
Sosyal Bilimler Enstitüsü	X
Uygulamalı Matematik Enstitüsü	
Enformatik Enstitüsü	
Deniz Bilimleri Enstitüsü	

YAZARIN

Soyadı : Meşeli Allard
Adı : Seda
Bölümü : Klinik Psikoloji

TEZİN ADI : The Relatedness of Attention Deficit Hyperactivity and Conduct Disorder Symptoms to Substance Use and Internet Addiction: Importance of Negative Life Events

TEZİN TÜRÜ : Yüksek Lisans [X] Doktora [ ]

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. [X]
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. [ ]
3. Tezimden bir (1) yıl süreyle fotokopi alınamaz. [ ]

TEZİN KÜTÜPHANEYE TESLİM TARİHİ:

APPENDIX L

TÜRKÇE ÖZET

Bu çalışmanın amacı demografik özelliklerin (cinsiyet, yaş, sınıf, ebeveyn eğitim düzeyi, kişinin büyüdüğü yer, gelir, ebeveyn sigara içme durumu) çocukluk çağı dikkat eksikliği hiperaktivite bozukluğu (DEHB), yetişkin DEHB, davranış bozukluğu, nikotin bağımlılığı, internet bağımlılığı, psikopatoloji ve son iki ay içinde yaşanan olumsuz yaşam olaylarının üzerindeki etkisini araştırmaktır. Bu araştırmanın ikinci amacı, hayat boyunca alkol, sigara ve esrar kullanıp kullanmama durumunun ve son 6 ay içinde bu maddeleri kullanma sıklığının çocukluk çağı DEHB, yetişkin DEHB, davranış bozukluğu, nikotin bağımlılığı, internet bağımlılığı, psikopatoloji ve güncel olumsuz yaşam olaylarının üzerindeki etkisini saptamaktır. Araştırmanın üçüncü amacı, tüm araştırma ölçütleri (cinsiyet, yaş, sınıf, ebeveyn eğitim düzeyi, kişinin büyüdüğü yer, gelir, ebeveyn sigara içme durumu, çocukluk çağı DEHB, yetişkin DEHB, davranış bozukluğu, nikotin bağımlılığı, internet bağımlılığı, genel psikopatoloji, güncel olumsuz yaşam olayları, alkol, sigara ve esrar kullanıp kullanmama ve son 6 ay içinde bu maddeleri kullanma sıklıkları) arasındaki ilişkiyi incelemektir. Araştırmanın dördüncü ve son amacı, genel psikopatoloji ile internet ve nikotin bağımlılıklarını yordayan faktörleri belirlemektir. Çalışmanın verisi, yaşları 18 ile 47 arasında değişen ve Türkiye'nin çeşitli illeri ile yurtdışında öğrenimini sürdüren 530 Türk üniversite öğrencisinden toplanmıştır. 530 üniversite öğrencisinin 340'ı kadın, 190'ı erkektir. Sınıf bazında bakıldığında katılımcıların 9'unun hazırlık sınıfına, 403'ünün lisans, 74'ünün yüksek lisans ve 35'inin doktora eğitimine devam ettiği belirlenmiştir. Katılımcıların öğrenim gördüğü üniversitelere bakıldığında en fazla katılımın Orta Doğu Teknik Üniversitesi'nden olduğu görülmüş, bunu Hacettepe, İstanbul, Ankara, Namık Kemal ve İstanbul Teknik Üniversiteleri'nin takip ettiği belirlenmiştir. Psikoloji, tıp, uluslararası ilişkiler, işletme ekonomi, hukuk ve mimarlık bölümlerinin sırasıyla en fazla katılımın olduğu bölümler olduğu

görülmüştür. Katılımcıların 270'inin ailevi gelirinin en fazla 3000 TL, 259'unun gelirinin ise 3000'den yüksek olduğu saptanmıştır. Araştırmaya katılanların 337'sinin yaşamının büyük bir bölümünü büyük şehirde, 162'sinin şehirde, 23'ünün kasabada, 8'inin ise köyde geçirdiği bilgisi alınmıştır. Katılımcıların annelerinin eğitim seviyelerine bakıldığında annesi en fazla lise eğitimi almış olanların sayısının 297, en az üniversite eğitimi almışların 215 olduğu bilgisine ulaşılmıştır. Babaların eğitim oranına bakıldığında, 247 katılımcının babasının en fazla lise eğitimi aldığı, 273'ünün ise en az üniversite eğitimi aldığı saptanmıştır.

Demografik bilgi formu (18 madde), madde kullanımı sorularını içeren form (12 madde), Young Internet Bağımlılığı Ölçeği, APA davranış bozukluğu sorularını içeren ölçek, Fagerström Nikotin Bağımlılığı Ölçeği, Kısa Semptom Envanteri, Üniversite Öğrencileri için Yaşam Olayları Envanteri, Wender Utah Değerlendirme Ölçeği ve Yetişkin DEHB/ DEB Tanı Tarama ve Değerlendirme Ölçeği araştırmada kullanılan ölçeklerdir. Tüm ölçeklerin doldurulması katılımcı başına yaklaşık 40 dakika sürmüştür ve katılımcılar ölçekleri kendileri doldurmuşlardır. Araştırmanın istatistiki analizleri SPSS programı ile gerçekleştirilmiştir. MANOVA, ANOVA ve t-test analizleri, demografik değişkenler ile madde kullanımı sorularının araştırmanın değişkenleri üzerindeki etkisini belirlemek için kullanılmıştır. Araştırmanın tüm değişkenleri arasındaki korolasyonlar pearson analizi ile hesaplanmıştır. Son aşamada genel psikopatoloji, nikotin ve internet bağımlılıklarını yordayan faktörler 3 adet regresyon analizi ile belirlenmiştir. Regresyon analizlerine sırayla davranış bozukluğu, çocukluk çağı DEHB, yetişkinlik çağı DEHB ve güncel olumsuz yaşam olayları değişkenleri dört aşamada girilmiştir. Sonuçlar, sınıf değişkeninin çocukluk çağı DEHB değişkeninin 'okulla alakalı sorunlar' alt alanı üzerinde anlamlı bir etkisi olduğunu ortaya koymuştur. Daha açık bir şekilde, lisans ya da hazırlık sınıfına devam eden katılımcılar, yüksek lisans ya da daha yüksek derecedeki eğitimine devam eden katılımcılara göre daha fazla DEHB ile alakalı 'okulla alakalı sorun' yaşadıklarını belirtmişlerdir. Bu alanda yapılan araştırmalar, DEHB semptomlarını taşıyan üniversite öğrencilerinin, taşımayanlara göre daha düşük not ortalamasına

sahip olduklarını, akademik kaygılarının daha fazla olduğunu ve üniversiteden mezun olma ihtimallerinin daha düşük olduğu konusunda hemfikirdir (Blase ve ark., 2009; DuPaul ve ark., 2009; Heiligenstein ve ark., 1999; Lewandowski ve ark., 2008; Murphy ve ark., 2002; Rabiner ve ark., 2008; Wolf, 2001). DEHB'nin üniversite öğrencilerine teşkil ettiği engel göz önüne alındığında, çocukluk çağında DEHB nedeni ile okulla alakalı sorunlar yaşamış bireylerin, üniversitede de yüksek sınıflara devam etme ihtimalinin düşük olması mantıklıdır. Anne eğitim düzeyinin çocukluk çağı DEHB'nin 'dikkat sorunları' alt alanı üzerinde, ebeveyn eğitim düzeylerinin ise mevcut DEHB semptomları ve 'DEHB ile alakalı sorunlar' alt alanı üzerinde anlamlı etkileri olduğu saptanmıştır. Annesi üniversite mezunu olan ya da daha yüksek eğitim almış üniversite öğrencileri, annesi lise mezunu olan ya da daha düşük eğitim almış kişilere kıyasla DEHB'nin 'dikkat sorunları' alt alanında daha yüksek puan almışlardır. Benzer şekilde ebeveynleri üniversite mezunu olan ya da daha yüksek eğitim almış üniversite öğrencileri, ebeveynleri lise mezunu olan ya da daha düşük eğitim almış kişilere kıyasla daha fazla mevcut DEHB semptomları gösterdiklerini ve DEHB ile alakalı sorunlar yaşadıklarını belirtmişlerdir. Literatürde ebeveyn eğitim düzeyinin yüksek oluşunun yüksek bilişsel kapasiteye işaret ettiği ve yüksek eğitimli ebeveynlerin çocuğun farklı alanlardaki gelişimini olumlu anlamda destekledikleri belirtilmiştir (Rydell, 2010). Düşük anne eğitim düzeyinin çocuktaki DEHB semptomlarının yüksek seviyelerini yordadığı da literatür bulguları arasındadır (Gurevitz, Geva, Varon, & Leither, 2014; Gimpel, & Kuhn, 2000; Rydell, 2010). Bu bağlamda, araştırmanın sonuçları literatür bulguları ile paralel değildir. Bunun sebebi, çocuğa yöneltilen mükemmelliyetçiliğin, ebeveynin eğitimi ile çocuktaki DEHB semptomları arasında aracı değişken görevi görmesi olabilir. Yüksek eğitimli ebeveynlerin çocuktaki DEHB semptomları üzerinde tetikleyici etkisi olabileceği düşünülmektedir ancak bu bulgunun sebepleri ileriki araştırmalarda aydınlatılmalıdır. Sınıf değişkeninin mevcut DEHB semptomlarının 'dikkat sorunları' alt alanı üzerinde anlamlı bir etkisi bulunmuştur. Yüksek lisans ve daha yüksek düzeyde eğitim gören öğrenciler, lisans ve hazırlık sınıfında eğitim gören

öğrencilere kıyasla daha fazla dikkat sorunu yaşadıklarını bildirmişlerdir. DEHB, başarılı bir akademik hayatın önündeki önemli engellerden biridir ve DEHB semptomları gösteren kişilerin akademik hayatta yüksek sınıflara devam etmesi beklenmemektedir. Ancak yüksek lisans ya da doktora gibi yüksek eğitim seviyelerinde, iş yükünün, akademik sorumlulukların ve konsantrasyon gerekliliğinin daha yüksek oluşu, bu sınıflardaki öğrencilerin daha fazla dikkat sorunu yaşadıklarını belirtmelerinin nedeni olabilir. Demografik değişkenlerin 5 ve 18 yaşları arasında görülen davranış bozukluğu üzerindeki etkisine bakıldığında, cinsiyetin anlamlı bir etkisi saptanmıştır. İstatistiki analiz sonucunda, erkeklerin kadınlara oranlara anlamlı olarak daha fazla davranış bozukluğu semptomları gösterdiği bulunmuştur. Bu bulgu, literatür bilgisi ile uyumludur (Moffitt, 2001). Araştırmada ayrıca, cinsiyetin nikotin bağımlılığı üzerinde anlamlı bir etkisi olduğu; erkek öğrencilerinin kadın öğrencilerine oranla daha ciddi seviyelerde nikotin bağımlılığına sahip oldukları bulunmuştur. Bu alanda yapılan araştırmalar, erkeklerin nikotine, kadınların ise sigara içmenin davranışsal yönlerine (kendini güvenme hissetmek için sigara yakıp parmağının arasında tutmak vs.) bağımlı olmaya daha yatkın olduğunu göstermiştir (Bohadana ve ark. 2003). Dolayısıyla çalışmanın bulgusu, literatür bilgisi ile uyumludur. Baba eğitim düzeyinin de nikotin bağımlılığı üzerinde anlamlı bir etkisi bulunmuştur. Babası üniversite mezunu olan ya da daha yüksek eğitim almış üniversite öğrencilerinin, babası lise mezunu olan ya da daha düşük eğitim almış kişilere kıyasla daha az nikotin bağımlılığı gösterdikleri sonucuna ulaşılmıştır. Düşük ebeveyn eğitim düzeyinin çocuktaki yüksek sigara içme oranlarını yordadığı araştırmalarca kanıtlanmıştır (Rohde, Kahler, Lewinsohn, & Brown, 2004; Wallace ve ark., 2009). Ayrıca düşük ebeveyn eğitim düzeyinin evlerde ve arabalarda pasif sigara içiciliğini yordadığı, ve pasif içiciliğin ebeveyn eğitimi ile çocuktaki sigara kullanma oranları arasında aracı değişken olduğu gösterilmiştir. Bu bilgilerin ışığında, bu araştırmanın bulgusunun literatürle uyumlu olduğu söylenebilir. Babanın eğitim düzeyinin internet bağımlılığı üzerindeki anlamlı etkisi araştırmanın bir diğer bulgusudur. Analiz sonuçları, babası üniversite mezunu olan ya da daha yüksek

eğitim almış üniversite öğrencilerinin babası lise mezunu olan ya da daha düşük eğitim almış üniversite öğrencilerine kıyasla daha yüksek oranda internet bağımlılığı geliştirdiklerini göstermiştir. Ebeveyn eğitim düzeyi ile internet bağımlılığının ilişkisini çalışan çok az çalışma bulunmuştur ve bu araştırmaların sonuçları birbiriyle örtüşmemektedir. Ebeveyn eğitim düzeyi ailevi gelirin en önemli yordayıcılarından biridir. Yüksek gelir düzeyine sahip ailelerde, düşük gelir düzeyine sahip ailelere oranla bilgisayar, internet gibi teknolojiler daha yaygın olarak kullanılmaktadır ve bu kavram literatürde 'dijital ayrışma' diye adlandırılmaktadır (DeBell & Chapman, 2006). Bir bireyin herhangi bir maddeye ya da aktiviteye bağımlılık geliştirebilmesi için ilk şart o maddenin ya da aktivitenin kolaylıkla ulaşılabilir, el altında olmasıdır. Bu şekilde değerlendirildiğinde yüksek eğitimli ebeveynlere sahip öğrencilerin internet bağımlılık oranlarının fazla olması mantıklıdır. Çalışmada, baba sigara içme durumunun üniversite öğrencilerindeki genel psikopatoloji ile, olumsuz benlik, hostilite, depresyon ve somatizasyon belirtileri üzerinde anlamlı bir etkisi olduğu bulunmuştur. Analiz sonuçlarına göre, babası sigara içen üniversite öğrencileri, babası sigara içmeyen üniversite öğrencilerine göre daha yüksek seviyelerde genel psikopatoloji, olumsuz benlik, hostilite, depresyon, somatizasyon belirtileri yaşadıklarını beyan etmişlerdir. Ayrıca babası hayatının bir bölümünde sigara içmiş üniversite öğrencileri, babası hiç sigara içmemiş üniversite öğrencilerine göre daha yüksek seviyelerde genel psikopatoloji, olumsuz benlik, hostilite, ve depresyon belirtileri gösterdiklerini aktarmışlardır. Ebeveynin sigara içme durumunun çocukların psikopatoloji seviyesine olan etkisi çok fazla çalışılmamış bir konudur. Şu ana kadar yalnızca bir araştırma, ebeveynin sigara içmesinin yüksek seviyelerinin çocuklarda depresyon ve anksiyetenin yüksek seviyelerini yordadığını göstermiştir (Kardia, Pomerleau, Rozek, & Marks, 2003). Genetik, model alma, ebeveyn-çocuk ilişkisi ve bağlanma şekli, ebeveyn ve çocuğun sigara içmeye yaklaşımlarının benzemesinde rol almaktadır (Brook & Whiteman, 1997; Kandel & Wu, 1995; White, Johnson, & Buyske, 2000). Yüksek sigara içme oranlarının genel psikopatoloji, olumsuz benlik, hostilite, depresyon ve somatizasyonun yüksek

seviyelerini yordadığı bilinmektedir (Bunde & Suls, 2006; Fergusson ve ark., 1996; Fernander ve ark., 2006; Kahler ve ark., 2009; Hollifield, Paine, Tuttle, & Kellner, 1999; Kendler ve ark., 1993; Prochaska ve ark., 2014; Veselska ve ark., 2009). Bu şekilde düşünüldüğünde, ebeveyn sigara içme durumunun, çocuktaki sigara içme oranı alakalı olabileceği, bunun da çocuktaki psikopatolojiyi yordayabileceği düşünülmektedir. Bu araştırmanın bir diğer bulgusu, ailevi gelir seviyesinin üniversite öğrencilerinin son iki ayda yaşadığı olumsuz yaşam olaylar üzerindeki anlamlı etkisidir. Düşük seviyede (3000 TL ya da daha az) ailevi gelire sahip olan katılımcılar, yüksek seviyede (3000 TL'den fazla) gelire sahip olanlara göre daha fazla olumsuz yaşam olayı yaşadıklarını beyan etmişlerdir. Literatürde olumsuz yaşam olaylarının farklı sosyoekonomik düzeylerdeki ailelere eşit olarak dağılmadığını, düşük sosyoekonomik düzeydeki kişilerin daha fazla olumsuz yaşam olayı deneyimlediği belirtilmiştir (Marmot el al., 1991; Stronks, Van De Mheen, Looman, & Mackenbach, 1998). Düşük gelir seviyeleri sağlık, erken ölüm ya da barınma gibi ile ilgili sorunlarla ilintilidir (Gallo ve ark., 2012; Gallo, Monteros, & Shivpuri, 2009). Bu açıdan bakıldığında araştırmanın sonuçları, literatür bilgisi ile paraleldir. DEHB'nin çocukluk çağında başladığı ve çocukların yüksek bir oranının (yüzde elli ve seksen arası) bu semptomları yetişkinlik çağına da taşıdığı bilinmektedir (Frank-Briggs, 2011; Nair ve ark., 2006). Bu araştırmada da madde kullanımı değişkenlerinin çocukluk ve yetişkinlik çağı (güncel) DEHB semptomları üzerindeki etkisi oldukça benzer bulunmuştur. Son 6 ayda alkol kullanma sıklığının, çocukluk DEHB ('davranışsal sorunlar ve dürtüsellik' alt alanı) ile güncel DEHB semptomları (toplam skor ve 'DEHB ile ilişkili özellikler' alt alanı) üzerinde anlamlı bir etkisinin bulunduğu tespit edilmiştir. Son altı ay içerisinde alkol kullanımı daha sık olan üniversite öğrencileri, alkol kullanma sıklığı daha az olan öğrencilere göre, çocukluk DEHB'nin 'davranışsal sorunlar ve dürtüsellik' alt alanı ile güncel DEHB'nin toplam skor ve 'DEHB ile ilişkili özellikler' alt alanında daha yüksek puanlar almışlardır. Literatürde DEHB semptomlarının alkol kullanımına etkisi konusunda çelişkili sonuçlar sunan araştırmalar bulunmaktadır. DEHB'nin başlama

yaşı (problemler 7 yaşından önce belirgin olmalı), alkolle ilk tanışma yaşından hemen her zaman önce gelmektedir. Dolayısıyla bu araştırma kesitsel olmasına rağmen, alkol kullanımı ve DEHB semptomları arasında bir sebep-sonuç ilişkisinden bahsetmek olasıdır (Smith ve ark., 2002). Alkolün DEHB semptomları ile DEHB ile ilişkili durumlarla baş etmede kullanılan bir madde olduğu iddia edilmiştir (Wilens, 1998), dolayısıyla DEHB semptomuna sahip üniversite öğrencilerinin, bu semptomlarla baş etmek amacıyla alkol tüketmeye yöneldikleri söylenebilir. Hayat boyunca sigara içip içmemenin çocukluk DEHB ('çabuk öfkelenme' alt ölçeği dışında tüm alt ölçekler ve toplam skor) ve güncel DEHB semptomları (toplam skor, 'hiperaktivite/dürtüsellik' ve 'DEHB ile ilişkili özellikler' alt ölçeği) üzerinde anlamlı bir etkisi olduğu saptanmıştır. Hayatı boyunca en az bir kez sigara denemişler, hiç sigara denememişlere göre çocukluk DEHB (toplam skor ve 'çabuk öfkelenme' alt ölçeği dışında tüm alt ölçekler) ve güncel DEHB (toplam skor, 'hiperaktivite/dürtüsellik' ve 'DEHB ile ilişkili özellikler' alt ölçeği) ölçeklerinde daha yüksek puanlar almışlardır. Benzer şekilde, sigara içme sıklığının güncel DEHB semptomları üzerinde anlamlı bir etkisi olduğu bulunmuştur. Son 6 ay içerisinde sigara içme sıklığı yüksek olan üniversite öğrencileri, sigara içme sıklığı daha az olan üniversite öğrencilerine göre güncel DEHB semptomları (toplam skor ve 'DEHB ile ilişkili özellikler') ölçeğinden daha yüksek puanlar almışlardır. DEHB semptomları gösteren bireylerin daha yüksek sigara içme deneyimi yaşadığı ve daha sık sigara içme oranlarına sahip olduğu bulgusu farklı araştırmalarca tekrarlanmıştır. Nikotinin ADHD semptomları üzerinde iyi edici bir etkisi olduğu iddia edilmiştir (Levin ve ark., 1996). Uyarıcı etkisinden dolayı, DEHB semptomlarına sahip bireylerin dikkat ve konsantrasyonlarını yükseltmek amacıyla nikotin içeren sigaraya yöneldikleri belirtilmiştir (Milberger ve ark., 1997). Hayat boyunca esrar kullanıp kullanmamanın çocukluk çağı DEHB ('davranış problemleri ve dürtüsellik' alt alanları) ve güncel DEHB semptomları (toplam skor ve 'DEHB ile ilişkili özellikler' alt alanları) üzerinde anlamlı bir etkisi bulunmuştur. Benzer şekilde, son 6 ay içerisinde esrar kullanma sıklığının güncel DEHB semptomları üzerinde (toplam skor ve 'DEHB ile

ilişkili özellikler' alt alanları) üzerinde anlamlı bir etkisi vardır. Hayatında en az bir kez esrar denemiş olan üniversite öğrencileri, hiç esrar denememiş olanlara göre, çocukluk çağı DEHB ('davranış problemleri ve dürtüsellik' alt alanı) ve güncel DEHB semptomları (toplam skor ve 'DEHB ile ilişkili özellikler' alt alanı) ölçeklerinden daha yüksek puanlar almışlardır. Esrar kullanma sıklığı yüksek olan üniversite öğrencileri, düşük sıklıkta esrar kullanan öğrencilere göre güncel DEHB semptomlar (toplam skor ve 'DEHB ile ilişkili özellikler' alt alanı) ölçeğinden daha yüksek puanlar almışlardır. Amerika'da yapılan bir araştırma, esrar kullanımının üniversite kampüslerinde oldukça yaygın olduğunu ve üniversite öğrencilerinin üçte birinin geçen yıl en az bir kez esrar kullandığı ortaya koymuştur (Rooney ve ark., 2012). Hem bu araştırmada hem de literatürde ortaya konulan alkol, sigara ve esrar kullanımları ile DEHB semptomları arasındaki pozitif ilişki, 'dopamin hipotezi' ile açıklanabilir. Dopaminin düşük seviyelerinin, bilişsel işlevlerdeki eksikliklerle (dikkat eksikliği, bilişle ve kısa süreli bellekle ilgili sıkıntılar, odaklanma zorluğu ve dürtüsellik) ile ilgili olduğu ileri sürülmüştür (Milberger ve ark., 1997; Wilens & Decker, 2007). Nikotin, alkol ve esrar kullanımı ise beyindeki dopamin salınımını tetiklemektedir (Koob & Le Moal, 1997; Milberger ve ark., 1997; Pierce & Kumaresan, 2006; Robbins & Everitt, 1996; Wilens & Decker, 2007). Beyindeki dopamin seviyesinin artışının DEHB semptomlarını hafiflettiği iddia edilmiştir. Hayat boyunca sigara ve esrar kullanıp kullanmama ve son altı aydaki sigara kullanma sıklığının 5-18 yaşları arasında görülen davranış bozukluğu üzerinde anlamlı bir etkisi olduğu saptanmıştır. Hayat boyunca en az bir kez sigara ya da esrar kullanmış üniversite öğrencilerinin hiç sigara ve esrar kullanmamışlara göre, ve son altı ayda sigara kullanma oranı daha sık olan öğrencilerin sigara kullanma sıklığı daha az olan öğrencilere göre daha az davranış bozukluğu semptomu gösterdikleri bulunmuştur. Bu bulgu literatürle uyumludur ve davranış bozukluğu semptomları içerisinde yer alan olağandışı davranışlar göstermenin, kişiyi farklı maddeleri kullanmaya yatkın hale getirdiği bulunmuştur (Abrantes ve ark., 2005). Bu araştırmada ayrıca son altı aydaki sigara kullanma sıklığının nikotin bağımlılığı

üzerinde anlamlı bir etkisi bulunmuştur. Daha fazla sigara içenlerin nikotine yüksek oranlarda bağımlılık göstermesi son derece anlamlıdır. Ayrıca son altı aydaki alkol kullanma sıklığı ve hayat boyunca esrar kullanıp kullanmamanın nikotin bağımlılığı üzerinde anlamlı bir etkisi bulunmuştur. Daha sık alkol kullanan öğrencilerin, daha seyrek alkol kullananlara göre ve hayatı boyunca en az bir kez esrar denemiş olanların, hiç esrar denememiş olanlara göre daha yüksek oranlarda nikotin bağımlılığı geliştirdikleri saptanmıştır. 'Madde sıralaması modeli'ne göre kişiler önce yasal (sigara gibi), daha sonra ise yasal olmayan maddeleri (esrar gibi) kullanma yönelimi içindedirler (Breslau, 1995). Alkol ve sigara 'geçit maddeleri' olarak tanımlanmakta ve diğer maddelerin daha ileri zamanlarda kullanılma ihtimalini yükseltmektedirler (Breslau, 1995). Bu araştırmada bir sebep-sonuç ilişkisi saptamak mümkün olmasa da, Türkiye'de üniversite öğrencileri arasında oldukça yaygın olarak kullanılan ve sosyal olarak fazlaca kabul görmüş sigaranın diğer madde kullanımlarından önce geldiği söylenebilir. Araştırmanın sonuçları, hayat boyunca esrar kullanıp kullanmamanın internet bağımlılığı üzerinde anlamlı bir etkisi olduğunu göstermiştir. Hayatında en az bir kez esrar denemiş olan üniversite öğrencilerinin, hayatında hiç esrar denememişlere göre daha fazla internet bağımlılığı geliştirdiği bulunmuştur. Bir kişilik özelliği olan 'eğlence arayışında olmanın' internet bağımlılığı ve madde kullanımı ile ilişkili olduğu bulunmuştur (Franken & Muris, 2006; Ko ve ark., 2008). Bu kişilik özelliğine sahip olan kişilerin hem esrar denemeye hem de internet bağımlılığı geliştirmeye daha yatkın olabileceği düşünülmektedir. Çalışmanın bir diğer bulgusu, hayat boyunca sigara ve esrar deneyip denememenin ve son 6 aydaki sigara içme sıklığının, son iki ayda yaşanan olumsuz yaşam olayları üzerindeki etkisidir. Hayatı boyunca en az bir kez sigara ya da esrar denemiş olan üniversite öğrencilerinin bu deneyime sahip olmayanlara göre ve son altı ayda sigara içme sıklığı yüksek olanların, sigara içme sıklığı düşük olanlara göre olumsuz yaşam olayları ölçeğinden daha yüksek puanlar aldıkları bulunmuştur. Olumsuz yaşam olaylarının kişiyi madde kullanımına daha yatkın hale getirdiği literatürde sunulan bilgilerden biridir (Chassin, Curran, Hussong, & Colder,

1996; Wills ve ark., 2001). Olumsuz yaşam olayları deneyimleyen kişiler nikotini sorunlarından uzaklaşmak ve öfke, anksiyete, üzüntü gibi olumsuz duygularını düzene sokmak için kullanmaktadırlar (Delfino, Jamner, & Whalen, 2001). Sabit bir şekilde stres altında olan olan üniversite öğrencilerinin de olumsuz yaşam olaylarının sebep olduğu stresle baş etmek için sigara içmeye yöneldiği söylenebilir. Regresyon analizlerinin birinci bölümünde genel psikopatoloji ile ilgili olan faktörlerin belirlenmesi amaçlanmıştır. Regresyonun birinci aşamasında analize girilen davranış bozukluğu semptomlarının (5-18 yaşları arası) güncel ve genel psikopatolojiyi yordadığı belirlenmiştir (β = .25). Literatürde de davranış bozukluğunun, yetişkinlik çağı psikiyatrik sorunları ve psikopatolojinin farklı formlarını yordadığı öne sürülmüştür (Gyllenberg ve ark., 2010; Olino ve ark., 2010). Davranış bozukluğunun madde kullanımı için bir risk teşkil ettiği çeşitli araştırmalarca kanıtlanmıştır (Elkins ve ark., 2007; Hopfer ve ark., 2013). Ayrıca madde kullanımı da psikopatolojinin çeşitli formlarının oluşum riskini arttırmaktadır (Degenhardt ve ark., 2003; Kandel ve ark., 1986). Dolayısıyla madde kullanımının davranış bozukluğu ile yetişkinlik çağında görülen psikopatoloji arasında aracı değişken görevi görebileceği de düşünülmektedir. Davranış bozukluğu semptomlarının etkisi kontrol edildiğinde, psikopatolojiyi yordayan diğer faktörler çocukluk çağı DEHB (β = .52) ve güncel DEHB semptomları (β = .57) olarak belirlenmiştir. DEHB nörobiyolojik bir bozukluktur ve genetik bir temele dayanmaktadır, dolayısıyla DEHB'nin diğer psikopatoloji formlarını yordayışının temelinde de genetik benzerliklerin olduğu düşünülmektedir. Ayrıca davranış bozukluğu örneğinde olduğu gibi, DEHB madde kullanımını yordayan önemli faktörlerdendir (Biederman ve ark., 1998, Gudjonsson et. al, 2012; Katusic ve ark., 2005; McGough ve ark., 2005) ve madde kullanımı da birçok psikopatoloji formunu yordamaktadır. Bu da madde kullanımının ADHD ve diğer psikopatoloji formları arasında aracı değişken görevi görebileceğini düşündürmektedir. Davranış bozukluğu, çocukluk çağı ve güncel DEHB semptomlarının etkisi kontrol edildiğinde, olumsuz yaşam olaylarının psikopatalojiyi anlamlı şekilde (β = .50) yordadığı görülmüştür. Araştırmalar olumsuz yaşam

olayları süresince karşı karşıya kalınan stresin, kişiyi ruhsal bozulmalara ve psikopatoloji formları geliştirmeye yatkın hale getirdiğini öne sürmüştür (Tennant, 2002). Üniversite öğrencileri, akademik ve mesleğe ilişkin sorunlar, adaptasyon zorlukları, gelecek ile ilgili kaygılar ve ekonomik sıkıntılar nedeni ile sürekli olarak strese ve olumsuz yaşam olaylarına maruz kalmaktadırlar (Misra & McKean, 2000; Visser ve ark., 2013), bu da üniversite öğrencileri populasyonunu psikopatalojinin çeşitli formlarını geliştirmeye yatkın bir hale getirmektedir. İkinci regresyon analizinde amaç, internet bağımlılığı ile ilgili faktörleri saptamaktır. Bu amaçla analize girilen ilk değişken olan davranış bozukluğunun (5-18 yaşları arası) internet bağımlığı ile pozitif bir ilişkisi olduğu saptanmıştır (β = .37). Bu analizin sonucunda bir sebep-sonuç ilişkisi saptamak mümkün olmasa da davranış bozukluğunun yaş aralığı ve kişinin internetle ilk tanışma yaşı göz önüne alındığında bir sebep-sonuç ilişkisi saptamak olasıdır. Cao ve Su (2007) araştırmalarında davranış problemi yaşayan lise öğrencilerinin devamlı olarak anne baba ve öğretmenlerin eleştiri ve kınamalarına maruz kaldıklarını ve interneti öfkelerini yansıtmanın bir yolu olarak kullandıkları hipotezini savunmuşlardır. Aynı araştırmada, davranış problemi yaşayan lise öğrencilerinin normal hayatlarında pek fazla deneyimleyemedikleri başarma ve tatmin olma duygularını internet sayesinde telafi ettikleri düşünülmüştür (Cao & Su, 2007), bu önermenin davranış bozukluğu semptomlarına sahip üniversite öğrencileri için de geçerli olabileceği düşünülmektedir. 5-18 yaşları arasında yaşanan davranış bozukluğu semptomlarının etkisi kontrol edildiğinde çocukluk çağı DEHB semptomlarının (β = .37) ve davranış bozukluğu ile çocukluk çağı DEHB semptomlarının etkisi kontrol edilidğinde güncel DEHB (β = .34) semptomlarının internet bağımlılığı ile pozitif bir ilişkisi olduğu bulunmuştur. DEHB'nin 7 yaşından önce başlayan nörobiyolojik bir bozukluk olduğu ve internetle ilk tanışma yaşının şu an üniversiteye devam eden nesil için 7 yaşından sonra gerçekleştiği düşünüldüğünde DEHB semptomlarının kişiyi internet bağımlılığına geliştirmeye yatkın hale getirdiği söylenebilir. Hiperaktivite ve dürtüsellik özellikleri gösteren bireyler, internetin sunduğu hızlı tempodan hoşlanmaktadırlar (Dalbudak & Evren, 2013). Ayrıca

dürtüsellik, gecikmeye karşı doyulan yoğun hoşnutsuzluk ve hemen sunulan bir ödülü tercih etme ile ilgilidir (Yen ve ark., 2007) ve internet, hızlı bir şekilde cevap ve ödül sunan bir platformdur (Yen ve ark., 2007; Yen ve ark., 2009) dolayısıyla dürtüsellik özelliği gösteren üniversite öğrencilerine de çekici gelmesi anlamlıdır. Ayrıca dikkat eksikliği özelliği gösteren kişilerin belli bir uyarandan çabuk sıkıldıkları bilinmektedir (Diamond, 2005). İnternetin hız ve aynı anda birçok aktivite vadeden bir platform olması sebebiyle de DEHB semptomlarına sahip üniversite öğrencilerine çekici gelebileceği düşünülmektedir. Davranış bozukluğu ve DEHB semptomlarının etkisi kontrol edildiğinde, son 2 aydaki olumsuz yaşam olaylarının internet bağımlılığı ile pozitif bir ilişkisi olduğu bulunmuştur (β = .17). Jie ve ark. (2014) olumsuz yaşam olaylarının internet bağımlılığı üzerindeki anlamlı etkisini ortaya koymuşlardır. Li ve ark. (2009) ise stresle baş etme mekanizmalarının olumsuz yaşam olaylarının internet bağımlılığını yordayışına olan katkısına vurgu yapmışlardır. Stres sonucunda kendini suçlama, düşlere dalma, geri çekilme ya da rasyonelleştirmenin problemli internet kullanımına katkı yaptığını savunmuşlardır (Li ve ark., 2009). Son regresyon analizinde nikotin bağımlılığı ile alakalı olan faktörler belirlenmiştir. Davranış bozukluğunun nikotin bağımlılığı ile pozitif bir ilişkisi olduğu bulunmuştur (β = .17). Riala ve ark. (2011) nikotin bağımlılığının davranış bozukluğunun agresivite içeren semptomlardan (Birini cinsel etkinlikte bulunmaya zorlamak) ziyade, agresiflik içermeyen semptomları (ailevi kurallara uymamak gibi) ile alakalı olduğunu öne sürmüşlerdir. Yenilik arayışı ile zarar verebilecek aktivitelerden yeterince kaçınmama durumunun da sigaraya başlama ve devam etme ile ilgili olduğu düşünülmüştür (Riala ve ark., 2011). Davranış bozukluğu semptomları kontrol edildiğinde çocukluk DEHB semptomlarının nikotin bağımlığı ile anlamlı bir ilişkisi bulunmamıştır. Benzer şekilde, bu iki değişken kontrol edildiğinde güncel DEHB semptomlarının da nikotin bağımlılığı ile anlamlı bir ilişkisi saptanmamıştır. Literatüre bakıldığında, kimi araştırmalar davranış bozukluğunun etkisi kontrol edildiğinde bile DEHB'nin nikotin bağımlılığı üzerinde anlamlı bir etkisi olduğunu savunurken (Flory ve ark., 2003; Wilens ve ark., 2008)

bazı araştırmalar davranış bozukluğunun etkisi kontrol edildiğinde DEHB'nin nikotin bağımlılığı üzerindeki etkisinin ortadan kalktığını iddia etmişlerdir (Burke ve ark., 2001; Greene ve ark., 1997). DEHB'nin farklı alt alanlarının (hiperaktivite, dürtüsellik, dikkat eksikliği) sigara kullanımı ve nikotin bağımlılığına olan etkilerinin farklı olduğu literatürün vurguladığını noktalardandır. Hiperaktivite /dürtüsellik ile davranış bozukluğu semptomları yüksek oranda kesişmektedir (Babinski, Hartsough, & Lambert, 1999). Nikotin bağımlılığının bu kesişim tarafından yordandığı ve davranış bozukluğunun yordayıcı gücünün daha güçlü olduğu düşünülmektedir (Burke ve ark., 2001). Bu araştırmada DEHB'nin alt alanlarının nikotin bağımlılığı üzerindeki etkisi incelenmemiş olması, bu hipotezin doğrulanamamasına neden olmaktadır. Üçüncü regresyon analizinin son aşamasında, davranış bozukluğu, çocukluk çağı ve güncel DEHB semptomları kontrol edilidiğinde son 2 aydaki olumsuz yaşam olaylarının nikotin bağımlılığı ile pozitif bir ilişkisi olduğu bulunmuştur ($\beta = .22$), yukarıda olumsuz yaşam olaylarının sigara içme oranı ile olan pozitif ilişkisi detaylı olarak açıklanmıştır. Araştırmanın kesitsel oluşu, değişkenler arasında sebep-sonuç ilişkisi kurmaya olanak tanımamaktadır ve bu araştırmanın eksik yönlerinden sayılabilir. Dolayısıyla bu araştırmada kullanılan değişkenler ile çalışırken boylamsal çalışmaların yapılması önerilmektedir. Ayrıca araştırmada katılımcılar sorulara kendileri cevap vermişlerdir. Bu durumun, madde kullanımı ile ilgili olan yanıtlar başta olmak üzere ölçeklerde kendini hatalı yansıtmaya ya da özellikle çocuklukla ilgili olan maddeleri yanlış hatırlamaya yol açabileceği düşünülmektedir. İleriki araştırmalarda özellikle madde kullanımı ile ilgili bilgi toplamak amacıyla farklı tekniklerin kullanılması önerilmektedir. Nikotin bağımlılığını biyokimyasal bir ölçüm aracıyla ölçmek bu öneriye bir örnektedir. Araştırmanın güçlü yönleri arasında birçok değişkeni (çocukluk dönemi ile güncel DEHB semptomları, davranış bozukluğu semptomları, madde kullanımı, internet bağımlılığı, olumsuz yaşam olayları, psikopatoloji) üniversite öğrencileri üzerinde çalışması sayılabilir. Bu çalışma, internet ve nikotin bağımlılıkları ile psikopatolojinin yordanmasında olumsuz yaşam olaylarının güçlü etkisini ortaya

koymuştur. Bu bulgu, olumsuz yaşam olayları ile karşılaşıldığı zamanlarda sağlıklı baş etme mekanizmalarını benimsemenin önemine işaret etmektedir. Araştırmanın bir diğer önemli bulgusu, davranış bozukluğu semptomları kontrol edildiğinde, DEHB'nin nikotin bağımlılığı üzerinde bir etkisi olmadığını göstermiş olmasıdır. Bu araştırma, DEHB semptomlarının alkol, sigara, esrar ve internet kullanımı üzerinde; davranış bozukluğu semptomlarının ise internet bağımlılığı, sigara kullanımı ve nikotin bağımlılığı üzerindeki anlamlı etkisini ortaya koymuştur. Ayrıca DEHB ve davranış bozukluğu semptomlarının yetişkinlik çağındaki psikopatoloji üzerindeki etkisi de gösterilmiştir. Tüm bu bulgular, DEHB ve davranış bozukluğunun, sonradan yaşanabilecek diğer sorunların önüne geçmek için, daha erken yaşlarda tedavi edilmesi gerektiğini vurgulamaktadır. İleriki araştırmalar, DEHB'nin alt alanlarının (hiperaktivite, dürtüsellik ve dikkat eksikliği) alkol, sigara, esrar ve internet bağımlılıklarına olan etkisini araştırmalıdır. Farklı yaşam olaylarının kişiyi farklı maddeleri kullanmaya yatkın kıldığı farklı araştırmalarca ortaya konulmuştur. İleriki araştırmalarda olumsuz yaşam olaylarının madde kullanımı üzerindeki rolü araştırılırken sınıflandırılması önerilmektedir (ekonomik, sosyal, akademik ile ilgili sorunlar vs.).