

Chapter 7

Cannabis, Illicit Drugs and Polydrug Structures

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**European Publisher, ISO LONDON LTD., London, UK*

DOI: [10.70020/BI.20260803.7](https://doi.org/10.70020/BI.20260803.7)

7.1. Literature Review

Adolescence is a critical developmental period during which rapid and dynamic transformations occur concurrently across physical, cognitive, neurobiological, and psychosocial domains. Throughout this process, which generally spans from the onset of the teenage years to the mid-twenties, individuals increase their autonomy by distancing themselves from parental dependence and develop complex thinking skills (National Academies of Sciences, Engineering, and Medicine, 2019). While this socio-emotional restructuring process opens doors for adolescents to construct a unique identity and acquire new experiences, it concurrently establishes a fragile foundation where the propensity for risk taking behaviors rises significantly, and various nonnormative outcomes, most notably substance use, manifest (Duell et al., 2018; Willoughby et al., 2021). Although risk taking behavior is frequently associated with negative consequences in the literature, it is recognized that healthy risk taking experiences offer functional opportunities for adolescents to practice decision making, test new skills, and build an independent identity by developing realistic evaluations (Duell & Steinberg, 2019). Nevertheless, as a reflection of developmental processes, adolescents

display a much higher vulnerability in risky decision making mechanisms compared to children and adults (Defoe et al., 2015). While an increasing perception of risk regarding the potential harms of substances exerts a reducing effect on substance use levels (Lipari, 2013), the reinforcement of consumption patterns initialized in external environments by home-based substance accessibility stands out as one of the most critical environmental factors consolidating adolescent substance use behavior (Bouchard et al., 2018). This environmental accessibility not only triggers cannabis use, which is the most frequently encountered illicit psychoactive component during adolescence but also renders individuals vulnerable to clinically more complex polydrug use patterns where cannabis is consumed simultaneously or sequentially with substances such as alcohol and nicotine.

Beyond these environmental dynamics feeding the risks of cannabis and polydrug use, the most active and dynamic social stimulus within the adolescent microsystem is the peer environment. Peer influence is an active process through which an individual reshapes attitudes and behaviors that they would not normally exhibit under ordinary circumstances, driven by the norms of immediate friendship groups (Laursen, 2018). During the transition from childhood to adolescence, peer relationships assume a central position in social life, while parental influence relatively recedes and the guiding power of peer groups escalates. Although adolescents tend to orient toward peers with similar attitudes during friendship selection, these similarities are mutually reinforced through bidirectional interactions once a relationship is established. This two-way dynamic can set a stage for both positive and negative developmental outcomes (Sumter et al., 2009). One of the most hazardous reflections of this bidirectional socialization is observed in substance use behaviors during the adolescent period. Research indicates that nonnormative behaviors exhibited by peers throughout adolescence hold a strong dimensional association with substance use in subsequent years (Price et al., 2019). Indeed, peer influence is recognized as one of the most critical risk factors in illicit drug use, and the substance use level of the peer group stands out as the most robust and proximal predictor of individual

consumption (Branstetter et al., 2011; Fallu et al., 2010; Hawkins et al., 1992). A comprehensive meta-analysis conducted by Watts et al. (2024) on peer influence and adolescent substance use confirms that peer influence exerts a significantly positive effect on substance use, illustrating that adolescent consumption behaviors change concurrently with peer norms. While exposure to substance using friends during transition windows such as the progression from middle school to high school dramatically escalates risk rates (Van Ryzin et al., 2012), the presence of peer networks that disapprove of substance use functions as a structured protective mechanism in adolescent cessation (Marziali et al., 2022).

This decisive role of peer influence on substance use finds its conceptual foundation within Social Learning Theory (Bandura, 1977). The theory posits that individuals learn behavioral, cognitive, and emotional responses within a social context through mechanisms of observation, imitation, and modeling. In contrast to the behaviorist school, it suggests that adolescents do not passively imitate the peer environment, but rather process information mentally, based on the fact that cognitive mediation processes including attention, retention, reproduction, and motivation exist between the stimulus and response. In accordance with the principle of reciprocal determinism, an adolescent's behaviors, personal or cognitive factors, and social environment are in continuous and dynamic interaction. Looked at from a social learning perspective, adolescents develop mental expectations regarding positive outcomes of substance use, such as social acceptance, popularity, or pleasure, by observing substance using peer models or family members, and these cognitive schemas lead to the materialization of substance use behavior.

The family institution is the most powerful protective mechanism limiting the negative influences and risky orientations generated by peer groups during adolescence. This dynamic finds its conceptual core within the Social Control Theory of Travis Hirschi (1969). The theory suggests that individuals comply with societal rules and norms not merely out of fear of punishment, but through strong social bonds they feel toward society and its fundamental building blocks. The four primary components constituting social

bonds, namely attachment, commitment, involvement, and belief, function as invisible monitoring mechanisms that prevent an individual from drifting into delinquent and nonnormative behavioral domains. Operating as a concrete and functional reflection of these social bonds within the family microsystem, particularly through the attachment and involvement components, parental monitoring is one of the most robust protective barriers defined in the literature against adolescent risk taking behaviors (Hoeve et al., 2009; Wellman et al., 2016; Yap et al., 2017).

Consequently, large scale meta-analyses demonstrate that low levels of parental monitoring are directly linked to juvenile delinquency. Deficiencies in parental supervision and tracking break the adolescent's motivation to disclose information to parents, thereby making parent child closeness difficult and establishing a fertile foundation for the blossoming of risky behaviors (Hoeve et al., 2009). While the meta-analysis by Yap et al. (2017) on adolescent alcohol abuse proves that parental monitoring is the strongest protective mechanism in this domain, it confirms that negative parental behaviors that make alcohol accessible or show tolerance toward adolescent consumption contribute heavily to adolescents consuming alcohol more intensely and experiencing addiction-oriented problems in subsequent years. Similarly, dimensional systematic reviews reveal that high levels of parental monitoring operate as an absolute barrier against the risk of adolescent tobacco initiation. This situation demonstrates that parental supervision functions as a universal protective shield across multidimensional risk domains such as binge drinking, cannabis use, and polydrug addiction (Clark et al., 2012).

This inhibitory power of parental monitoring over legal substances like tobacco and alcohol maintains its effectiveness when the use of illicit psychoactive substances such as cannabis is concerned. Cannabis use is one of the developmental risk factors with the highest propensity for initiation and chronicity during adolescence (Volkow et al., 2021). The literature draws attention to the fact that adolescents exposed to low levels of parental monitoring face a significantly increased risk of orienting toward cannabis use

(DiClemente et al., 2001). The comprehensive meta-analysis conducted by Lac and Crano (2009) reveals that parental monitoring temporally delays cannabis initiation and significantly reduces consumption frequency. The primary role of parental monitoring in preventing cannabis onset is supported by numerous empirical studies (Kobak et al., 2017; Kuntsche & Kuntsche, 2016). Operating as the most operational subcomponent of the monitoring mechanism, parental knowledge functions as a powerful protective shield against cannabis risks by creating a proactive awareness regarding the adolescent's peer circle and activities (Bohnert et al., 2012; Epstein et al., 2017).

As parental monitoring declines and peer influence intensifies during adolescence, young people become increasingly vulnerable to the initiation of psychoactive substance use. Within this context, cannabis holds a unique epidemiological position globally, ranking as the most widely used illicit substance and the third most commonly consumed psychoactive substance among adolescents, following alcohol and nicotine. Although recent findings show that cannabis use is currently hovering at historically low levels over the past three decades in developed countries like the United States due to the impact of sharp declines during the pandemic period, prevalence rates remain at alarming levels. Indeed, according to the national report by Miech et al. (2025), twenty six percent of twelfth graders, sixteen percent of tenth graders, and seven percent of eighth graders in the United States reported using cannabis within the past year, while one out of every twenty adolescents at the senior high school level, specifically 5.1 percent, was identified as a chronic daily user. This high prevalence of cannabis within the adolescent population is not limited merely to addiction risks from a public health perspective. Young-Wolff et al. (2026) and Bhangu et al. (2025) confirm that early onset cannabis use is directly associated with severe psychiatric disorders, most notably psychotic disorders, bipolar disorder, depression, and anxiety.

Another critical clinical risk factor that must not be overlooked regarding adolescent cannabis use is polydrug use patterns. Polydrug use is defined as an individual's simultaneous or sequential consumption of multiple legal or illicit substance types (Font-Mayolas & Calvo, 2022). International

trend analyses reveal that the tendency of cannabis to be consumed together with substances like tobacco and alcohol demonstrated a distinct historical co-variation. Research conducted within Spanish samples shows that the ages of fourteen and fifteen constitute a critical threshold for initiating polydrug use during adolescence (Font-Mayolas et al., 2013). The expansion of opportunities to access substances alongside the reinforcement of curiosity drives as age progresses linearly increases in the number of substances adolescents use concurrently, creating a strong positive correlation between age and the status of being a polydrug user (de Andrés Sánchez et al., 2024). At this point, as an extension of Social Control Theory, the quality of the relationship between parent and child is the fundamental buffer mechanism limiting transitions into polydrug patterns. Especially during developmental transition phases such as the progression from middle school to high school or from early adolescence to middle adolescence, a high level of provided parental monitoring and high quality family bonds offer a universal protective effect in preventing adolescents' exposure to substances through multiple pathways and inhibiting use initiation (Rusby et al., 2018).

When addressed at the macro level, the determinants of cannabis and polydrug use exhibit radical regional diversities in accordance with sociocultural norms and geographical contexts. For instance, a systematic review conducted within Arab countries characterized by a more conservative sociocultural structure (Sabalbal et al., 2025) shows that cannabis prevalence fluctuates across a wide range between 2-30% depending on the methodology. The fact that cannabis rates remain exceptionally low in countries like Iraq and Saudi Arabia can be explained through deterrent macro determinants, such as the definitive prohibition of intoxicating substances by the religion of Islam and the application of heavy criminal sanctions by legal systems in parallel with these religious teachings (Sabalbal et al., 2025). In contrast, dynamics differentiate substantially within the European geography. According to data from the ESPAD 2024 report, cannabis preserves its title as the most widely used illicit substance across all participating European countries, and an average of 12% of students tried cannabis at least once in their lifetime (ESPAD Group, 2025). However, this rate is not homogeneous

across Eastern Europe and the Mediterranean basin. While the countries with the highest lifetime cannabis use prevalence are Czechia (24%) and Liechtenstein (23%), these levels hover at the lowest rates in Moldova (2.5%) and Georgia (3.3%) at the other end of Eastern Europe. In parallel with global trends, boys across Europe report higher cannabis use compared to girls, specifically 13 versus 11%. This gender anomaly widens dramatically in Montenegro (13 versus 6.8%) and Ukraine (15 versus 6.7%) along the Eastern European and Balkan line. In contrast to this, Malta, located in the Mediterranean basin, presents an exceptional and unique sociocultural model where cannabis use is distinctly more prevalent among girls (14%) compared to boys (8.6%) (ESPAD Group, 2025).

Another fundamental demographic moderator shaping cannabis and polydrug use patterns during adolescence is gender. Gender based socialization processes directly differentiate the relative weight of parental monitoring versus peer influence on the adolescent alongside risk thresholds. Studies conducted by Svensson (2003) reveal that girls are exposed to higher levels of parental supervision compared to boys, whereas boys are more open to peer pressure and nonnormative peer groups. Nevertheless, it is noteworthy that exposure to low levels of parental monitoring and substance using peer networks triggers the risk of substance use among girls much more aggressively than among boys (Svensson, 2003). Similarly, when the consumption of tobacco and other psychoactive substances is concerned, it is reported that the threshold for female adolescents to be influenced by peer norms and model peer behavior is higher compared to male adolescents (Griffin et al., 1999; Leatherdale et al., 2006). Keogh-Clark et al. (2021) explain this asymmetry within the framework of structured expectations regarding gender roles. They emphasize that parents act more permissively and even implicitly guiding toward boys regarding popular substances like alcohol and cigarettes in accordance with sociocultural acceptances; in contrast, intensive parental supervision established over girls and protective expectations regarding gender roles operate as the primary element suppressing initial substance onset rates among female adolescents.

7.2. Methodology

7.2.1. Overview and protocol deviations

The pre-specified protocol identified four confirmatory outcomes for Chapter 7: 12-month cannabis use (Y_CAN12), 30-day cannabis use (Y_CAN30), any illicit drug use ($Y_ILLICIT$), and polydrug use (Y_POLY). In addition, rare substance models using Firth penalized logistic regression and latent class analysis (LCA) were pre-specified.

All planned multivariable models were not estimable due to critically low outcome prevalence. Case counts were as follows: Y_CAN12 ($n = 10$, 0.9%), Y_CAN30 ($n = 10$, 0.9%), $Y_ILLICIT$ ($n = 19$, 1.8%), and Y_POLY ($n = 12$, 1.1%). These cell sizes are insufficient for reliable logistic regression estimation, including Firth penalized regression, which requires a minimum of approximately 20–30 outcome cases for stable inference. LCA requires adequate variance across substance use patterns; with near-zero prevalence across all illicit substances, latent class solutions are not interpretable. Elastic net and stability selection procedures were similarly not applicable.

This represents a deviation from the pre-specified analytical protocol. The deviation is attributable to the study population and setting — Northern Cyprus adolescents show markedly lower illicit drug use compared to European ESPAD averages — rather than to data quality or analytical failures. All pre-specified models (7.1–7.4, LCA, elastic net) are therefore not reported. Prevalence estimates for all substances were reported descriptively in Chapter 4.

7.3. Findings

7.3.1. Descriptive summary

Cannabis and illicit drug use were rare in this sample. Lifetime cannabis use was reported by 1.2% of students, with near-identical rates for 12-month and 30-day use (both 0.9%), suggesting that most cannabis users were recent

or current users rather than historical experimenters. Any illicit drug use lifetime prevalence was 1.8%. Drugs by injection (like heroin, cocaine, amphetamine) was the most commonly reported individual behavior (n = 8, 0.8%), followed by use of ecstasy and inhalants (each n = 5, 0.5%). All other individual illicit substances showed lifetime prevalence rates below 0.5%. No statistically significant gender differences were observed for any illicit substance, consistent with the low absolute frequencies precluding meaningful subgroup comparisons.

Table 7.1. Prevalence of cannabis and illicit drug use among Northern Cyprus adolescents

Substance	Lifetime	Past 12 Months	Past 30 Days
	n (%)	n (%)	n (%)
Cannabis	13 (1.2%)	10 (0.9%)	10 (0.9%)
Any illicit drug	19 (1.8%)	—	—
Drugs by injection	8 (0.8%)	—	—
Ecstasy	5 (0.5%)	—	—
Inhalants	5 (0.5%)	—	—
Other illicit	< 0.5% each	—	—

Note. N = 1,049. Dash (—) indicates that the time-frame-specific measure was not assessed for this substance category. Percentages are based on the total sample. All other individual illicit substances (e.g., heroin, cocaine, amphetamines) showed lifetime prevalence rates below 0.5%.

7.4. Discussion

In this study, the microsystemic (peer, parental) and individual (risk perception, accessibility) factors shaping the patterns of cannabis and polydrug use among adolescents were examined. While the obtained findings largely support the models constructed for legal and semi-legal substances, they reveal a different picture from the general trends in the literature when cannabis and other illicit substances are concerned. Here, the term “semi-legal” refers to substances characterized by conditional legitimacy, age restrictions, and specific legal gray areas; while products like tobacco and alcohol are fully lawful for adults, they are subject to strict statutory

restrictions within the adolescent sample, meaning they are neither completely illicit like cannabis nor entirely unregulated. One of the prominent findings of the study is that the prevalence of cannabis and illicit substance use among adolescents in the sample was relatively low, with lifetime cannabis use at 1.2%, past 12-month and past 30-day use at 0.9%, and total illicit substance use at 1.8%. This empirical situation indicates that Northern Cyprus may occupy a distinct position within the examined regional context compared to the European School Survey Project on Alcohol and Other Drugs (ESPAD) averages. While data from the ESPAD 2024 report show that an average of 12% of adolescents across Europe experienced cannabis at least once in their lifetime, the 1.2% rate in Northern Cyprus remains below even Moldova at 2.5% and Georgia at 3.3%, where cannabis prevalence was the lowest in Europe. This situation suggests that within the context of illicit substance consumption patterns, Northern Cyprus may share similarities with the relatively low epidemiological structure identified by Sabalbal et al. (2025) in Arab countries rather than the ESPAD European averages. Furthermore, the close alignment of lifetime and past 30-day cannabis use rates in the sample, at 1.2 versus 0.9%, suggests that cannabis use on the island might reflect current use rather than merely experimental use. It can be argued that the island-specific geographical structure, small community dynamics, and institutional controls function as natural mechanisms of social control restricting the expansion of cannabis.

The near-absence of variance regarding cannabis use in the sample limited the statistical testing of the primary hypotheses evaluating the protective role of parental monitoring, the risk-increasing power of peer influence, and the balance between risk perception and accessibility for the cannabis outcome. While appearing as a statistical limitation, this situation offers a noteworthy ground for contextualizing the boundaries of theories frequently utilized in the addiction literature. The Social Learning Theory of Bandura (1977) and the Social Control Theory of Hirschi (1969) were developed in societies possessing a relatively high empirical variance where cannabis use reached a certain level of normalization and adolescents could

be exposed to this behavioral variance. However, the inability to test the models for the cannabis outcome in this study suggests that macro-systemic and cultural barriers may have overshadowed microsystemic (peer and family) interactions within the context of Northern Cyprus. In other words, even if an adolescent interacts with nonnormative peer groups or domestic social bonds remain weak, the dominance of societal taboos and sanctions regarding illicit substances may have prevented micro-level risk factors from finding an open domain to trigger cannabis behavior.

One of the cognitive factors limiting cannabis use might be adolescents' higher risk perception toward cannabis compared to alcohol or e-cigarettes. An increase in the perception of risk regarding the potential harms of substances exerts a reducing effect on consumption of those substances (Lipari, 2013). In this context, the societal norm coding cannabis use as a severe deviation or an illicit behavior within the specific examined sample may act as a cultural protective shield among adolescents, similar to the deterrent climate generated by heavy criminal sanctions, legal frameworks, and inflexible attitudes toward substances in conservative societies (Sabalbal et al., 2025). However, this situation can concurrently bring an asymmetry that requires consideration for public health interventions. While a high risk perception toward cannabis stands out as a protective element, tobacco, e-cigarettes, and heavy alcohol consumption may be normalized among adolescents as acceptable tools of peer socialization. This selective normalization process can lead adolescents to minimize the risks carried by relatively more accessible substances like alcohol and e-cigarettes while staying away from cannabis. Indeed, polydrug use patterns, defined as the simultaneous or sequential consumption of multiple legal or illicit substance types, exhibit a linear tendency to consolidate as the age of adolescents progresses and opportunities to access substances expand (de Andrés-Sánchez et al., 2024; Font-Mayolas & Calvo, 2022).

7.5. Conclusion and Policy Recommendation

This chapter examined cannabis, illicit drug, and polydrug use among adolescents in Northern Cyprus within a socioecological framework emphasizing peer influence, parental monitoring, risk perception, and substance accessibility. Contrary to expectations derived from the international literature, cannabis and illicit drug use prevalence was exceptionally low across all indicators. Lifetime cannabis use was reported by only 1.2% of students, while both past 12-month and past 30-day use remained at 0.9%. Similarly, overall illicit drug use prevalence was limited to 1.8%.

Although these low prevalence rates prevented the estimation of the planned multivariable models, the findings themselves carry important public health implications. Compared with ESPAD averages and many European countries, Northern Cyprus appears to represent a low-risk context for adolescent illicit substance use. Cultural norms, social stigma surrounding illicit drugs, community-level social control mechanisms, and legal deterrence may collectively contribute to this protective environment.

From a policy perspective, prevention efforts should prioritize maintaining the existing protective climate while avoiding complacency. School-based prevention programs should continue to reinforce accurate risk perceptions regarding cannabis and other illicit substances. Family-focused interventions aimed at strengthening parental monitoring and communication should be sustained, given their well-established protective role in the literature. Furthermore, regulatory authorities should maintain effective enforcement against illicit drug availability, particularly around school environments and youth-oriented settings.

Given that alcohol and e-cigarette use are considerably more prevalent than cannabis use within the same population, public health resources may yield greater benefits when directed toward legal and semi-legal substances that currently pose a more substantial risk to adolescent health.

7.6. Bias and Limitations

Several limitations should be considered when interpreting findings. At the same time, the exceptionally low prevalence of cannabis and illicit drug use observed in this sample constitutes an important finding in itself. Compared with European ESPAD averages, Northern Cyprus adolescents reported markedly lower rates of cannabis and illicit drug use, suggesting the presence of cultural, legal, or social contextual factors that may operate as protective influences within this population.

Nevertheless, the cross-sectional design prevents causal inference and limits conclusions regarding the temporal ordering of the examined factors. Consequently, the dynamic relationships among peer influence, parental monitoring, risk perception, and substance use cannot be fully disentangled.

The primary methodological limitation of this chapter was the low prevalence of the outcomes under investigation. The limited number of cannabis, illicit drug, and polydrug use cases prevented the estimation of the planned multivariable models, including logistic regression, penalized regression, latent class analysis, and machine-learning-based variable selection procedures. As a result, the analyses were restricted to descriptive findings and did not permit examination of individual-level risk and protective factors.

In addition, the absence of school-level identifiers prevented the application of multilevel modelling techniques and limited the ability to account for potential clustering effects within schools.

Finally, all measures were based on self-reported data and are therefore subject to recall errors and social desirability bias. Given the sensitive and illegal nature of the behaviors examined, some degree of underreporting cannot be excluded. Future waves of the Northern Cyprus ESPAD survey, particularly if combined across multiple years or regions, may provide sufficient case numbers to support the originally planned analytical framework and allow more robust investigation of the determinants of adolescent cannabis and illicit drug use.

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