**Early Maladaptive Schemas are Associated with Adolescents’ Substance and Behavioral Addictions**

Yaniv Efratia\*, Daniel C. Kolubinskib, Claudia Marinob,c and

Marcantonio M. Spadab,

a Bar-Ilan University, [Faculty of Education](https://www.researchgate.net/institution/Bar_Ilan_University/department/School_of_Education), Ramat Gan, Israel.

b Centre for Addictive Behaviours Research, School of Applied Sciences, London South Bank University, London, UK.

c Dipartimento di Psicologia dello Sviluppo e della Socializzazione, Università degli Studi di Padova, Padova, Italy

\*Correspondence to: Yaniv Efrati, Bar-Ilan University, [Faculty of Education](https://www.researchgate.net/institution/Bar_Ilan_University/department/School_of_Education), Ramat Gan, Israel. Email: [ypefrati@gmail.com](mailto:ypefrati@gmail.com) Phone: +972-545-800-094.

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**Abstract**

Unlike the consequences of substance and behavioral addictions and the profile of adolescents with substance and behavioral addictions that were extensively studied, the cognitive distortions that might be responsible to the development and maintenance of substance and behavioral addictions are less understood. The sample comprised 1,948 adolescents (756 male and 1192 female) aged 14–18 years (mean age = 16.20 years; SD = 1.83) who completed the survey anonymously and with parental consent. We examined associations between substance and behavioral addictions and cognitive distortions in the form of early maladaptive schemas among adolescents. Results revealed that early maladaptive schemas are associated with adolescents’ substance and behavioral addictions. From a lay epidemiological perspective, the current research expands our knowledge about addiction among adolescents, offering potential insights for clinical applications.

Keywords: substance use disorder; behavioral addictions; early maladaptive schemas; cognitive distortions; adolescents.

**Early Maladaptive Schemas are Associated with Adolescents’ Substance and Behavioral Addictions**

**Introduction**

Adolescence is associated with high levels of risk taking (Ciranka & van den Bos, 2021); these risky behaviors can lead to substance and behavioral addictions (Van Rooij et al., 2014). Substance and behavioral addictions are defined as functional impairments to daily life characterized by the prioritization of and preoccupation with substance use or specific behaviors along with the continuation or escalation of these despite their negative consequences (Brand et al., 2020; Zou et al., 2017). To date, much of the research on substance and behavioral addictions among adolescents in Israel has focused on frequency and use behavior (see the Health Behaviour in School-aged Children study [HBSC]; Walsh et al., 2020). Only a few studies, mostly involving adults, have been conducted, focusing specifically on the cognitive distortions and early maladaptive schemas possibly at the root of the development and continuation of addictive behaviours (Efrati, Shukron & Epstein, 2021). This study uses a lay epidemiological approach (see Hodgins, Wilson & Schluter, 2022; Hodgins, Konkolÿ Thege & Wild, 2020; Schluter, Hodgins, Wolfe & Wild, 2018; Schluter, Hodgins, Konkolÿ Thege, & Wild, 2020) that considers the self-perceived of adolescents with reference to the general population in Israel.

Lay epidemiology proposes that “fields of symptomatology, nosology, etiology, and epidemiology have identifiable counterparts in the thoughts and activities of people outside the formal medical community” (Davison, Smith & Frankel, 1991, p. 6). From this perspective, the lay public’s conceptions of addictive behaviours can influence whether they perceive themselves as addicts. Adolescents who use the term “sense of self” perceive their addiction as an extension of the self because it reflects their sense of identity that is linked to how they want to present themselves to others (see Jameel, Shahnawaz & Griffiths, 2019). Wild et al. (2015) suggest that rates of self-attributed addiction problems exhibit a striking concordance with those obtained using expert-derived formal diagnostic criteria.

Gender plays a key role in substance and behavioral addictions. A 2021 study of adults presenting with a substance use disorder found that 63.4% were men and 36.6% were women (Martin et al., 2021). Adolescence is a stage associated with the onset of genetic and hormonal processes contributing to the development of gender-specific behaviors as well as with young people’s experimentation with psychoactive drugs, potentially leading them to developing addictions (Kuhn 2015). Females tend to present lower rates of binge drinking, heavy drinking, Alcohol Use Disorder, and nicotine dependence than males (CBHSQ, 2016). Gender differences are also common in behavioral addictions. For example, research indicates that male adolescents are exposed to pornography at an earlier age than females, watch more pornography, and more frequently tend to describe themselves as being addicted to pornography (Kowalewska et al., 2020; Peter & Valkenburg, 2016). In addition, adolescent males show greater attention biases toward sexual cues and present higher prevalence of Compulsive Sexual Behavior Disorder (Efrati & Amichai-Hamburger, 2021). The prevalence of gambling disorders in young people aged between 11 and 16 was estimated at 4.6% (Calado, Alexandre & Griffiths, 2017; Montiel et al., 2021), and, again, is more frequent in men than in women in adulthood (Ronzitti et al., 2016). Similarly, studies on gaming addiction have shown a higher prevalence in males than in females (Efrati, Kolubinski, Marino & Spada, 2021). A study by Fam (2018) found that adolescent boys were four times more likely to develop gaming addictions than their female counterparts. Some studies suggest that while males prefer to play games on the internet, women prefer to use the internet for communication purposes (Mihara & Higuchi, 2017); consequently, social networking addiction has been shown to be more prevalent among adolescent females than males (Peris, de la Barrera, Schoeps & Montoya-Castilla, 2020). Similarly, a meta-analysis of studies of adults showed a prevalence of approximately 5% of shopping addiction in different populations, with women exhibiting higher percentages compared to men (Tarka & Kukar-Kinney, 2022). This prevalence has been increasing over the years (Maraz, Griffiths & Demetrovics, 2016). Finally, Rodrigue, Gearhardt & Begin (2019) demonstrated that binge eating is nearly as prevalent in young people as in adults. Lee-Winn et al. (2016) found no significant differences between men and women in terms of the incidence or severity of Binge Eating Disorder (see also Barry et al., 2002; Tanofsky et al., 1997). It has, however, been demonstrated that females are more likely to exhibit symptoms of distress and loss of control due to binge eating (Lewinsohn et al., 2002; Striegel-Moore et al., 2009). Given the higher prevalence of the disorders described above, our hypothesis was that the rate of self-perceived substance use, gambling, gaming, and sex-related addictions would be higher among male adolescents than among females of the same age. In contrast, we predicted that more females would report having addictions to shopping, binge eating, and social networks than males.

Religious affiliation is another factor which has been found to affect patterns of addictive behaviors. Research indicates that religious belief is often perceived by the general public as a protection or deterrent against risky behaviors and substance and behavioral addictions (see Connery & Devido, 2020; Grubbs & Grant, 2020). Religious adolescents and adults are less likely to suffer from substance addictions (Acheampong, Lasopa, Striley & Cottler, 2016; Grim & Grim, 2019; Miller, Davies & Greenwald, 2000). In some aspects of life, however, religious belief may be at the root of disturbing inner struggles that can sustain addictive behaviors (Faigin, Pargament & Abu-Raiya, 2014). According to the moral incongruence model, emotional and physical distress arises from the contradiction between a person’s moral beliefs and their behaviors (Grubbs, Kraus, Perry, Lewczuk & Gola, 2020; Grubbs, Kraus & Perry, 2019; Lewczuk, Glica, Nowakowska, Gola & Grubbs, 2020).

For example, there can be incongruence between the natural sexual urges of a religious adolescent and the conservative principles endorsed by their religious leaders (e.g., a rabbi) and religious texts, such as the Bible or the Talmud, in which sexual thoughts and behaviors are discouraged or even condemned. Related to this incongruence, a recent study of Polish adults with self-perceived behavioral addiction to pornography, internet use, social networking, or online gaming found that religiosity was uniquely, although weakly, connected to pornography addiction, but not to other types of addictive behaviors (Lewczuk, Nowakowska, Lewandowska, Potenza & Gola, 2021). Therefore, we hypothesized that secular youth would report more self-perceived substance and behavioral addictions.

Research indicates that the average age of first substance use is 13–14-years-old, which applies mainly to alcohol and illegal substances (Nowak, Papiernik, Mikulska & Czarkowska-Paczek, 2018). Moreover, previous studies have demonstrated that substance use before the ages of 16–18-years is associated with substance abuse later in life (Brumback, Thompson, Cummins, Brown & Tapert, 2021; Jordan & Andersen, 2017; Rioux et al., 2018; Scholes-Balog et al., 2016). Halladay et al. (2020) conducted a systematic review of 70 recent papers studying substance use among adolescents. They found that 71% of the studies compared age-based clusters and that 88% of these found significant differences between the age groups, with older adolescents demonstrating higher levels of multiple use. Müller et al. (2015) performed a study concerning video game addiction in seven European countries that surveyed close to 13,000 adolescents. Comparing the clusters of 14–15 and 16–17-year-olds, they found no clear differences in terms of video game use disorders. Similarly, Ustinavičienė et al., (2016) found no differences in gaming addiction in her sample of 13–15 year-olds and 16–18 year-olds. A study of gambling among 1537 Icelandic youths by Olason et al. (2011) found that older age groups are more likely to bet money online, and Farré and colleagues (2020) found that pornography use increases in older age groups. Our hypothesis was that older adolescents would report higher levels of substance addiction and sex-related behavior, whereas there would not be any differences based on age for other types of behavioral addiction (gaming, social networks, etc.).

**Early Maladaptive Schemas**

Young et al. (2003) defined early maladaptive schemas as “extremely stable and enduring themes, comprised of memories, emotions, cognitions, and bodily sensations regarding oneself and one’s relationship with others, that develop during childhood and are elaborated on throughout the individual’s lifetime, and that are dysfunctional to a significant degree” (Young et al., 2003, p. 7). It has been suggested that early maladaptive schemas develop as a result of negative childhood experiences and become stable organizational systems by which people order and interpret their behaviors and emotions (Pilkington, Bishop & Younan, 2021; Riso et al., 2006; Young, 1999). According to the Cognitive theoretical perspective, early maladaptive schemas are believed to be at the core of the development and maintenance of psychopathologies, particularly psychopathologies that are chronic and enduring in nature (Young et al., 2003).

Young et al. (2003) proposed a classification of 18 early maladaptive schemas that could be grouped into five early maladaptive system (EMS) domains: “disconnection/rejection” (the belief that one’s basic interpersonal needs will not be met); “impaired autonomy/performance” (the belief that one does not have the abilities to function or survive independently); “impaired limits” (an inability to maintain or understand appropriate internal and interpersonal limits); “other directedness” (concentrating and focusing on the needs of others at the expense of one’s own needs); and “overvigilance/inhibition” (an excessive focus on setting and attempting to match unrealistic internal standards and values). A recent factor analytic study confirmed these domains in a large mixed (clinical and non-clinical) sample of adults (Bach, Lockwood & Young, 2018).

**Substance and Behavioral Addictions and Early Maladaptive Schemas**

Adolescents’ self-perceived addictions and those of early maladaptive schemas share several possible associations. Adolescents with self-perceived addictions fear (Young, 2009) that their preoccupation with addiction use, thoughts, and behaviors will harm them and other people around them (i.e., unwanted consequences because of risky behavior). This disposition might be related to “other directedness” (setting unrealistic standards) and “overvigilance/inhibition” (focusing on the needs of others at the expense of one’s own needs and mental health). These schemas, and especially “other directedness,” might also be associated with negative affect resulting from self-perceived addiction (such as shame and guilt). This is because of the tendency to act at the expense of one’s own needs. In addition, adolescents with self-perceived addictions often lack the ability to control their thoughts and behaviors, which might be related to an inability to maintain internal limits – the “impaired limits” schema. Finally, adolescents with self-perceived addictions tend to employ thoughts of addiction and use in the hope of regulating distress and pain, often with short-lived (Hasking, Whitlock, Voon, & Rose, 2017). This might be related to “disconnection/rejection” and to “impaired autonomy/performance.”

There are many studies available concerning the link between early maladaptive schemas and various addictions among adult , including alcohol (Janson et al., 2019; Shorey, Anderson & Stuart, 2012a); cannabis (Khosravani et al., 2017); cocaine (Shorey, Stuart & Anderson, 2014); gambling (Shorey, Anderson & Stuart, 2012b); problematic video gaming (Cudo, Dobosz, Griffiths & Kuss, 2022); Internet (Ostovar et al., 2021; Shajari et al., 2016); eating (Imperatori et al., 2017); [smartphone addiction](https://idp.springer.com/authorize/casa?redirect_uri=https://link.springer.com/article/10.1007/s11469-019-00186-y&casa_token=ry6ArmAaAjYAAAAA:5UYqjBJr-opoApXdJ4V18jo6sGeR3c151w5Qt5yV03hXOGJlCiSEtrAHywJwZdxkuapbsBHP_4z2QsU) (Arpaci, 2021); compulsive sexual behavior (Efrati, Shukron & Epstein, 2019; 2021), and social network abuse (Cudo et al., 2020). We found only two studies on adolescence, including Internet (Aloi et al., 2020) and eating (Zhu et al., 2016). Adding to this literature, this study was designed to explore the possible associations between substance and behavioral addictions and cognitive distortions in the form of early maladaptive schemas among Jewish adolescents in Israel. We predicted that the existence of early maladaptive schemas would be highly differentiates of high levels of substance and behavioral addiction.

**Method**

**Participants**

For this study, 1948 participants (756 male and 1192 female) were selected using convenience sampling from Israeli adolescents (mean age = 16.20 years; SD = 1.83). Inclusion criteria were (1) ages 14 to 18-years-old, and (2) the submission of a completed questionnaire. Participants were also asked about their religiosity; 558 reported that they were “secular,” 359 that they were “traditional,” 949 considered themselves “religious,” and 83 referred to themselves as “ultra-Orthodox.” The study combined the first two categories, “secular” and “traditional” and the “religious” and “ultra-Orthodox,” categories, resulting in two categories of *secular* and *religious*.

**Measures**

**Screener for Substance and Behavioral Addictions (SSBA)**

The SSBA is a measurement instrument for screening self-attributed addiction problems (Schluter et al., 2018). The instrument was translated into Hebrew from English for the purposes of this study by an individual proficient in both languages; the first author then back translated it. The SSBA uses four self-report items that indicate distinctive signs or symptoms of potential compulsive behavior or addiction (“I did it too much”; “Once I started, I couldn’t stop”; “I felt I had to do it in order to function”; and “I continued to do it, even though it caused problems”). The instrument is typically applied to the measurement of addiction to four substances (alcohol, tobacco, cannabis, and cocaine) and six behaviors (gambling, shopping, video gaming, eating, sexual activity, and working). However, in our study focusing on adolescents, *work* was substituted with *social networking*. Participants were asked to rank how often they used said substances or engaged in said behaviors over the past year on a 5-point Likert scale: 0 = none of the time; 1 = not much of the time; 2 = some of the time; 3 = most of the time; and 4 = all of the time. They could also choose two additional responses: “I didn’t do this at all” and “Don’t know/I prefer not to say.” Participants who responded, “I didn’t do this at all” were recoded as “None of the time.” There were 18 participants who stated declared that they “Don’t know/I prefer not to say” and they were eliminated from the study. Clear definitions of each behavior were provided to mitigate the risk that participants might misunderstand what exactly was meant by excessive behaviors and the symptoms of disorders, particularly those related to food and sex. Coefficient alphas ranged from 0.87 to 0.95, indicating good internal reliability.

**The Young Schema Questionnaire – Short Form 3 (YSQ-S3):**

The YSQ-S3 (Young & Brown, 2005) is a 90-item self-report measure assessing 18 early maladaptive schemas associated with cognitive distortions. Young et al. (2010) produced the Hebrew version used in this study. There are five general categories of schemas. The first is disconnection and rejection. This domain includes the schemas concerning abandonment and instability, mistrust and abuse, emotional deprivation, defectiveness and shame, and social isolation and alienation. An example of a statement from the YSQ-S3 testing this domain would be “I haven’t had someone to nurture me, share him/herself with me, or care deeply about everything that happens to me.” The second domain involves impaired autonomy and performance and includes dependence and incompetence; vulnerability to harm or illness; enmeshment and undeveloped self, and failure schemas typified by statements such as “Almost nothing I do at work (or school) is as good as other people can do.” The third domain, impaired limits, includes the entitlement/grandiosity and the insufficient self-control/self-discipline schemas. This domain is characterized by statements such as, “I have a lot of trouble accepting ‘no’ for an answer when I want something from other people.” The statement, “I think that if I do what I want, I’m only asking for trouble,” illustrates the fourth dimension. This dimension refers to the schemas of other-directedness, referring to subjugation, self-sacrifice, and approval seeking and recognition seeking. The fifth and final domain concerns overvigilance and inhibition. This includes schemas of negativity and pessimism, emotional inhibition, unrelenting standards and hypercriticalness, and punitiveness. “I find it embarrassing to express my feelings to others” is a statement representative of this domain. Cronbach’s alpha for subscales ranged from .73 to .88.

**Procedure**

The study was presented as a research project on addiction among 14–18-year-old adolescents. The participants constituted a convenience sample from all over Israel. They were recruited from a variety of sources (postings on bulletin boards and in online forums). Questionnaires were uploaded to Qualtrics – an online platform for questionnaires – and distributed by several research assistants. Parents of adolescents who agreed to participate in the study were contacted via email and/or phone, and were asked to review the questionnaires and sign an informed parental consent form, which was sent back to the research assistants by email. Upon agreement, a link for the online survey was sent to the adolescent who was assured as to the anonymity of the survey. Participants were then asked to complete the survey in private, in a quiet room in their home (i.e., without the presence of others). Following an informed consent form, questionnaires were presented in random order (early maladaptive schemas and Screener for Substance and Behavioral Addictions). All questionnaires were in Hebrew – the native language in Israel. Lastly, an online debriefing was given, and participants were thanked for their participation. The procedure was approved by the university Institutional Review Board (IRB).

**Data Analysis**

Data were analyzed using SPSS (version 25; IBM Corp, 2017). Participants were divided into two groups, one for low scores (0–9) and one for high scores (10–20) on each of the ten measures of addiction. A non-normal distribution of p < .001 for the variables was determined using a Shapiro-Wilk test. This made it impossible to run a MANCOVA process controlling for gender, age, and religiosity to assess group differences between self-perceived addiction levels across the five early maladaptive schemas. Floor effects were also observed for most of the addiction sub-scales, suggesting that data transformations would not be effective. It was therefore decided, to, instead, assess differences in terms of gender and religiosity across high and low levels of the ten self-perceived addictions by conducting a series of Chi-square tests and a Spearman correlation for age and scores on self-perceived addictions measures. A series of Mann-Whitney U Tests (non-parametric t-tests) were then conducted to test high and low self-perceived addiction group differences for each of the schemas. A Bonferroni adjustment was applied to each analysis if results were deemed to be significant at the p < .001 level.

**Results**

**Demographic Differences**

The Chi-square analysis identified significant differences between the genders across nine of the ten addictions with the exception of shopping, which was shared (see Table 2). Males were disproportionately represented in the *high* category for the four substance use categories of alcohol, cannabis, cocaine and tobacco, gambling, video gaming, and sex addictions. Females were disproportionately represented in the *high* category for eating and social networking addiction. Religiosity was shown to play a significant role in five of the ten addictions. Religious adolescents reported significantly lower levels of alcohol, tobacco, shopping, video gaming, and social networking addiction (see Table 3). Lastly, there were statistically weak positive correlations between age and alcohol (rs = .20, p < .001); tobacco (rs = .15, p < .001), cannabis (rs = .11, p < .001); gambling (rs = .05, p < .001), and sex (rs = .11, p < .001). There was also a significant weak negative correlation between age and video gaming (rs = -.10, p < .001), and social networking (rs = -.10, p < .001).

**Group Differences**

Significant differences across the ten addiction types in terms of almost all the maladaptive schemas were indicated by a series of Mann-Whitney U tests. High scores for addiction matched high scores for all but three maladaptive schemas (p < .001 – see Table 4). Only two exceptions were found. On the SSBA, no significant differences were found in impaired limits between high and low levels of cocaine or gambling, nor any difference in overvigilance between high and low levels of gambling on the SSBA.

**Discussion**

The purpose of this study was to examine cognitive distortions often found with substance and behavioral addictions in terms of early maladaptive schemas related to the etiology, development, and maintenance of a number of chronic and enduring psychopathologies (Young et al., 2003).We conducted a large-scale study involving 1948 Jewish Israeli adolescents from the general population.

Males tend to experience substance and behavioral addiction in higher proportions than females (Schulte, Ramo & Brown, 2009). In line with the trends noted in the literature, our study confirmed male participants identifying themselves as having alcohol, tobacco, cannabis, gambling, video gaming, and sex-related addictions in greater proportions than females. The findings in this study are consistent with the results of other studies comparing the rates of addiction in men and women in terms of substance use disorder (CBHSQ, 2016; Martin et al., 2021); gambling (Ronzitti et al., 2016; Weidberg et al., 2018); video gaming (Efrati, Kolubinski, Marino & Spada, 2021; Fam, 2018), and sex-related behavior (Efrati & Amichai-Hamburger, 2021; Kowalewska et al., 2020). In contrast, binge eating and social network addiction were associated with the female sample in higher proportions, corresponding with previous studies of adults that indicated higher levels of uncontrolled binge eating among women (Lewinsohn et al., 2002; Striegel-Moore et al., 2009). It has been found that women living in developed countries are more susceptible to cultural beauty standards that impinge on eating habits and body image (Black, Monahan, Schlosser & Repertinger, 2001). Previous research has already demonstrated that females tend to use the internet more for communication purposes (Mihara & Higuchi, 2017). A recent Israeli study found that adolescent females experienced more severe social network addiction than males (Efrati et al., 2021). Our study revealed no differences between the genders in terms of shopping addiction. A recently published literature review indicates that shopping addiction presents equally across the genders, but that men and women are motivated by different concerns when shopping (Niedermoser et al., 2021).

Israel’s population is composed of different types of religious, traditional, modern, and ultra-Orthodox groups. Confirming our hypothesis, non-religious individuals (adhering to secular principles) showed a higher tendency to identify themselves as having an addiction to alcohol, tobacco, shopping, gaming, or social networks. Previous studies have suggested that religion acts as a protection or deterrent against patterns of substance use (Connery & Devido, 2020) and gaming (Lewczuk et al., 2021). In addition, we found higher rates of addiction to shopping and social networks in secular adolescents than religious ones. In religious communities, which are geographically concentrated in certain dense residential neighborhoods, children and adolescents are educated in institutions that are under constant supervision, and the experiences of mobility and social networking especially among the ultra-Orthodox is very limited (Rosenberg, Blondheim & Katz, 2019; Rosenberg & Blondheim, 2021). This community surveillance also explains differences in rates of online shopping addiction as accessibility to the internet is closely monitored in highly religious communities. Duong & Liaw (2021) found that excessive and frequent internet use for shopping purposes are predictors of online shopping addiction. However, online shopping relies on electronic payment systems, such as credit cards, to which adolescents do not tend to have access (Xu et al., 2022).

As hypothesized, age differences were also found. Unsurprisingly, rates of alcohol, tobacco, cannabis, gambling, gaming, and sex-related addictions were higher among older adolescents. This is consistent with the literature on substance use (Halladay et al., 2020), gambling (Olason et al., 2011), and sex-related addiction (Farré et al., 2020). This may be explained by the exposure of older teens to alcohol, tobacco, and sex-related behavior at social events they attend; it is also indicative of social acceptance of these behaviors.

As predicted, early maladaptive schemas were associated with various behavioral and other addictions. Distorted expectations that basic social needs like love, warmth, safety, and social belonging will not be met have been shown to be related to substance and behavioral addiction (Efrati et al., 2022). However, this does not result in individuals socially isolating as might be expected but, rather, to greater dependency on other people for effective functioning. These two cognitive distortions create a vicious cycle where an individual, while dependent on others, feels they are unable to fulfill their needs. The attempt to regulate distress by engaging in addictive thoughts and behaviors as opposed to within intimate interpersonal relationships could be linked to these cognitive distortions. Negative affect in the form of shame and guilt are a constant in adolescents with higher rates of self-perceived addiction. This may be related to trying to retain unrealistic standards and prioritizing the needs of others above one’s own. In our study, adolescents with higher levels of self-perceived addictions were shown to have impaired internal and interpersonal limits. This could explain their difficulties with behavioral control and the constant intrusive thoughts, urges, and behaviors. Alternatively, these impaired limits may also explain the fear that thoughts, urges and behaviors have the potential to cause harm to oneself and others. A final observation, which somewhat refutes our initial hypothesis, was that there was no significant difference between levels of impaired limits between high and low levels of cocaine or gambling on self-perceived addictions and no difference in overvigilance between high and low levels of gambling on self-perceived addictions. This is probably due to adolescents being unaware of gambling as a problem with a consequent discrepancy between self-perception and the genuine dangers of gambling (Cronce et al., 2007; Aloi et al., 2020). Similarly, cocaine use among adolescents in Israel, especially in non-clinical populations, is not a recognized problem and, like gambling, they may be less able to perceive cocaine as a problem.

**Limitations and future studies**

There are a number of limitations to this study. Self-report measures can be subject to response bias especially in cases that concern highly sensitive personal issues like addiction. The cross-sectional design of the study also means that causal relations between variables could not be inferred. Longitudinal studies would be required to determine the directionality of the associations between psychological, cognitive, psychopathological, and cultural characteristics in self-reported addiction. Finally, the research population was limited to Jewish adolescents drawn from the general population of Israel. Future studies of adolescent populations in different contexts are needed to confirm the generalizability of the findings.

Despite these limitations, the study revealed some interesting patterns of self-perceived substance and behavioral addiction among Israeli adolescents. In the context of adolescence as a period of experimentation and psychological development, these patterns are not out of the ordinary, but they do offer us a better understanding of how maladaptive schemas interact with self-perceived addiction in adolescents, the potential negative consequences of these associations, and potential risk factors that they could carry into adulthood.

**Clinical implications**

Knowing the cognitive distortions associated with substance and behavioral addiction might improve the therapeutic interventions for substance and behavioral addiction. One promising modality is Cognitive-Behavioral Therapy (CBT). An initial step in CBT is identifying the external (e.g., things associated with addiction activity) and internal (e.g., dysfunctional thoughts) triggers for substance and behavioral addiction and the underlying dysfunctional thoughts associated with a given disorder. Once identified, the aim of CBT is to modify the dysfunctional thoughts through cognitive tasks and behavioral interventions and to remodel the environment and habits in a way that allows triggers to be avoided. The revealed associations between early maladaptive schemas and substance and behavioral addiction highlight several key cognitive distortions that could be the focus of CBT.

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**Table 1:** Means and Standard Deviations for Measures

|  |  |  |  |
| --- | --- | --- | --- |
|  | Mean | Standard Deviation | Range |
| SSBA: Alcohol | 4.80 | 3.29 | 0 to 20 |
| SSBA: Tobacco | 4.39 | 3.87 | 0 to 20 |
| SSBA: Cannabis | 3.63 | 2.90 | 0 to 20 |
| SSBA: Cocaine | 3.30 | 2.39 | 0 to 20 |
| SSBA: Gambling | 3.56 | 2.55 | 0 to 20 |
| SSBA: Shopping | 7.38 | 3.80 | 0 to 20 |
| SSBA: Video Gaming | 6.87 | 4.32 | 0 to 20 |
| SSBA: Eating | 7.87 | 4.42 | 0 to 20 |
| SSBA: Sex | 5.21 | 3.93 | 0 to 20 |
| SSBA: Social Networking | 11.14 | 4.61 | 0 to 20 |
| YSQ-S3: EMS Disconnection | 61.70 | 24.62 | 25 to 149 |
| YSQ-S3: EMS Autonomy | 43.57 | 16.60 | 20 to 120 |
| YSQ-S3: EMS Limits | 30.89 | 8.07 | 10 to 60 |
| YSQ-S3: EMS Directness | 44.23 | 11.17 | 15 to 90 |
| YSQ-S3: EMS Overvigilance | 59.89 | 15.75 | 20 to 120 |

Note: SSBA: Alcohol = Screener for Substance and Behavioral Addictions (Alcohol)**;** SSBA: Tobacco = Screener for Substance and Behavioral Addictions (Tobacco)**;** SSBA: Cannabis = Screener for Substance and Behavioral Addictions (Cannabis)**;** SSBA: Cocaine = Screener for Substance and Behavioral Addictions (Cocaine)**;** SSBA: Gambling = Screener for Substance and Behavioral Addictions (Gambling)**;** SSBA: Shopping = Screener for Substance and Behavioral Addictions (Shopping)**;** SSBA: Video Gaming = Screener for Substance and Behavioral Addictions (Video Gaming)**;** SSBA: Eating = Screener for Substance and Behavioral Addictions (Eating)**;** SSBA: Sex = Screener for Substance and Behavioral Addictions (Sex)**;** SSBA: Social Networking = Screener for Substance and Behavioral Addictions (Social Networking)**;** YSQ-S3: EMS Disconnection = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Disconnection);YSQ-S3: EMS Autonomy = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Impaired Autonomy);YSQ-S3: EMS Limits = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Impaired Limits);YSQ-S3: EMS Directness = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Other Directness);YSQ-S3: EMS Overvigilance = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Overvigilance).

**Table 2:** Chi-Square, Means and Standard Deviations for Gender Differences on the SSBA

|  |  |  |  |
| --- | --- | --- | --- |
|  | Chi-Square Value | Mean (SD)  Males | Mean (SD)  Females |
| SSBA: Alcohol | 36.07\* | 5.69 (3.54) | 4.24 (2.98) |
| SSBA: Tobacco | 64.75\* | 5.52 (4.59) | 3.67 (3.12) |
| SSBA: Cannabis | 43.06\* | 4.27 (3.50) | 3.22 (2.36) |
| SSBA: Cocaine | 22.14\* | 3.67 (2.82) | 3.06 (2.04) |
| SSBA: Gambling | 41.91\* | 4.19 (3.05) | 3.17 (2.09) |
| SSBA: Shopping | 7.87 | 7.07 (3.80) | 7.58 (3.79) |
| SSBA: Video Gaming | 131.34\* | 8.69 (4.46) | 5.72 (3.81) |
| SSBA: Eating | 21.76\* | 7.23 (4.11) | 8.27 (4.56) |
| SSBA: Sex | 113.83\* | 6.93 (4.40) | 4.13 (3.15) |
| SSBA: Social Networking | 74.05\* | 9.99 (4.57) | 11.87 (4.49) |

\*\* p < .001

Note: SSBA: Alcohol = Screener for Substance and Behavioral Addictions (Alcohol)**;** SSBA: Tobacco = Screener for Substance and Behavioral Addictions (Tobacco)**;** SSBA: Cannabis = Screener for Substance and Behavioral Addictions (Cannabis)**;** SSBA: Cocaine = Screener for Substance and Behavioral Addictions (Cocaine)**;** SSBA: Gambling = Screener for Substance and Behavioral Addictions (Gambling)**;** SSBA: Shopping = Screener for Substance and Behavioral Addictions (Shopping)**;** SSBA: Video Gaming = Screener for Substance and Behavioral Addictions (Video Gaming)**;** SSBA: Eating = Screener for Substance and Behavioral Addictions (Eating)**;** SSBA: Sex = Screener for Substance and Behavioral Addictions (Sex)**;** SSBA: Social Networking = Screener for Substance and Behavioral Addictions (Social Networking)

**Table 3:** Chi-Square, Means and Standard Deviations for Religiosity Differences on the SSBA

|  |  |  |  |
| --- | --- | --- | --- |
|  | Chi-Square Value | Mean (SD)  Secular | Mean (SD)  Religious |
| SSBA: Alcohol | 21.33\* | 5.37 (3.46) | 4.30 (3.04) |
| SSBA: Tobacco | 15.60\* | 4.83 (4.06) | 4.00 (3.65) |
| SSBA: Cannabis | 4.93 | 3.93 (3.04) | 3.36 (2.74) |
| SSBA: Cocaine | 5.10 | 3.51 (2.51) | 3.11 (2.64) |
| SSBA: Gambling | 10.00 | 3.89 (2.69) | 3.28 (2.39) |
| SSBA: Shopping | 24.11\* | 7.79 (4.07) | 7.02 (3.50) |
| SSBA: Video Gaming | 30.95\* | 7.61 (4.55) | 6.22 (4.00) |
| SSBA: Eating | 2.68 | 8.10 (4.56) | 7.65 (4.28) |
| SSBA: Sex | 2.02 | 5.47 (3.89) | 4.98 (3.95) |
| SSBA: Social Networking | 15.55\* | 11.71 (4.59) | 10.64 (4.58) |

\*\* p < .001

Note: SSBA: Alcohol = Screener for Substance and Behavioral Addictions (Alcohol)**;** SSBA: Tobacco = Screener for Substance and Behavioral Addictions (Tobacco)**;** SSBA: Cannabis = Screener for Substance and Behavioral Addictions (Cannabis)**;** SSBA: Cocaine = Screener for Substance and Behavioral Addictions (Cocaine)**;** SSBA: Gambling = Screener for Substance and Behavioral Addictions (Gambling)**;** SSBA: Shopping = Screener for Substance and Behavioral Addictions (Shopping)**;** SSBA: Video Gaming = Screener for Substance and Behavioral Addictions (Video Gaming)**;** SSBA: Eating = Screener for Substance and Behavioral Addictions (Eating)**;** SSBA: Sex = Screener for Substance and Behavioral Addictions (Sex)**;** SSBA: Social Networking = Screener for Substance and Behavioral Addictions (Social Networking)

**Table 4:** Mann-Whitney U Tests Comparing SSBA Differences Between Participants with Low (0-9) and High (10-20) Scores on Each Addiction Sub-Scale

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | YSQ-S3: EMS Disconnection | YSQ-S3: EMS Autonomy | YSQ-S3: EMS Limits | YSQ-S3: EMS Directness | YSQ-S3: EMS Overvigilance |
| SSBA: Alcohol | High Mean | 78.99  (23.64) | 56.73  (17.80) | 34.92  (7.14) | 50.19  (10.99) | 66.55  (14.22) |
|  | High Median | 79 | 55 | 35 | 50 | 65 |
|  | Low Mean | 60.09  (24.09) | 42.35  (15.93) | 30.52  (8.05) | 43.68  (11.03) | 59.27  (15.74) |
|  | Low Median | 56 | 39 | 30 | 43 | 58 |
|  | U | 212,869\*\* | 215,210.5\*\* | 194,692\*\* | 196,751\*\* | 187,795\*\* |
| SSBA: Tobacco | High Mean | 73.79  (24.37) | 53.64  (18.38) | 34.47  (7.49) | 48.04  (11.66) | 64.92  (14.72) |
|  | High Median | 76 | 53 | 34 | 48 | 64 |
|  | Low Mean | 60.45  (24.31) | 42.53  (16.06) | 30.52  (8.04) | 43.84  (11.05) | 59.37  (15.62) |
|  | Low Median | 56 | 40 | 30 | 43 | 58 |
|  | U | 212,979\*\* | 217,725\*\* | 206,932.5\*\* | 195,527.5\*\* | 195,128\*\* |
| SSBA: Cannabis | High Mean | 76.13  (19.55) | 57.24  (17.33) | 34.84  (7.29) | 47.98  (10.32) | 66.16  (13.94) |
|  | High Median | 79 | 61 | 35 | 49 | 66 |
|  | Low Mean | 61.06  (24.63) | 42.94  (16.30) | 30.71  (8.06) | 44.06  (11.18) | 59.60  (15.77) |
|  | Low Median | 56 | 40 | 30 | 44 | 59 |
|  | U | 111,729\*\* | 115,686.5\*\* | 102,748.5\*\* | 98,655.5\*\* | 100,795.5\*\* |
| SSBA: Cocaine | High Mean | 81.38  (15.61) | 64.62  (11.63) | 33.81  (6.65) | 49.21  (8.57) | 68.67  (10.28) |
|  | High Median | 82 | 66.50 | 33.50 | 50 | 68 |
|  | Low Mean | 61.26  (24.61) | 43.10  (16.40) | 30.83  (8.10) | 44.12  (11.20) | 59.70  (15.79) |
|  | Low Median | 57 | 40 | 30 | 44 | 59 |
|  | U | 61,460.5\*\* | 68,218\*\* | 49,905 | 53,198.5\*\* | 55,756\*\* |
| SSBA: Gambling | High Mean | 74.95  (15.68) | 59.61  (15.07) | 32.38  (4.95) | 48.59  (7.04) | 64.30  (10.90) |
|  | High Median | 78 | 65.50 | 32.50 | 49 | 64 |
|  | Low Mean | 61.30  (24.73) | 43.09  (16.41) | 30.85  (8.14) | 44.10  (11.24) | 59.76  (15.85) |
|  | Low Median | 57 | 40 | 30 | 44 | 59 |
|  | U | 74,734.5\*\* | 82,100.5\*\* | 60,900.5 | 68,611\*\* | 63,670.5 |
| SSBA: Shopping | High Mean | 69.07  (24.60) | 50.17  (16.91) | 33.50  (7.88) | 48.18  (11.19) | 63.99  (15.17) |
|  | High Median | 65 | 47 | 33 | 47 | 63 |
|  | Low Mean | 59.40  (24.18) | 41.51  (15.96) | 30.08  (7.95) | 43.00  (10.88) | 58.61  (15.71) |
|  | Low Median | 55 | 38 | 30 | 43 | 58 |
|  | U | 426,350.5\*\* | 451,963.5\*\* | 429,191\*\* | 432,054.5\*\* | 412,305\*\* |
| SSBA: Video Gaming | High Mean | 67.33  (24.35) | 48.70  (17.03) | 33.00  (8.11) | 46.45  (11.06) | 62.12  (14.80) |
|  | High Median | 64 | 47 | 33 | 46 | 62 |
|  | Low Mean | 60.00  (24.45) | 42.02  (16.16) | 30.26  (7.95) | 43.56  (11.12) | 59.22  (15.97) |
|  | Low Median | 55 | 39 | 30 | 43 | 58 |
|  | U | 402,448\*\* | 418,741.5\*\* | 408,201.5\*\* | 389,856\*\* | 379,845.5\*\* |
| SSBA: Eating | High Mean | 71.68  (25.82) | 50.23  (17.40) | 33.23  (7.55) | 48.44  (10.87) | 64.68  (15.59) |
|  | High Median | 68 | 47.50 | 33 | 48 | 64 |
|  | Low Mean | 57.21  (22.68) | 40.57  (15.32) | 29.84  (8.07) | 42.34  (10.78) | 57.74  (15.35) |
|  | Low Median | 53 | 38 | 29 | 42 | 57 |
|  | U | 542,046\*\* | 542,157\*\* | 506,363\*\* | 532,692.5\*\* | 507,727.5\*\* |
| SSBA: Sex | High Mean | 71.92  (22.49) | 51.04  (17.62) | 34.82  (7.43) | 48.25  (10.16) | 63.86  (14.19) |
|  | High Median | 73 | 50 | 35 | 48 | 63 |
|  | Low Mean | 60.09  (24.56) | 42.40  (16.13) | 30.28  (7.99) | 43.60  (11.19) | 59.27  (15.89) |
|  | Low Median | 55 | 39.50 | 30 | 43 | 58 |
|  | U | 292,391\*\* | 287,236.5\*\* | 295,801.5\*\* | 280,686.5\*\* | 262,688\*\* |
| SSBA: Social Network | High Mean | 65.84  (25.24) | 46.85  (16.97) | 32.30  (7.97) | 46.70  (11.09) | 62.20  (15.63) |
|  | High Median | 62 | 44 | 32 | 46 | 61 |
|  | Low Mean | 55.18  (22.10) | 38.40  (14.60) | 28.67  (7.72) | 40.35  (10.14) | 56.26  (15.26) |
|  | Low Median | 51 | 35 | 28 | 40 | 56 |
|  | U | 565,536\*\* | 590,037\*\* | 569,207\*\* | 594,916\*\* | 545,852\*\* |

\*\* p < .001

Note: SSBA: Alcohol = Screener for Substance and Behavioral Addictions (Alcohol)**;** SSBA: Tobacco = Screener for Substance and Behavioral Addictions (Tobacco)**;** SSBA: Cannabis = Screener for Substance and Behavioral Addictions (Cannabis)**;** SSBA: Cocaine = Screener for Substance and Behavioral Addictions (Cocaine)**;** SSBA: Gambling = Screener for Substance and Behavioral Addictions (Gambling)**;** SSBA: Shopping = Screener for Substance and Behavioral Addictions (Shopping)**;** SSBA: Video Gaming = Screener for Substance and Behavioral Addictions (Video Gaming)**;** SSBA: Eating = Screener for Substance and Behavioral Addictions (Eating)**;** SSBA: Sex = Screener for Substance and Behavioral Addictions (Sex)**;** SSBA: Social Networking = Screener for Substance and Behavioral Addictions (Social Networking)**;** YSQ-S3: EMS Disconnection = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Disconnection);YSQ-S3:Autonomy = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Impaired Autonomy);YSQ-S3: Limits = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Impaired Limits);YSQ-S3: Directness = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Other Directness);YSQ-S3: Overvigilance = The Young Schema Questionnaire – Short Form 3 (Early Maladaptive Schema Overvigilance).