

Alcohol Use and Associated Environmental Factors Among Middle and High School Students in Sfax (Tunisia)

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Published online: 24 July 2018

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Abstract Our objective was to investigate the prevalence and the environmental determinants of alcohol use among students in the region of Sfax in Tunisia. We carried out a cross-sectional study among 315 middle and high school students. We used the Alcohol Use Disorders Identification Test (AUDIT) to identify risky alcohol consumption, and we used the Parenting Styles and Dimensions Questionnaire (PSDQ) to assess the students' perceptions of their parents' parenting styles. The results show that 19.7% reported drinking alcohol at least once in their lifetime. Among them, 21% scored as dependent alcohol users, according to the AUDIT. Those who drank alcohol at least once were more likely to have parents with a permissive parenting style ($p < 0.001$; Cramer's $V = 0.287$), and a father ($p < 0.001$; Cramer's $V = 0.258$), a mother ($p = 0.025$; Cramer's $V = 0.158$), or a friend ($p < 0.001$; Cramer's $V = 0.341$) who drinks. Students perceiving their parents' parenting style as permissive had the highest AUDIT score ($p = 0.005$; partial $\eta^2 = 0.132$). The authoritarian style score was significantly higher for students who were current alcohol users ($p = 0.028$; Cohen's $d = 0.57$). Our study highlights the influence of peers, family drinking, and parenting styles on alcohol use among middle and high school students. Therefore, particular attention should be given to students that are at risk of having the abovementioned environmental determinants of alcohol use. And, prevention strategies should involve parents, as well as enhanced guidance and counseling for these students.

Keywords Prevalence · Alcohol · Middle and high school students · Peers · Family · Parenting styles

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Adolescence is a transitional period of human development involving multiple physiological and psychosocial changes. During this development stage, teenagers will develop their self-identity and will learn how to interact with the environment as an autonomous person (Shifflet-Chila et al. 2016). In fact, as adolescents develop more advanced patterns of reasoning, as well as a stronger sense of self, they seek to forge their own identities, developing important attachments with people other than their parents. These adolescents assert their own desires, search for new identification figures, and seek new experiences, often not conforming to established rules (Institut National de la Santé et de la Recherche Médicale 2014).

Looking to free themselves from parents and peer group integration, the adolescent may engage in risky behaviors such as substance use (Institut National de la Santé et de la Recherche Médicale 2014). Indeed, the consumption of psychoactive substances, especially alcohol, is part of the broad spectrum of behavioral disorders that are closely related to adolescence (Beck and Legleye 2009). Furthermore, it is worth mentioning that adolescence can also be a time when peers and family relationships play a role in shaping teen behavior.

This is especially concerning, given that Tunisians in the 10–24-year age group now account for 30% of the population. But, this concern is not new. In 2011, the Tunisian government, and notably the Ministry of Health, focused on the issue of drug abuse and on the prevalence of this phenomenon in schools in particular. It is both a recognized public health issue and a social problem, drawing media attention (Gaussot et al. 2011).

The psychoactive substance use among youth is a multifactorial event including individual vulnerability, environmental influences, and substance-related factors (Varescon 2010).

Individual risk factors may include some personality traits such as impulsivity and sensations seeking, but also psychopathological symptoms, particularly emotional ones (Michel et al. 2001; Van Hasselt et al. 1993). Environmental risk factors such as adolescents' relationship with their environment, family structure, parents' consumption habits, and parenting styles also influence adolescents' psychoactive substance use (Hayes et al. 2004). Indeed, beyond the substance-specific parenting practices, general aspects of parenting may contribute to the adolescents' propensity to engage in substance use. According to a recent review, most studies find that authoritative parenting is associated with the best outcomes regarding adolescent substance use, particularly with less use of alcohol, whereas neglectful parenting is associated with the worst outcomes (Becoña et al. 2012).

Despite the extent of alcohol use among Tunisian adolescents, there is a lack of data regarding the prevalence and the causes of this behavior. It is thus important to study pathways to adolescent alcohol use in order to facilitate the development of prevention programs.

The objective of the present study was to investigate the prevalence and environmental determinants of alcohol use among the middle and high school students in Sfax (a region in central Tunisia).

Methods

Sample

A cross-sectional study was conducted during the third trimester of the 2015–2016 school year. The list of schools in Sfax was obtained from the Regional Commissariat for Education-Sfax 1, under the aegis of the Ministry of National Education of Tunisia. The middle and high

schools in the region were randomly selected. The clusters were defined as classes in each selected school (two middle schools and two high schools), and all the students in the clusters were included in the survey.

Students over the age of 12 who gave informed consent to participate in the study were included.

Procedure

For each class, two investigators (psychiatry residents) were present in order to ensure the completion of the questionnaire and to clarify questions.

The confidentiality of the responses was assured after a clear explanation of the objectives.

All school personnel and teachers were not present at the time of data collection to prevent any response bias inside the classrooms.

A total of 424 questionnaires were distributed, from which 109 were excluded because they were not filled-in completely. Consequently, we obtained a response rate of 74.3% ($N = 315$).

Data Collection

We used a self-administrated questionnaire to collect data. It was divided into four sections:

- Sociodemographic characteristics
- Data related to alcohol and other psychoactive substance uses
- The Alcohol Use Disorders Identification Test (AUDIT) (an international screening instrument to recognize risky alcohol consumption)

This questionnaire was developed under the guidance of the World Health Organization (WHO) in collaboration with primary care units (Saunders et al. 1993). It consists of ten items: eight items deal with the subject's relationship with alcohol use in the previous year. The two remaining items have no temporality. Items 1–3 measure alcohol consumption, items 4–6 measure drinking behaviors, items 7 and 8 measure adverse effects, and items 9 and 10 measure problems related to alcohol consumption.

For each item, students were asked to indicate the appropriate response on a scale of 0 to 4.

Scores range from 0 to 40. A score of 8 or more in men and 7 or more in women indicates a current alcohol misuse. A score of 12 or more in men and 11 or more in women indicates alcohol dependency (Société Française d'Alcoologie 2001).

The AUDIT is validated for both genders, as well as for both white and black ethnicities (Steinbauer et al. 1998). This scale has shown good sensitivity for identifying alcohol problems or disorders among adolescents and good reliability (coefficient alpha of 0.87) (Clements 1998; Gache et al. 2005).

- The “Parenting Styles and Dimensions Questionnaire” (PSDQ) developed by Robinson et al. (2001) assesses adolescents' perceptions of their parents' parenting styles.

The PSDQ measures dimensions of parenting styles using authoritative scales (15 items grouped into three subscales: reasoning/induction, warmth and support, and autonomy granting), authoritarian scales (12 items grouped into three subscales: non-reasoning, physical coercion, and verbal hostility), and permissive scales (5 items).

Participants are intended to respond on a 4-point Likert scale (i.e., 1 = not at all like her/him; 4 = a lot like her/him). A score must therefore be calculated for the parent on each of the three dimensions. The total score can range from 0 to 96.

Statistical Analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 20. Data analysis involved descriptive statistics as well as univariate analysis. Descriptive statistics involved frequencies and percentages for categorical variables including cross tabulations.

Univariate associations between alcohol use and sociodemographic variables were assessed using the chi-square test. Cramer's V test was used to determine the strength of the association; values of 0.10–0.20 were considered as weak, 0.20–0.40 as moderate, 0.40–0.60 as relatively strong and 0.60–1.0 as strong.

Student's t test was used to evaluate the influence of parenting style scores on the continued alcohol use. Effect size was estimated with Cohen's d statistic; $0.2 < d \leq 0.5$ was considered small, $0.5 < d \leq 0.8$ was considered medium, and $d > 0.8$ was considered large.

An analysis of variance (ANOVA) was used to determine if parenting styles affect the adolescent's alcohol consumption or not. For ANOVA, effect sizes were reported as partial eta-square (partial η^2); values of 0.01 were considered as small, 0.06 as moderate, and 0.14 as strong. p values less than 0.05 were considered statistically significant.

Results

Sociodemographic and Clinical History Characteristics

The average age of participants was 16 years ($SD = 1.5$ years). More males (52.06%) than females (47.94%) participated in this study, such that a gender ratio of 1.08 was obtained.

The majority of the participants (91.1%) lived in two-parent families. For those living in one-parent families (8.9%), it was mainly as a result of either the death of one parent (3.8%) or a divorce (5.1%).

Regarding the parents' level of education, 20.3% of the participants have parents with a primary education level, 39.8% of participants have parents with a secondary education level, and 37.5% of participants have parents with a high education level. Among the participants, 2.4% have parents who are illiterate. More than half of the students (59%) were from high-income families, whereas 11% were from low-income families (a middle income is estimated to be one to two times the minimum wage per family member, and the minimum wage in Tunisia is ≈ 320 Tunisian Dinars/month). The participants lived in urban areas in 92.7% of cases and in semi-rural areas in 7.3% of cases.

About 37.1% of participants were from middle schools and 62.9% from high schools. Nineteen percent of school students had repeated at least one grade, and 33.1% reported school absenteeism.

Among the participants, 16.2% had previously suffered from physical abuse, 35.5% suffered from emotional abuse, and 1.9% suffered from sexual abuse. Moreover, 20.6% of participants considered their family as non-supportive.

Concerning their clinical history, 13.7% of respondents suffered from a somatic disease and 7.3% reported a psychiatric problem. About 7.3% of participants attempted suicide.

Psychoactive Substance Use

The prevalence of current smokers was 24.4% with a mean consumption of 7.8 cigarettes per day. The mean age of smoking initiation was 13.48 years (SD = 1.9 years). The prevalence of cannabis experimentation was 3.2%, and that of volatile organic solvent inhalation was 1.3%.

Alcohol Use

Sixty-two students (19.7%) reported drinking alcohol at least once in their lifetime. Among them, 41.9% were still using it at the time of the survey. The mean age of a first drink was 13.8 years (SD = 2.8 years). The two main reasons behind the continuation of alcohol after the first use were either to seek sensations or to deal with boredom (53.84% for both).

Beer, vodka, and whisky were the most consumed drinks (67.7, 50, and 38.7%, respectively).

Table 1 provides the data related to alcohol drinking among school students.

Assessment of Alcohol Use Disorders

Among lifetime alcohol users, the average AUDIT score was 5.56 (SD = 6.21). Twenty-one percent of participants scored as dependent alcohol users (c.f. Fig. 1).

Table 1 Characteristics of alcohol use among participants

| | Alcohol users (<i>N</i> = 62), % |
|--|-----------------------------------|
| Influence for alcohol initiation | |
| Peers | 58 |
| Parents | 8.1 |
| Media | 1.6 |
| Environment | 6.5 |
| No influence | 25.8 |
| Family and friends' drinking | |
| Fathers | 8.3 |
| Mothers | 1.3 |
| Siblings | 4.4 |
| Friends | 34.9 |
| Reasons for drinking | |
| Searching for new experiences | 77.4 |
| Curiosity | 46.7 |
| Seeking happiness or pleasure | 40.3 |
| Getting over personal problems | 27.4 |
| Dealing with boredom | 24.2 |
| Integrating the peer group | 19.3 |
| Other reasons | 22.6 |
| Festive drinking (at fiestas, on weekends) | 75.8 |
| How to drink | |
| Solo | 25.8 |
| With friends | 74.2 |
| In family settings | 12.9 |
| Parents' attitude toward drinking | |
| Restrictive attitude | 81.6 |
| Permissive attitude | 6 |

%; percentage

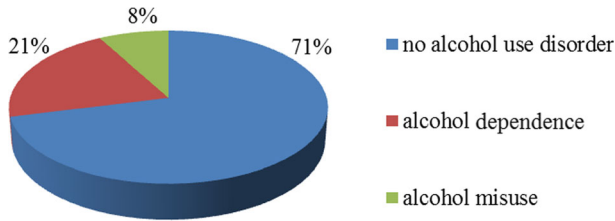


Fig. 1 Alcohol use disorder assessment

Assessment of Parenting Styles Using the PSDQ

The description of means and standard deviations of parenting style scores among the participants is presented in Table 2.

According to participants’ perceptions, the authoritative style was the most frequently adopted by parents (83.5%), followed by the authoritarian style (11.4%) and the permissive style (5.1%).

Univariate Analysis

As shown in Table 3, statistically significant associations were observed between the lifetime alcohol use and the male gender, age ≥ 18 years, semi-rural location, school absenteeism, and the history of physical or emotional abuse, somatic disease, and finally, suicide attempt.

No significant associations were observed in relation to the school level, family income, and fathers or mothers’ education.

As shown in Table 4, compared to non-users, lifetime alcohol users were more likely to have parents with a permissive parenting style, a parents’ permissive attitude toward drinking, and a family member or friend who drinks.

We found that the parenting styles were correlated with the AUDIT score ($p = 0.005$; partial $\eta^2 = 0.132$). The students who perceived their parenting style as permissive had the highest AUDIT score (c.f. Table 5).

The authoritarian parenting style score was significantly higher in students who were current alcohol users ($p = 0.028$; Cohen’s $d = 0.57$) (c.f. Table 6).

Discussion

Prevalence of Alcohol Use Among Adolescents

To the best of our knowledge, this study represents the first survey focusing on the alcohol use among middle and high school students in the region of Sfax, the economic capital of Tunisia. Our findings show that 19.7% of participants drank alcohol at least once during

Table 2 Mean and standard deviation (SD) of the PSDQ among parents

| | Mean (\pm SD) |
|---------------|----------------------|
| Authoritative | 27.66 (± 9.2) |
| Authoritarian | 12.77 (± 6.09) |
| Permissive | 8.32 (± 3.04) |

Mean (\pm SD): mean and standard deviation

Table 3 Alcohol use and background characteristics

| Background characteristics | Users (%) | Non-users (%) | <i>p</i> value | Cramer's <i>V</i> |
|----------------------------|-----------|---------------|----------------------|--------------------|
| Age | | | | |
| < 18 years | 15.9 | 84.1 | < 0.001 ^a | 0.216 ^b |
| ≥ 18 years | 39.2 | 60.8 | | |
| Gender | | | | |
| Male | 30.5 | 69.5 | < 0.001 ^a | 0.283 ^b |
| Female | 7.9 | 92.1 | | |
| Location | | | | |
| Urban | 17.8 | 82.2 | 0.003 ^a | 0.168 ^c |
| Semi-rural | 43.5 | 56.5 | | |
| Family income | | | | |
| High/medium | 19.8 | 80.2 | NS | – |
| Low | 19.6 | 80.4 | | |
| Father's education | | | | |
| Illiterate | 16.7 | 83.3 | NS | – |
| Primary | 15 | 85 | | |
| Secondary | 18.9 | 81.1 | | |
| University | 23.1 | 76.9 | | |
| Mother's education | | | | |
| Illiterate | 22.2 | 77.8 | NS | – |
| Primary | 13.2 | 86.8 | | |
| Secondary | 16.8 | 83.2 | | |
| University | 26.1 | 73.9 | | |
| School level | | | | |
| Middle school | 15.4 | 84.6 | NS | – |
| High school | 22.2 | 77.8 | | |
| School absenteeism | | | | |
| Yes | 34.6 | 65.4 | < 0.001 ^a | 0.264 ^b |
| No | 12.3 | 87.7 | | |
| Physical abuse | | | | |
| Yes | 35.3 | 64.7 | 0.002 ^a | 0.173 ^c |
| No | 16.7 | 83.3 | | |
| Emotional abuse | | | | |
| Yes | 28.6 | 71.4 | 0.003 ^a | 0.166 ^c |
| No | 14.8 | 85.2 | | |
| Somatic disease | | | | |
| Yes | 62.6 | 67.4 | 0.022 ^a | 0.129 ^c |
| No | 17.6 | 82.4 | | |
| Suicide attempt | | | | |
| Yes | 39.1 | 60.9 | 0.015 ^a | 0.137 ^c |
| No | 18.2 | 81.2 | | |

NS not significant

^a There is a significant difference between the two groups $p < 0.05$; ^b a moderate effect size; ^c a weak effect size

their lifetime; among them, 21% were dependent on alcohol, according to the AUDIT. The prevalence of alcohol use in this study is higher than the one reported in the Mediterranean School Survey Project on Alcohol and Other Drugs (MedSPAD) (5.8%), carried out in 2013 in the governorate of Tunis (Tunisia); this study included upper secondary pupils aged 15–17 (Comité MedSPAD 2015) and used the same criterion of drinking alcohol at least once during the lifetime. The increase in prevalence that we have found in our study could be related to the disparity of alcohol use distribution across the different regions of Tunisia and the heterogeneity of sociodemographic characteristics of the studied samples. Another argument raised is the expansion of the alcohol consumption phenomena from the year 2013 up to now.

Table 4 Alcohol use and family and friends factors

| | Users (%) | Non-users (%) | <i>p</i> value | Cramer's <i>V</i> |
|--|-----------|---------------|----------------------|--------------------|
| Predominant parenting style (PSDQ) | | | | |
| Authoritative | 74.2 | 85.8 | < 0.001 ^a | 0.287 ^b |
| Authoritarian | 8.1 | 12.3 | | |
| Permissive | 17.7 | 2 | | |
| Permissive parents' attitude toward drinking | 72.2 | 16.2 | < 0.001 ^a | 0.329 ^b |
| Family drinking | | | | |
| Fathers | | | | |
| Yes | 53.8 | 46.2 | < 0.001 ^a | 0.258 ^b |
| No | 16.6 | 83.4 | | |
| Mothers | | | | |
| Yes | 75 | 25 | 0.025 ^a | 0.158 ^c |
| No | 19 | 81 | | |
| Siblings | | | | |
| Yes | 57.1 | 42.9 | < 0.001 ^a | 0.203 ^b |
| No | 17.9 | 82.1 | | |
| Friends' drinking | | | | |
| Yes | 38.2 | 61.8 | < 0.001 ^a | 0.341 ^b |
| No | 9.8 | 89.2 | | |

^a There is a significant difference between the two groups $p < 0.05$; ^b a moderate effect size; ^c a weak effect size

The prevalence found in the present study is also higher than what is reported in neighboring countries such as Morocco. In the 2013 Morocco National Survey, which was conducted among 5801 school students, the lifetime prevalence of alcohol use was 8% (Comité MedSPAD 2015).

The rates found in some Arab countries like Lebanon appear to be higher (28.5%) (World Health Organization 2011), and those reported in occidental countries are even much higher, like in France (86.6%) (Spilka et al. 2016) and Canada (67.9%) (Centre for Addiction and Mental Health 2015).

The large disparity in the findings among different countries is clear. This seems to be related to sociocultural and religious factors. For example, in France, the cultural acceptance of alcohol and its traditional use foster the early experimentation of alcohol by adolescents and justify the high rates of alcohol experimentation reported in different studies (Beck and Richard 2014). However, adolescents in Arab and Muslim countries are much less likely to use alcohol because alcohol is prohibited by their religion. It should be noted here that Tunisia stands out from other Muslim countries with its partial adherence to the religious precepts of fasting, veiling, and the prohibition of alcohol consumption. Actually, Tunisia seems to be the most influenced Arab country by the occidental lifestyle. This is due to the Internet, satellite television channels, and especially, the historical links, which have been forged with Europe over the years and, more particularly, with France during the colonization. Thus, consumption of alcohol and other psychoactive substances should increase in the coming years. And, preventive and therapeutic strategies remain insufficient.

Table 5 AUDIT score and parenting styles according to the PSDQ

| | Mean AUDIT score | <i>p</i> value | Partial η^2 |
|-------------------|------------------|--------------------|--------------------|
| Predominant style | | | |
| Authoritative | 0.87 | 0.005 ^a | 0.132 ^b |
| Authoritarian | 0.31 | | |
| Permissive | 6.56 | | |

^a There is a significant difference $p < 0.05$; ^b a strong effect size

Table 6 Mean PSDQ scores and current alcohol use

| PSDQ score | Current users | Non-users | <i>p</i> value | Cohen's <i>d</i> |
|---------------------|---------------|-----------|--------------------|-------------------|
| Authoritative style | 22.69 | 26.81 | 0.097 ^a | – |
| Authoritarian style | 10.88 | 14.39 | 0.028 ^a | 0.57 ^b |
| Permissive style | 8.54 | 8.83 | 0.77 ^a | – |

^a There is a significant difference between the two groups; ^b a medium effect size

Among the measures adopted toward prevention and treatment, policy makers have set up a national observatory of drugs and drug addiction under the oversight of the prime minister's office and have integrated specific addiction courses in the medical curriculum in the university of Tunis, Sfax, and Sousse, the three biggest cities in Tunisia. It is worth noting that there are few adapted treatment programs in Tunisia. The main rehabilitation facility is the "Aide et Ecoute" center run by a non-government organization "ATUPRET." This center is situated in Sfax, the same city in this present study. It is currently the only center offering medical and psychological care in Tunisia, which, in our view, is still insufficient because of the severity and the extent of the situation.

Patterns of Alcohol Consumption

In our study, the average age of the first alcohol use was 13.8 years. Our finding is consistent with previous studies indicating a beginning age of between 12 and 13 years (Choquet et al. 2011; Godeau et al. 2008). Strong evidence supports the association of early use with negative alcohol-related outcomes. In fact, the risk of alcohol misuse is increased among individuals who begin to drink at an early age (Kandel 2002), since the adolescent's brain is particularly sensitive to alcohol effects (Beck and Richard 2014). According to Zeigler et al. (2005), individuals who first drank alcohol before the age of 14 are at an increased risk of developing alcohol use disorders, brain damage, and neurocognitive deficits, with implications for learning and intellectual development.

In our study, peer influence has been shown to play a crucial role in alcohol initiation. Hence, having a friend who drinks alcohol was a risk factor for alcohol use ($p < 0.001$). The other factors influencing alcohol initiation were parents' alcohol consumption (8.1%) and media (1.6%). Their roles were rather limited due to the unavailability of alcohol in the family environment and the prohibition of alcohol advertising through media. It depends on our sociocultural context in which parents supervise their child's behavior, especially girls regardless of their age, and prohibit them from alcohol use. Parents who allow underage drinking and media which promote alcohol are widely viewed as alien to the value systems of Tunisian culture. In our study, the minority of adolescents whose parents (fathers, 8.3%; mothers, 1.3%) and/or siblings (4.4%) were drinkers were more likely to experiment with alcohol (father and sibling: $p < 0.001$, mother: $p = 0.025$). In an environment where alcohol is easy to obtain and where drinking is permissible, adolescents will have more of a tendency and ease to drink.

Thus, adolescents learn how to consume alcohol through social context and the social learning theory might explain the links demonstrated in our study (Bandura 1977). This action of drinking is learned through observation and imitation, and therefore, the consumption is rewarded with social relationships.

In our study, the three most frequent reasons for drinking reported by students were searching for new experiences (77.4%), satisfying curiosity (46.7%), and seeking happiness

or pleasure (40.3%). These drinking motives were widely reported in previous studies. Jerez and Coviello (1998) found that most adolescents drink for enjoyment reasons, while Michel et al. (2001) indicated that curiosity was the main motive for psychoactive substance experimentation in adolescence.

Moreover, getting over personal problems and dealing with boredom were the reasons reported by almost one quarter of the participants (27.4 and 24.2%, respectively) in our study. Tunisian youth, living in a lower- or middle-income country, can encounter more stressors in their communities linked to an increased risk of alcohol use in order to cope with stress. Unlike our findings, social reasons appear to be the most commonly drinking motive across occidental studies. According to a review of young people's drinking motives (Kuntsche et al. 2005), most adolescents drink for either social facilitation, improvement of social gatherings, or putting themselves in a party mood. In an Argentinian study among 13 to 18 years old, 80% drank for enjoyment reasons, 7% to overcome their bad mood, 4.6% to be accepted by peers, and 1% to relax or to escape boredom (Jerez and Coviello 1998). According to the study of Plant et al. (1990), among 14 to 16 years old in the UK, "drinking to make a party more enjoyable" was the most often reported reason (94.4% of the male heavy drinkers). Finally, in a Canadian study, most college students drank either to enjoy the taste (24.9%), to celebrate (21.3%), or to be sociable (16.9%), whereas 2.1% drank to forget worries or to feel less shy (Kairouz et al. 2002).

Impact of Sociodemographic Factors on Alcohol Consumption

Our results showed that alcohol use was related to young age, male gender, location, and histories of physical abuse, emotional abuse, health problem, and suicide attempts.

Students aged above 18 years were more likely to use alcohol, with a moderate effect size ($p < 0.001$; Cramer's $V = 0.216$), and the prevalence of drinking in high school students was higher than that in middle school students (22.2 versus 15.4%). This is consistent with findings among French school students (Choquet et al. 2011), indicating that alcohol consumption increases with age and predicts alcohol abuse during adulthood.

Concerning gender, males were more likely to consume alcohol than females ($p < 0.001$). According to the "global status report on alcohol and health" of the World Health Organization (2014), the prevalence of individuals who had never drank alcohol was higher for women than for men in all areas of the world. Moreover, in our sociocultural context, alcohol remains reserved for the male gender, and even if there are young girls who drink alcohol, it is often concealed. Thus far, drinking among girls is less socially accepted than among boys and it is always considered as a source of shame.

As indicated in the literature (Bailly et al. 2015; Choquet and Ledoux 1994), we found that alcohol use was significantly more common among participants living in semi-rural areas, with a weak effect size ($p = 0.003$; Cramer's $V = 0.168$). Indeed, several factors such as the availability of alcohol, norms for acceptable drinking behaviors, and demographic and economic characteristics, which vary within urban, rural, or semi-rural areas across the region of Sfax, may influence drinking behaviors.

We did not find a difference in the prevalence of alcohol use according to the family income. Actually, most alcohol users had not yet developed an alcohol use disorder and were not regular drinkers. Hence, regardless of financial means, they can afford to buy beer, the most consumed drink, which remains rather cheap in Tunisia. However, in occidental countries, it is reported that alcohol use differs according to the social level of the parents (Legleye et al. 2013). Adolescents with a higher socioeconomic level may have more pocket money to

purchase drinks, whereas adolescents of low-social status parents are more often “binge drinkers” (defined as a consumption of more than five glasses in 2 h in men and more than four glasses in 2 h in women). Another hypothesis suggests that in socioeconomically deprived families, young people would spend more time outside their home and would therefore be more likely to meet illegal drug dealers (Wendland et al. 2017).

In our study, histories of physical and emotional abuse were significantly related to alcohol use [$p = 0.002$ (Cramer’s $V = 0.173$) and $p = 0.003$ (Cramer’s $V = 0.166$), respectively]. Child mistreatment, a widespread phenomenon, is a real public health issue. This mistreatment’s consequences can be devastating and persistent, affecting all areas of human development, far beyond childhood and adolescence (Wendland et al. 2017). According to a literature review carried out by Wendland et al. (2017), regardless of age at the time of the abuse, an individual will have a greater probability of consuming licit or illicit substances between 18 and 25 years old. Because of the development of a negative self-view, abused children would be more likely to expose their bodies to risk-related substance use (Cicchetti and Valentino 2006).

Impact of Educational Parenting Styles on Alcohol Consumption in Adolescents

Baumrind (1978) was the first researcher to develop a theoretical model of parenting styles based on the parents’ value systems. She postulates three main parenting styles: authoritarian, authoritative, and permissive.

Parenting style is recognized to be one of the key factors in the adolescent’s socialization process. It may contribute to the health and well-being of adolescents and may influence their substance use behavior (Berge et al. 2010). Calafat et al. (2014) conducted a study in six European regions, including populations from Northern, Central, Eastern, Western, and Southern Europe. Their purpose was to cover different cultural sensibilities, attitudes, and legal frameworks toward alcohol and other drugs. They found that both authoritative (warmth and strict) and indulgent (warmth but not strict) parenting styles were associated with lower levels of substance use than authoritarian and neglectful parenting styles. Results were similar in Southern European countries (Spain and Portugal) as well as in the other European countries (Sweden, the UK, Slovenia, and the Czech Republic). A large amount of empirical research indicates that both authoritative and indulgent parenting styles, sharing warmth as a characteristic, are equally protective against adolescent substance use in the European context (García and Gracia 2009; Lamborn et al. 1991; Steinberg et al. 1994). In these cultures, strictness and impositions in the socialization practices seem to be perceived in a negative way (Gracia et al. 2012; Martínez and García 2008).

Considering other youth outcomes, the indulgent style was related to the lowest level of personal disturbances (being in trouble with the police), better self-esteem, and superior school performance within the European context, than the authoritative parenting style (Calafat et al. 2014).

Overall, research conducted in Anglo-Saxon contexts, with European-American samples, suggests that the authoritative parenting style or even, for certain minorities, the authoritarian parenting style, both sharing strictness as a characteristic, have the best positive effect in the area of drug use prevention. Adolescents from authoritative households use less illegal drugs, are more resilient, achieve better academic performance, have better psychological competence and better adaptive strategies, and are less involved in the broad spectrum of behavior problems. On the opposite side, adolescents from indulgent home may benefit in the area of psychosocial development but show higher rates of deviance, particularly in the area of drug use (Bahr and Hoffmann 2010; Lamborn et al. 1991; Montgomery et al. 2008).

Actually, the perception of authoritarian parenting style differs in cross-cultural contexts. For Asian children, as well as for African Americans, authoritarian parenting is not viewed negatively and it is even associated with caring and love, respect, and protection from the dangers of the streets, making life easier for the child (Randolph 1995; Tobin et al. 1989).

Furthermore, initial findings among Arabs indicated that Arab adolescents favored authoritarian parenting, and no relationship was found between authoritarian parenting and various measures of mental health. Authoritarianism within the Arab society is not necessarily associated with feeling oppressed, and children may be satisfied with this way of life (Dwairy et al. 2006). It seems that authoritarian or authoritative parenting style has no negative influence on Arab adolescents' mental health. A study conducted among 431 Palestinian-Arab adolescents in Israel showed a significant relationship between the authoritative parenting style and better self-concept and self-esteem, less anxiety, depression, conduct disorder, and identity disorder (Dwairy 2004).

In our study, according to participants' perceptions, the authoritative style was the most frequently adopted by parents (83.5%), followed by the authoritarian style (11.4%) and the permissive style (5.1%). Each of these three parenting styles had a significant influence on alcohol experimentation among adolescents.

The authoritative style was more common among adolescents who did not experience alcohol (85.8 versus 74.2%). One of the important characteristics of this style is an open communication between children and their parents. The parents make disciplinary decisions by integrating the point of view of the child as long as they perceive it to be reasonable (Bornstein and Zlotnik 2008).

Thus, children of authoritative families are generally object-oriented and cognitively motivated. They are independent and socially responsible and have high self-esteem and internal locus of control (Baumrind 1978, 1991; Maccoby and Martin 1983). We can hence deduct that this educational style seems to be a protective factor from alcohol consumption for adolescents, since the parents exert control over teenagers' lifestyle choices. Besides, teenagers know that in case of a problem, they can resort to their parents to discuss and solve problems together.

Our findings show that parenting style was more frequently perceived as authoritarian by non-users of alcohol (12.3 versus 8.1%). Similarly, AUDIT scores were significantly lower in the case of authoritarian style ($p = 0.005$; partial $\eta^2 = 0.132$), indicating a lower alcohol consumption. Furthermore, authoritarian style PSDQ scores were significantly higher among adolescents who no longer drank alcohol ($p = 0.028$), with a medium effect size according to Cohen's d (0.57). These results emphasize that authoritarian parenting style education might prevent adolescents from continuing alcohol consumption. Indeed, parental control and monitoring, particularly marked in the authoritarian style, have been recognized to be important factors against adolescent substance use (Ennett et al. 2008).

Adolescents comply with parental rules, particularly those relating to alcohol. They respect the traditions and cultural values of Tunisian families. The latter are generally conservative and consider alcohol consumption as immoral, due to its prohibition by the Islamic religion.

Concerning permissive style, in addition to its association with alcohol use (17.7% in users versus 2% in non-users, $p < 0.001$), our study also shows its association with problematic alcohol use (highest AUDIT score, 6.56; $p = 0.005$; partial $\eta^2 = 0.132$). Thus, permissive parental style could be a factor favorable to the consumption of alcohol among young people.

Similarly, in keeping with our findings, several studies conclude that parents' permissive attitude directly influences control processes and indirectly influences alcohol consumption and abuse in adolescents (Patock-Peckham and Morgan-Lopez 2006; Patock-Peckham et al. 2011; Piko and Balázs 2012).

Permissive parents, with no authority to control or discipline, have little expectation of mature behavior from the child, allowing him/her the freedom to act and choose activities as he or she pleases (Bornstein and Zlotnik 2008). With such freedom of action and lack of parental control, adolescents will try new experiences and then they will be attracted to alcohol and share that interest with the peer group.

Considering these results, parental guidance seems to be a significant source of protection against alcohol abuse among adolescents. Developing healthy parent-child relationships, including affection and discipline, could enhance the capacity of parents to transmit their own social values and norms to their children.

Limitations

The first limitation of this study is the reliance on correlational data. An experimental design examining the hypothesized relationships is needed to further clarify the causal links. The second limitation is related to the limited data that we dispose of, as the questionnaires were distributed only in one city in Tunisia (Sfax). Further studies with a more representative sample of Tunisian adolescents would be interesting to support the findings of our study. Finally, the procedure used to categorize the participants' parenting styles is relative to the sample responses. Future longitudinal studies using additional measures of parenting styles as reported by parents would be beneficial.

Conclusion

Our data show the expansion of alcohol use among Tunisian adolescents during prior years.

We found that friends' and family members' drinking status is a potential risk factor of alcohol use, supported by the theory of social learning and imitation of parental models. The other individual and social risk factors identified in this study can be seen as predictors of drinking to cope with social disappointments and psychological difficulties. In addition, for Tunisian adolescents, the authoritative style seems to have a positive influence as a protective factor against underage alcohol use, while the authoritarian one seems to prevent the transition to regular alcohol use or abuse. Conversely, the permissive parenting style, involving low control, could be a significant risk factor for alcohol use. Accordingly, special attention should be given to the group of adolescents with those family, social, and individual determinants of alcohol use. Consequently, prevention strategies should involve parents and enhanced guidance and counseling for adolescents.

Nonetheless, our results are preliminary and need to be replicated using samples from other Tunisian cities. Future longitudinal researches should focus on the susceptibility factors to alcohol misuse in adolescents as this may be helpful for implementation of prevention strategies and early intervention in this context. It would also be wise to conduct follow-up studies in order to examine how social and family environment interacts in the prediction of alcohol misuse. This would allow designing predictive models with longitudinal data to determine risk factors for the subsequent development of hazardous alcohol drinking in adolescents.

Prevention strategies should also involve the mass media in an awareness campaign in order to draw stakeholders' attention to the problem of substances' use among school students. Finally, policy makers could implement a continuing counseling program provided by mental health professionals for adolescents.

Acknowledgements The authors would like to thank the regional education commissioner of Sfax 1 (Tunisia) for granting us permission to carry out this study in the schools of Sfax City. We also thank the assistance and cooperation of the directors and teachers of the schools for ensuring the smooth running of this research, and we thank all the students who participated in the study. We wish to thank Richard Fontaine, PhD, a native English speaker and a Professor at the University of Quebec in Montréal, for the proofreading.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Informed Consent All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants for being included in the study.

Ethical Approval All procedures performed in the present study were in accordance with the ethical standards of the institutional and national research committees and with the 1964 Helsinki Declaration and its later amendments.

References

- Bahr, S. J., & Hoffmann, J. P. (2010). Parenting style, religiosity, peers, and adolescent heavy drinking. *Journal of Studies on Alcohol and Drugs*, 71(4), 539–543.
- Bailly, D., Rouchaud, A., Garcia, C., Roehrig, C., & Ferley, J.-P. (2015). Alcohol use in young adolescents. A survey in French secondary schools. *Archives de Pédiatrie*, 22(5), 510–517. <https://doi.org/10.1016/j.arcped.2015.02.016>.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs: Prentice-Hall.
- Baumrind, D. (1978). Parental disciplinary patterns and social competence in children. *Youth Society*, 9(3), 239–267. <https://doi.org/10.1177/0044118x7800900302>.
- Baumrind, D. (1991). Parenting styles and adolescent development. In R. M. Lerner, A. C. Peterson, & J. Brooks-Gunn (Eds.), *The encyclopedia of adolescence* (pp. 746–758). New York: Garland.
- Beck, F., & Legleye, S. (2009). Sociologie et épidémiologie des consommations de substances psychoactives de l'adolescent. *L'Encéphale*, 35(Suppl 6), S190–S201. [https://doi.org/10.1016/s0013-7006\(09\)73470-0](https://doi.org/10.1016/s0013-7006(09)73470-0).
- Beck, F., & Richard, J. B. (2014). Consommation d'alcool des adolescents. *Archives de Pédiatrie*, 21(5), 168–169. [https://doi.org/10.1016/S0929-693X\(14\)71515-5](https://doi.org/10.1016/S0929-693X(14)71515-5).
- Becoña, E., Martínez, U., Calafat, A., Juan, M., Fernández-Hermida, J. R., & Secades-Villa, R. (2012). Parental styles and drug use: a review. *Drugs: Education, Prevention and Policy*, 19, 1–10. <https://doi.org/10.3109/09687637.2011.631060>.
- Berge, J. M., Wall, M., Loth, K., & Neumark-Sztainer, D. (2010). Parenting style as a predictor of adolescent weight and weight-related behaviors. *Journal of Adolescent Health*, 46, 331–338. <https://doi.org/10.1016/j.jadohealth.2009.08.004>.
- Bornstein, M.H., & Zlotnik, D. (2008). Parenting styles and their effects. *Encyclopedia of Infant and Early Childhood Development*, 496–509. <https://doi.org/10.1016/B978-012370877-9.00118-3>.
- Calafat, A., Garcia, F., Juan, M., Becoña, E., & Fernández-Hermida, J. R. (2014). Which parenting style is more protective against adolescent substance use? Evidence within the European context. *Drug and Alcohol Dependence*, 138, 185–192. <https://doi.org/10.1016/j.drugalcdep.2014.02.705>.
- Centre for Addiction and Mental Health (2015). *Ontario student drug use and health survey*. Retrieved from http://www.camh.ca/en/research/news_and_publications/ontario-student-drug-use-and-health-survey/Pages/default.aspx.
- Choquet, M., & Ledoux, S. (1994). *Adolescents: Enquête Nationale*. Paris: INSERM.
- Choquet, M., Com-Ruelle, L., Lengagne, P., Le Guen, N., Leymarie, N., & Neveu, X. (2011). *Les 13-24 ans et l'alcool: Comportements, contextes, facteurs de risque et de modération. Analyses complémentaires de l'enquête IREB de novembre 2007 (report No. 549bis)*. Retrieved from <http://www.irdes.fr/recherche/rapports/549bis-les-13-24-ans-et-l-alcool-comportements-contextes-facteurs-de-risque-et-de-moderation.pdf>.
- Cicchetti, D., & Valentino, K. (2006). An ecological transactional perspective on child maltreatment: failure of the average expectable environment and its influence upon child development. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology* (Vol. 3, 2nd ed., pp. 129–201). New York: Wiley. <https://doi.org/10.1002/9780470939406.ch4>.
- Clements, R. (1998). A critical evaluation of several alcohol screening instruments using the CIDI-SAM as a criterion measure. *Alcoholism: Clinical and Experimental Research*, 22(5), 985–993. <https://doi.org/10.1111/j.1530-0277.1998.tb03693.x>.

- Comité MedSPAD (2015). A first glance at the situation in the Mediterranean region in relation to the prevalence of alcohol, tobacco and drug use among adolescents. Retrieved from <http://www.coe.int/T/DG3/Pompidou/Source/Documents/MedSPAD-f-web.pdf>.
- Dwairy, M. (2004). Parenting styles and mental health of Palestinian-Arab adolescents in Israel. *Transcultural Psychiatry*, 41(2), 233–252. <https://doi.org/10.1177/1363461504043566>.
- Dwairy, M., Achoui, M., Abouserine, R., & Farah, A. (2006). Parenting styles, individuation, and mental health of Arab adolescents. A third cross-regional research study. *Journal of Cross-Cultural Psychology*, 37, 262–272.
- Ennett, S. T., Foshee, V. A., Bauman, K. E., Hussong, A., Cai, L., Reyes, H. L., et al. (2008). The social ecology of adolescent alcohol misuse. *Child Development*, 79(6), 1777–1791. <https://doi.org/10.1111/j.1467-8624.2008.01225.x>.
- Gache, P., Michaud, P., Landry, U., Accietto, C., Arfaoui, S., Wenger, O., & Daeppen, J. B. (2005). The Alcohol Use Disorders Identification Test (AUDIT) as a screening tool for excessive drinking in primary care: reliability and validity of a French version. *Alcoholism: Clinical and Experimental Research*, 29(11), 2001–2007. <https://doi.org/10.1097/01.alc.0000187034.58955.64>.
- García, F., & Gracia, E. (2009). Is always authoritative the optimum parenting style? Evidence from Spanish families. *Adolescence*, 445(173), 101–131.
- Gaussot, L., Le Minor, L., & Palierne, N. (2011). Les styles éducatifs parentaux et la consommation d'alcool des jeunes. *Alcoologie et addictologie*, 33(3), 205–213.
- Godeau, E., Arnaud, C., & Navarro, F. (2008). *La santé des élèves de 11 à 15 ans en France/2006: Données françaises de l'enquête internationale Health Behaviour in School-aged Children*. Retrieved from Institut National de Prévention et d'Éducation pour la Santé website: <http://impes.santepubliquefrance.fr/CFESBases/catalogue/pdf/1132.pdf>.
- Gracia, E., Fuentes, M. C., García, F., & Lila, M. (2012). Perceived neighborhood violence, parenting styles, and developmental outcomes among Spanish adolescents. *Journal of Community Psychology*, 40, 1004–1021. <https://doi.org/10.1002/jcop.21512>.
- Hayes, L., Hudson, A., & Matthews, J. (2004). Parental monitoring behaviors: a model of rules, supervision, and conflict. *Behavior Therapy*, 35(3), 587–604. [https://doi.org/10.1016/s0005-7894\(04\)80033-9](https://doi.org/10.1016/s0005-7894(04)80033-9).
- Institut National de la Santé et de la Recherche Médicale (2014). "Conduites addictives chez les adolescents", une expertise collective de l'Inserm. Retrieved from <http://www.inserm.fr/actualites/rubriques/actualites-societe/conduites-addictives-chez-les-adolescents-une-expertise-collective-de-l-inserm>.
- Jerez, S. J., & Coviello, A. (1998). Alcohol drinking and blood pressure among adolescents. *Alcohol*, 16(1), 1–5. [https://doi.org/10.1016/s0741-8329\(97\)00152-3](https://doi.org/10.1016/s0741-8329(97)00152-3).
- Kairouz, S., Gliksmann, L., Demers, A., & Adlaf, E. M. (2002). For all these reasons, I do...drink: a multilevel analysis of contextual reasons for drinking among Canadian undergraduates. *Journal of Studies on Alcohol*, 63(5), 600–608. <https://doi.org/10.15288/jsa.2002.63.600>.
- Kandel, D. B. (2002). *Stages and pathways of drug involvement: examining the gateway hypothesis*. Cambridge: Cambridge University Press.
- Kuntsche, E., Knibbe, R., Gmel, G., & Engels, R. (2005). Why do young people drink? A review of drinking motives. *Clinical Psychology Review*, 25(7), 841–861. <https://doi.org/10.1016/j.cpr.2005.06.002>.
- Lamborn, S. D., Mounts, N. S., Steinberg, L., & Dornbusch, S. M. (1991). Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development*, 62, 1049–1065.
- Legleye, S., Janssen, E., Spilka, S., Le Nézet, O., Chau, N., & Beck, F. (2013). Opposite social gradient for alcohol use and misuse among French adolescents. *International Journal of Drug Policy*, 24(4), 359–366. <https://doi.org/10.1016/j.drugpo.2012.12.007>.
- Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: parent-child interaction. In P. H. Mussen & E. M. Hetherington (Eds.), *Handbook of child psychology: vol. 4. Socialization, personality, and social development* (4th ed., pp. 1–101). New York: Wiley.
- Martínez, I., & García, J. F. (2008). Internalization of values and self-esteem among Brazilian teenagers from authoritative, indulgent, authoritarian, and neglectful homes. *Adolescence*, 43(169), 13–29.
- Michel, G., Purper-Ouakil, D., & Mouren-Siméoni, M. C. (2001). Facteurs de risques des conduites de consommation de substances psycho-actives à l'adolescence. *Annales Médico-Psychologiques, Revue Psychiatrique*, 159(9), 622–631. [https://doi.org/10.1016/s0003-4487\(01\)00102-0](https://doi.org/10.1016/s0003-4487(01)00102-0).
- Montgomery, C., Fisk, J. E., & Craig, L. (2008). The effects of perceived parenting style on the propensity for illicit drug use: the importance of parental warmth and control. *Drug and Alcohol Review*, 27(6), 640–649. <https://doi.org/10.1080/09595230802392790>.
- Patock-Peckham, J. A., & Morgan-Lopez, A. A. (2006). College drinking behaviors: mediational links between parenting styles, impulse control, and alcohol-related outcomes. *Psychology of Addictive Behaviors*, 20(2), 117–125. <https://doi.org/10.1037/0893-164X.20.2.117>.
- Patock-Peckham, J. A., King, K. M., Morgan-Lopez, A. A., Ulloa, E. C., & Moses, J. M. (2011). Gender-specific mediational links between parenting styles, parental monitoring, impulsiveness, drinking control, and alcohol-related problems. *Journal of Studies on Alcohol and Drugs*, 72(2), 247–258. <https://doi.org/10.15288/jsad.2011.72.247>.

- Piko, B. F., & Balázs, M. Á. (2012). Authoritative parenting style and adolescent smoking and drinking. *Addictive Behaviors*, 37(3), 353–356. <https://doi.org/10.1016/j.addbeh.2011.11.022>.
- Plant, M. A., Bagnall, G., & Foster, J. (1990). Teenage heavy drinkers: alcohol-related knowledge, beliefs, experiences, motivation and the social context of drinking. *Alcohol and Alcoholism*, 25(6), 691–698. <https://doi.org/10.1093/oxfordjournals.alc.a045067>.
- Randolph, S. M. (1995). African American children in single-mother families. In B. J. Dickerson (Ed.), *African American single mothers: understanding their lives and families* (pp. 117–145). Thousand Oaks: Sage.
- Robinson, C. C., Mandleco, B., Olsen, S. F., & Hart, C. H. (2001). The Parenting Styles and Dimensions Questionnaires (PSQD). In B. F. Perlmutter, J. Touliatos, & G. W. Holden (Eds.), *Handbook of family measurement techniques: Vol. 3. Instruments & index* (pp. 319–321). Thousand Oaks: Sage.
- Saunders, J. B., Aasland, O. G., Amundsen, A., & Grant, M. (1993). Alcohol consumption and related problems among primary health care patients: WHO collaborative project on early detection of persons with harmful alcohol consumption-I. *Addiction*, 88(3), 349–362. <https://doi.org/10.1111/j.1360-0443.1993.tb00822.x>.
- Shifflet-Chila, E. D., Harold, R. D., Fitton, V. A., & Ahmedani, B. K. (2016). Adolescent and family development: autonomy and identity in the digital age. *Children and Youth Services Review*, 70, 364–368. <https://doi.org/10.1016/j.childyouth.2016.10.005>.
- Société Française d'Alcoologie (2001). Guideline for clinical practice: alcohol use behaviors. Critical view of classifications and definitions: therapeutic objectives, patients, criteria. Retrieved from https://www.sfalcoologie.asso.fr/download/SFA_conduites-alcool.pdf.
- Spilka, S., Le Nézet, O., Mutatayi, C. & Janssen, E. (2016). Les drogues durant les années lycée: Résultats de l'enquête ESPAD 2015 en France. Retrieved from Observatoire Français des Drogues et des Toxicomanies website: <https://www.ofdt.fr/BDD/publications/docs/eftxssw9.pdf>.
- Steinbauer, J. R., Cantor, S. B., Holzer, C. E., & Volk, R. J. (1998). Ethnic and sex bias in primary care screening tests for alcohol use disorders. *Annals of Internal Medicine*, 129(5), 353–362. <https://doi.org/10.7326/0003-4819-129-5-199809010-00002>.
- Steinberg, L., Lamborn, S. D., Darling, N., Mounts, N. S., & Dornbusch, S. M. (1994). Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development*, 65(3), 754–770.
- Tobin, J. J., Wu, D. Y. H., & Davidson, D. H. (1989). *Preschool in three cultures*. New Haven: Yale University Press.
- Van Hasselt, V. B., Null, J. A., Kempton, T., & Bukstein, O. G. (1993). Social skills and depression in adolescent substance abusers. *Addictive Behaviors*, 18(1), 9–18. [https://doi.org/10.1016/0306-4603\(93\)90004-s](https://doi.org/10.1016/0306-4603(93)90004-s).
- Varescon, I. (2010). Mieux comprendre la toxicomanie: que sait-on des facteurs de vulnérabilité et de protection ? *Bulletin de Psychologie, Numéro 510*(6), 441–444. <https://doi.org/10.3917/bupsy.510.0441>.
- Wendland, J., Lebert, A., de Oliveira, C., & Boujut, E. (2017). Links between maltreatment during childhood or adolescence and risk-related substance use among young adults. *L'évolution Psychiatrique*, 82(2), 383–393. <https://doi.org/10.1016/j.evopsy.2016.06.011>.
- World Health Organization (2011). *Global School-Based Student Health Survey (GSHS)-Lebanon: 2011 fact sheet*. Retrieved November 6, 2017, from http://www.who.int/chp/gshs/2011_GSHS_FS_Lebanon.pdf?ua=1.
- World Health Organization (2014). *Global status report on alcohol and health 2014*. Retrieved November 6, 2017, from http://www.who.int/substance_abuse/publications/global_alcohol_report/en/.
- Zeigler, D. W., Wang, C. C., Yoast, R. A., Dickinson, B. D., McCaffree, M. A., Robinowitz, C. B., & Sterling, M. L. (2005). The neurocognitive effects of alcohol on adolescents and college students. *Preventive Medicine*, 40(1), 23–32. <https://doi.org/10.1016/j.ypmed.2004.04.044>.