CATÓLICA
FACULDADE DE EDUCAÇÃO E PSICOLOGIA
PORTO

COFFEE CONSUMPTION HABITS OF PORTUGUESE ADOLESCENTS AND THEIR ASSOCIATION WITH THE USE OF OTHER PSYCHOACTIVE SUBSTANCES

Dissertation presented at Universidade Católica Portuguesa to obtain the degree of master in Psychology

- Specialization in Psychology of Justice and Deviant Behavior -

Maria Luís Morais Polónia

Porto, December of 2020

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Elaborated under the orientation of

Patrícia Oliveira-Silva, Ph.D.

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"*All things are poisons, for there is nothing without poisonous qualities. It is only the dose which makes a thing poison.*"

- Paracelsus, the father of toxicology

"*DAMN good coffee! And hot too!*"

- Special Agent Dale Cooper, Twin Peaks

"*Oh my god… That is the best coffee I've ever tasted.* (…) *Why the hell are we making meth?*"

- Walter White, Breaking Bad

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List of Abbreviations

APA – American Psychiatric Association

CC – Coffee consumption

CUD – Caffeine use disorder

DC – Decaffeinated coffee

DSM-5 – Diagnostic and Statistical Manual of Mental Disorders, fifth edition

ECDC – European Centre for Disease Prevention and Control

EMCDDA – European Monitoring Centre for Drugs and Drug Addiction

ESDM – Emergency social distancing measures

IM – Imbalance model

PFC – Prefrontal cortex

PS – Psychoactive substance(s)

SICAD – Serviço de Intervenção nos Comportamentos Aditivos e nas Dependências

SS – Sensation seeking

UNODC – The United Nations Office on Drugs and Crime

WHO – World Health Organization

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Resumo

O café é uma substância psicoativa devido ao seu conteúdo de cafeína. A adolescência é um período desenvolvimental em que os indivíduos podem experimentar e continuar a usar substâncias psicoativas, licitas e ilícitas. Ademais, há estudos que sugerem a existência de associação entre o consumo de café e o uso de outras substâncias psicoativas. Os objetivos do estudo foram determinar os padrões de consumo de café e avaliar as associações entre o consumo de café e o de tabaco, álcool e canábis numa amostra de adolescentes portugueses. Os resultados demonstram que um elevado número de adolescentes consome frequentemente; os adolescentes apresentam preferência por café com cafeina, em comparação com o café descafeinado; e o sabor a café, o sabor das bebidas com café, e os seus efeitos psicoativos são as principais razões para consumir café na adolescência. Não foram encontradas diferenças significativas no consumo de café antes do surgimento da pandemia e durante os meses das primeiras medidas de distanciamento social. Por fim, não foram encontradas associações significativas entre o consumo de café e o consumo de outras substâncias psicoativas. A investigação futura poderá colmatar as limitações desta investigação e dedicar-se a estudar o café separadamente das outras substâncias cafeinadas.

Palavras-chave: adolescência, café, café descafeinado, substâncias psicoativas, pandemia da covid-19

Abstract

Coffee is a psychoactive substance due to being a major source of caffeine. Adolescence is a developmental period where individuals might experiment and continue to use licit and illicit psychoactive substances. Evidence also suggests an association between coffee consumption and the use of other psychoactive substances. The study's aims were to determine the coffee consumption patterns of Portuguese adolescents and to evaluate the association between coffee consumption and the use of tobacco, alcohol, and cannabis in the same sample. The results showed that coffee consumption in adolescence can have its origins in an individual's childhood; a large number of adolescents frequently consumes coffee; adolescents prefer to consume caffeinated coffee over decaffeinated coffee; and coffee's taste, the taste of coffee beverages, and coffee's psychoactive effects are the main reasons for coffee consumption in adolescence. No significant differences were found for coffee consumption before the pandemic and during the pandemic's emergency social distancing measures. Lastly, no significant associations were found between coffee consumption and the use of tobacco, alcohol, and cannabis. Future research could extend on the present study's limitations and investigate coffee separated from the other caffeinated products. Practical implications relate to the possible clinical relevance of coffee consumption.

Keywords: adolescence, coffee, decaffeinated coffee, psychoactive substances, covid-19 pandemic

Introduction

This research is part of a bigger project entitled Caffeine Effects on Cognitive and Affective Performance, which aims to study the effects of coffee in different cognitive and affective processes. The general objectives of the present study are twofold. The first objective is to determine the coffee consumption patterns of Portuguese adolescents, including a small focus on decaffeinated coffee consumption. The second objective is to evaluate the association between coffee consumption and the consumption of other psychoactive substances in the same sample.

Coffee is one of the world's most valuable traded goods and its popularity is due to different factors, such as its history and its association with social interaction (Samoggia & Riedel, 2018; Tucker, 2017; Kingston, 2015). Data on coffee consumption (CC) prevalence and patterns in adolescence are scant, including data on decaffeinated coffee (DC). Adolescence is a developmental period characterized by multidimensional changes and where experimentation and continued use of licit and illicit psychoactive substances (PS) can happen (The United Nations Office on Drugs and Crime [UNODC], 2020; WHO, 2020). The same holds true for the Portuguese adolescent population (Serviço de Intervenção nos Comportamentos Aditivos e nas Dependências [SICAD], 2020). Coffee is a PS because it is a major source of a stimulant named caffeine (Onaolapo & Onaolapo, 2019). The use of any PS – whether single or multiple-PS use – entails the risk of acute and long-term adverse effects (APA, 2013; Brooks-Russel et al., 2015). But unlike other PS such as alcohol and tobacco, which are illegal for consumption by individuals below 18 years of age under Portuguese law (Decree-Law n.º 106/2015; Law n.º 63/2017), CC by adolescents is legal and socially acceptable (Ludden et al., 2017). There is also evidence in the scientific literature supporting an association between CC and the use of other PS (Marmorstein, 2019). For all these reasons, it is pertinent to gain a better understanding of the CC patterns in adolescence and the relationship between CC and the use of other PS.

This introduction is followed by the study's theoretical framework, which comprises the topics: coffee; adolescence; CC in adolescence; the use of other PS in adolescence; the relationship between CC and the use of other PS in adolescence; the covid-19 pandemic and the use of PS in adolescence; and, finally, the study's objectives. Afterward comes the method, where information on the study's design, sample, instruments, and data collection and analysis procedure are available. Subsequently, the study's results are presented and then discussed. The

dissertation ends with the study's main conclusions, limitations, suggestions for future research, and practical implications.

Theoretical Framework

Coffee

Coffee is one of the world's most valuable traded goods and is produced and consumed worldwide (Kingston, 2015). Factors like its history, finding its taste and aroma pleasurable, its psychoactive effects, its association with social interaction, its health-related beliefs, its economic value, and its political importance can explain its current popularity (Samoggia & Riedel, 2018; Samoggia et al., 2020; Tucker, 2017).

The coffee species that constitute the highest percentage in coffee production are *Coffea arabica* and *Coffea canephora*. Still, factors like geography, climate, harvesting method, processing method, roasting style, storage method, and brewing method also contribute to the flavor, aroma, and mouthfeel of a single type of coffee (Kingston, 2015). Roasting is an essential part of the coffee production process because the chemical reactions that take place during it give coffee its dominant flavors and aromas. Even though caffeine is the best well-known chemical in coffee, more than 800 compounds have been identified in coffee beans, many of which provide aromas, flavors, and effects on health (Kingston, 2015; Wachamo, 2017). The coffee beans' basic elements remain essentially the same whether roasted or unroasted; it is the proportion that changes. A coffee bean consists of water, caffeine, carbohydrates (including sugars), amino acids, proteins, fiber, minerals, organic acids, lipids, and trigonelline (Kingston, 2015). Roasted coffee has more than 30 different organic acids that contribute individually with flavor or antioxidant properties. For example, quinic acid contributes to coffee's bitter taste and produces melanoidins, a chemical with high antioxidant activity. Because acidity is a major factor in flavor definition, the acids will inhibit coffee from tasting flat when correctly balanced (Kingston, 2015). With respect to lipids, studies have shown both positive and negative effects on health. For example, cafestol and kahweol show high antioxidant potential, but can also increase serum cholesterol levels (Lee & Jeong, 2007; Wachamo, 2017). In conclusion, coffee is very rich in different chemical compounds, going beyond its caffeine content.

Caffeine is one of the world's most consumed PS (Onaolapo & Onaolapo, 2019). From a motor perspective, caffeine acutely improves performance in tasks like simulated driving and

handwriting, and endurance performance in activities like cycling, running, and swimming (Adan & Serra-Grabulosa, 2012; Astorino & White, 2012). From a psychological perspective, caffeine is related to an acute enhancement of cognitive processes like alertness, vigilance, and reaction time in both sleep-deprived and well-rested individuals (Lieberman et al., 2010; McLellan et al., 2016; Nehlig, 2010; Smith, 2012). Caffeine also has an acute positive effect on mood: Individuals feel more alert, vigorous, efficient, and motivated to work; and less fatigued, sleepy, and drowsy. This has been confirmed by different mood instruments (Adan & Serra-Grabulosa, 2012). Its effects on cognition and mood are particularly beneficial when individuals are fatigued, working at night, or sleep-deprived (Adan & Serra-Grabulosa, 2012; McLellan et al., 2016). Therefore, intraindividual characteristics will influence caffeine's effects (e.g., if a person is very fatigued, a higher dose might have positive effects, but if the same person is well-rested and uses the same dose as before, she/he might feel unwell; McLellan et al., 2016; Nehlig, 2010; Wood et al., 2014). Some interindividual characteristics that influence caffeine's effects are sensitivity to caffeine, an anxious personality, sex, and age (Nehlig, 2018). Additionally, caffeine might have a preventative role in the development of Alzheimer's and Parkinson's disease (Kolahdouzan & Hamadeh, 2017). Since caffeine is a PS, its use also entails the risk of adverse effects. Anxiety, irritability, restlessness, sleep problems, and early urgency and frequency of urination are acute effects that can arise (Distelberg et al., 2017; Lohsiriwat et al., 2011; Nehlig, 2018). The American Psychiatric Association (APA) recognizes that caffeine intoxication and caffeine withdrawal syndrome are potentially dysfunctional, since *caffeine intoxication* and *caffeine withdrawal* are two diagnostic categories in the DSM-5. Both have two criteria present in almost all diagnoses of mental disorder: signs and symptoms must "cause clinically significant distress or impairment in social, occupational, or other important areas of functioning" and must not be attributable to another medical condition or mental disorder (APA, 2013, p. 504). The DSM-5 also has two other caffeine-related diagnostic categories: *Caffeine-induced anxiety disorder*, which encompasses panic attacks or anxiety, and *caffeine-induced sleep disorder*, which encompasses troubled sleep (APA, 2013). It does not have a *caffeine use disorder* (CUD) diagnosis as it has for other licit and illicit PS, but presents it as a "condition for further study" in order to "stimulate research that will determine the reliability, validity, and prevalence of [CUD] based on the proposed diagnostic schema" (APA, 2013, p. 793). Since the DSM-5's publication, an abundance of scientific articles on the potential for disordered caffeine use has been published. Empirical studies provide evidence for the psychometric validity of a CUD questionnaire; for measuring CUD prevalence and severity by quantifying the criteria through a visual analog scale; for the effectiveness of a manual-only intervention for

problematic caffeine use; and for CUD prevalence, clinical significance, and correlates (e.g., one of these studies found that CC had a moderate association with CUD) (Ágoston et al., 2018; Booth et al., 2020; McGregor & Batis, 2016; Sweeney et al., 2019; Sweeney et al., 2020). Caffeine seems to stimulate the brain's reward system in, at least, three different ways, but does it in a mode of action that is slightly different from the other PS (Felix dos Santos et al., 2018).

Some individuals prefer to drink DC. DC is not 100% caffeine free but has an extremely low caffeine content (Addicott, 2012; Tucker, 2017). There is evidence supporting the idea that DC can also produce acute effects on cognition and mood, although research on this is scarce. More specifically, DC might decrease reaction time and increase alertness and overall mood (but, as expected, effects are greater when caffeinated coffee is consumed; Fukuda & Aoyama, 2017; Haskell-Ramsay et al., 2018; Sane et al., 2019). There are, at least, two possible explanations for these effects. The first one is that consumers might learn to associate perceptual stimuli present in both coffees (e.g., aroma, taste) with caffeinated coffee's effects (i.e., it is a conditioned response). The second one is that non-caffeine compounds present in coffee might interact synergistically to produce psychoactive effects, which has some empirical support (Camfield et al., 2013; Cropley et al., 2012). Distelberg et al. (2017), however, found that DC had no impact in mood, sleep, and health-related quality of life.

Coffee is also a cultural phenomenon (Tucker, 2017). Culture is "everything that people have, think, and do as members of a society" (Ferraro & Andreatta, 2014, p. 45). Coffee has ideas, meanings, practices, and technologies associated with it. The practice of going to coffeehouses is part of coffee culture - in fact, the expansion of coffeehouses is associated with a gradual growth in CC worldwide since 2000 (International Coffee Organization, 2016; Tucker, 2017). Coffeehouses are known as places for studying, social interaction, and other leisure activities, in addition to drinking a coffee preparation. Understanding the terminology for the different coffee preparations (e.g., *cappuccino*); owning a coffee technology to drink it at home, such as a pod-type coffee machine; organizing or attending a coffee festival; and/or owning or attending a coffeehouse that works as a "coffee lab" are other ways of partaking in coffee culture (Kingston, 2015; Lisbon Coffee Fest, 2020; Nogueira, 2020; Tucker, 2017). Coffee culture is also created through the media, there being songs, advertisements, television shows, and movies that reference coffee and coffeehouses. Furthermore, the social meanings associated with different coffee types, preparations, and practices allow consumers to express their identities (Samoggia & Riedel, 2018; Tucker, 2017).

Adolescence

Adolescence is a transitional period between childhood and adulthood from ages 10 to 19, present in almost all societies, with marked biological, psychological, and social changes (Larson & Wilson, 2004; Susman & Rogol, 2004; WHO, 2020). Globalization created a lengthier adolescence that includes longer schooling, later marriage, urbanization, and exclusion from full-time labor. This leads to more time to acquire knowledge and prepare for adulthood (Larson, 2002; Larson & Wilson, 2004). From a biological perspective, adolescence begins with puberty, a transition that finishes in young adulthood. Puberty comprehends neurological, endocrine, and physical morphological changes that culminate in reproductive maturity (Susman & Rogol, 2004).

From a neuropsychological perspective, the imbalance model (IM) of adolescent neurodevelopment has prevailed in the scientific literature until recently. Its assumptions are based on the fact that while ventral limbic regions fully develop during adolescence, myelination and pruning of the prefrontal cortex (PFC) continues into adulthood. For this reason, it was suggested that there is a structural and functional deficit in the ability of the PFC, the region predominantly involved in the executive functions, to exercise control over the limbic system, which is responsible for processing rewarding and emotional stimuli. This developmental imbalance would explain adolescents' propensity towards risky and impulsive behaviors (Casey & Caudle, 2013; Roebers, 2017; Romer et al., 2017; Spear, 2018). However, the lifespan wisdom model, argued by Romer et al. (2017), builds upon the IM's limitations and challenges previous interpretations of neuroscience's research findings. Firstly, sensation seeking (SS), defined as attraction to novel and exciting experiences, is a psychological characteristic that peaks during adolescence and declines in the transition to adulthood. It is a marker of rising dopaminergic activity in regions involved in reward recognition and anticipation (Duell et al., 2016; Romer et al., 2017; Wahlstrom et al., 2010; Zuckerman, 2015). The IM neglects that the SS peak cooccurs with a rise in dopaminergic activity in regions (e.g., medial PFC) and corticostriatal pathways involved in working memory and episodic memory, providing adolescents the ability to retrieve past experiences and learn from them. In fact, indicators of the executive functions (e.g., working memory) rise quickly during adolescence. The executive functions are a set of higher-order cognitive processes that engage individuals in goal-directed behavior, including decision-making and resisting temptations (i.e., self-control) (Bäckman et al., 2000; Gur et al., 2012; Hofmann et al., 2012; Luna, et al., 2004; Metcalfe & Mischel, 1999; Miyake et al., 2000; Murty et al., 2016; Roebers, 2017; Romer et al., 2017;

Shamosh et al., 2008). Moreover, there is evidence for a positive correlation between SS and working memory (Romer et al., 2011). Secondly, the IM fails to account for different types of risk-taking. Insensitivity to risk is characterized by impulsive action, or acting without thinking about consequences, and is the type of risk the IM aims to explain. Although it peaks during early adolescence, it is not characteristic of adolescence. It is an individual difference that is already present in childhood and prevails into adulthood without intervention (Bjork & Pardini, 2015; Moffit et al., 2011; Patton et al., 1995; Romer et al., 2017). Known risk, which includes impulsive choice, or choosing an immediate reward over a larger but delayed one, is shown to not peak in adolescence (Metcalfe & Mischel, 1999; Romer et al., 2017). The last type of risk is decision-making under ambiguity, which seems to peak in adolescence because adolescents have more tolerance to ambiguity than adults. This tolerance has an adaptive value since it allows for exploration of novel environments and "young organisms to take better advantage of learning opportunities" (Tymula et al., 2012, p. 17135). This type of risk is compatible with self-control and is related to SS because the increase in SS motivates exploration of ambiguous environments. SS does not seem to necessarily produce excessive risk-taking behavior unless it is accompanied by impulsive choice or impulsive action (Lewin-Bizan et al., 2010; Romer et al., 2017). Thirdly, even though maladaptive outcomes are generally more common in adolescence compared to childhood, most adolescents go through this period without them. These outcomes mainly occur in early adulthood, when imbalance should be minimal (European Centre for Disease Prevention and Control [ECDC], 2020a; ECDC, 2020b; Nelson et al., 2015; Regev et al., 2018; Romer et al., 2017; UNODC, 2018; UNODC, 2019). Finally, the increase in ambiguous risk-taking drives adolescents' exploratory behavior with an adaptive purpose. Their brains are particularly sensitive to learning and can take advantage of the gained experience. Thus, this type of risk will promote better decision-making ability in later adulthood despite the cognitive decline related to aging (Murty et al., 2016; Romer et al., 2017).

From an interpersonal perspective, adolescents' relationships with their parents undergo transformations and remain extremely influential on adolescent development. In healthy relationships, parents support adolescent individuation by giving age-appropriate autonomy and parental monitoring while continuing to be a *secure base*. Identity development requires psychological separation in terms of acknowledging how one is different and similar from their parents, but not necessarily physical and emotional separation, which is more common in western societies (Bowlby, 1969; Bornstein & Putnick, 2018; Stattin & Kerr, 2000). Concerning peer relationships, they increase markedly in importance in adolescence (French &

Cheung, 2018). Peer socialization and selection processes are factors predictive of negative and positive behaviors during adolescence (Shin & Ryan, 2014; Schwartz et al., 2019). Social networks are peer groups in which adolescents regularly interact and engage in similar activities. These include friends but also friends of friends, acquaintances, and enemies. Friendships, in contrast, are dyadic in nature. Romantic relationships and sexual activity can also begin during adolescence, there being cultural differences in timing (French, 2015; French & Cheung, 2018).

CC in Adolescence

Almost all of the studies with data on CC prevalence and associations in adolescence had general objectives unrelated to CC (e.g., most of them aimed to evaluate caffeine intake or energy drink consumption). To our knowledge, there is only one study that exclusively evaluated CC. It had a sample of 4,140 Finnish adolescents aged 12, 14, 16, and 18 years, and a response rate of 88% (Hemminki et al., 1988). In this study, 35% of girls and 45% of boys reported they consumed coffee daily; the number of moderate and heavy consumers increased with age; and boys reported consuming more than girls in each age group. Other results were that tobacco smoking was strongly associated with CC, the 12-14-year-old consumers had lower school grades compared with non-consumers, and more 16-18-year-old consumers had dropped out of school compared with non-consumers. CC was also associated with earlier menarche or first ejaculation and regular dating (Hemminki et al., 1988). Concerning the other studies, one with a sample of 2,525 Australian adolescents in grades 7, 9, and 11 found that CC was frequent in each grade group and the most commonly used PS by 7th-graders compared with tobacco, alcohol, and cannabis. Rates of CC rose each year for boys and girls (Patton et al., 1995). Another study with 1,105 Australian individuals aged 15-49 years found that 33% of 15-19-year-olds consumed coffee beverages (Galaxy Poll, 2013, as cited in Verster & Koenig, 2018). In a study that evaluated the energy drink consumption in 2,629 Polish individuals of ages 12-20, 43% consumed coffee (Nowak & Jasionowski, 2015). In a study that evaluated caffeine intake by 1,213 Italian adolescents aged 12-19 years, 88.7% reported drinking at least one coffee per day (Santangelo et al., 2018). In a study that evaluated beverage consumption among 52,508 Korean adolescents, 12.7% drank coffee more than once a week. Coffee was the preferred beverage amongst high school students compared with middle school students (Kim et al., 2019). In a study that evaluated the consumption of energy drinks by 1,414 Portuguese adolescents of ages 11-17, 56.7% consumed energy drinks and 46.6% of energy drink consumers reported CC, with 12.5% consuming more than one cup a day (Martin et al.,

2018). Finally, in a study with 2,514 Brazilian adolescents aged 18 and 19 years, 78.5% consumed coffee (Barbosa et al., 2020).

Regarding long-term effects of CC, Marmorstein's study (2016) is worth mentioning. CC in adolescence was associated with panic symptoms, and initial levels of hyperactivity symptoms predicted later increases in CC, while drinking energy drinks in adolescence was associated with depressive and conduct disorder symptoms. Also, in a sample of 213 adolescents aged 12-17 years, Harstad et al. (2016) found that the prevalence of seven out of nine symptoms of CUD, as proposed by the DSM-5, was 2.8%. Among those who reported using caffeine in the past 30 days, the prevalence was 3.9%. All adolescents who met criteria for CUD symptoms also met criteria for alcohol or cannabis use disorder. The analyzed CUD model was found to be psychometrically robust, but there are criteria that should be analyzed in future studies (Harstad et al., 2016).

With respect to factors that explain CC, these are organized into biological and psychological factors. From a biological perspective, a literature review on caffeine genetics concluded that there is a genetic predisposition for caffeine use (Yang et al., 2010). Another study found that CC has a strong genetic component that is stable over time and no evidence of shared environmental factors affecting CC. The most substantial genetic influence was found in the youngest and oldest age groups (Laitala et al., 2008). From a psychological perspective, there are reasons for CC in adolescence. To our knowledge, only two studies have these kinds of findings. Turton et al. (2016) explored the attitudes and beliefs on consumption of caffeinated drinks in a sample of 166 Canadian 9th-12th graders. Coffee beverages were the second most popular beverages (48.2%). Most of the participants did not understand that caffeine is a PS; only a few, mostly in grades 11 and 12, described it as a PS. Energy provision and taste were the most common reasons for drinking caffeine; energy provision was strongly related to CC. Accessibility was also a primary reason: The closeness of stores and restaurants, being able to bring it to school and the classroom, and the lack of barriers to purchase, such as an age limit, were reasons for drinking caffeinated beverages. Another reason, given by 9th and 10th graders, was that CC was perceived as something older adolescents and adults do. Responses mentioning parental role modelling were also frequent. Participants observed their parents drink (e.g., coffee in the morning), which implied that it is safe and acceptable for consumption, and said it was common for parents to purchase caffeinated drinks before work and school. Whether prepared at home or bought on the way to work or school, parents either explicitly offered caffeinated beverages or allowed participants free access to them. Another reason were the

media (e.g., frequency and placement of advertisements on television and in sport venues). Lastly, some participants also discussed how these drinks are often consumed by peers and how their peers can be perceived as not conforming to social norms if they decline drinking them. It was also stated that observing their peers drink one of these beverages could encourage them to try them (Turton et al., 2016). The second study explored behaviors and beliefs about caffeine with 49 North American adolescents. The majority were girls and in 12th grade (Ludden et al., 2017). CC was one of their main sources of caffeine and all the 11 focus groups had at least one participant who was a regular coffee consumer. Reasons for caffeine consumption included drinking to stay awake or to wake up and many complained about lack of sleep and the need for compensation. Coffee was the most popular beverage consumed for sleep-related reasons. When asked about reasons related to school performance, participants responded that they drank caffeine to do schoolwork or wake up for a test if they did not get enough sleep the night before. Some participants did not believe caffeine would enhance performance, only that it would keep them awake. Another reason for consumption was enjoying the taste and mood-enhancing effects of caffeinated drinks. Participants mentioned liking coffee's taste and adding sugar and flavors to coffee beverages to enhance or mask the taste. Availability was another reason for consumption (e.g., they can just "grab it"). The media were also a reason: Participants found advertisements influential when they made the drinks look cool and fun. Sometimes, multiple exposures influenced them to experiment a caffeinated drink. When advertisements were not effective, it was because they did not cater to youth and looked silly or fake. There were also social reasons for caffeine consumption. Participants stated they drank coffee with their family (mentioned in 6 groups), adding that their family introduced them to CC. Some participants mentioned CC with friends, adding that getting coffee with friends was "just like a thing" they did together. Coffee was also described, by boys and girls, as something to get before a sports practice or game as a team to sip on throughout. Participants also mentioned they typically drank coffee in the morning before school class, with many buying it on their way to school and drinking it before class. Coffee was mentioned as the most popular caffeinated beverage among adolescents their age. Participants said that adolescents consume caffeinated beverages to fit in and seem cool. For some students, college-aged students or older siblings positively influenced their perception of the drinks. Of the eight groups that mentioned this, participants in five groups specifically referred to CC. Concerning reasons for not drinking, some participants disliked coffee's taste, specifically decaffeinated, *espresso*, and hot coffee. Another reason for not drinking coffee was because of its negative acute effects. A few students

stated they would not drink caffeine while at school because it could decrease their performance.

In conclusion, CC in adolescence seems to be prevalent in some European countries and Brazil. Factors that explain CC might be certain genetic predispositions, its acute effects, taste, availability, consumption by peers and family, social meanings, and the media.

The Use of Other PS in Adolescence

Consistent with the peaks in SS and ambiguous risk-taking, adolescence is a developmental period where individuals might experiment and continue to use, in a single or multiple fashion, licit and illicit PS (Brooks-Russel et al., 2015; UNODC, 2020).

The most recent epidemiological study on PS use by Portuguese adolescents was conducted in 2019 by the SICAD (2020). The sample consisted of 26,319 adolescents aged 13-18; residing in Continental Portugal, Azores, and Madeira; and attending 734 public schools. The study found that the most consumed licit PS by Portuguese adolescents were alcohol and tobacco, respectively, and the most consumed illicit PS was cannabis. Regarding alcohol, 68% of adolescents had used alcohol at least once in their lives, 59% drank alcohol in the 12 months preceding the study, and 38% drank alcohol in the 30 days preceding the study (SICAD, 2020). Concerning tobacco, 38% had used it at least once in their lives, 29% smoked in the last 12 months, and 18% smoked in the past 30 days (SICAD, 2020). The term tobacco refers to different preparations of the *Nicotiana tabacum* plant, which can be smoked, chewed, or sniffed (Preedy, 2019). Nicotine is the PS in tobacco, but non-nicotine compounds might influence tobacco's rewarding effects through synergistic actions with nicotine or perceptual characteristics (e.g., flavor; Abreu-Villaça et al., 2019). Lastly, regarding cannabis, 13% used it at least once in their lives, 12% consumed it in the last 12 months, and 6% consumed it in the past 30 days (SICAD, 2020). The term cannabis refers to different *Cannabis* plant species' preparations, which can be smoked, vaporized, or eaten. Tetrahydrocannabinol is cannabis' PS, but other existing compounds might influence its acute effects (Preedy, 2017).

Factors associated with PS use in adolescence include perceived use by important adult figures and older siblings, decreased lability of parental solicitation and control, maltreatment by caregivers, and an insecure attachment to caregivers (especially an avoidant attachment). Affiliation with peers who use PS is a strong predictor of use during adolescence (Fairbairn et al., 2018; Gabrielli et al., 2017; Hayre et al., 2019; Lee et al., 2017; Lindberg & Zeid, 2017; Marceau et al., 2020; Schuler et al., 2019). Reasons for using alcohol, tobacco, and cannabis in

adolescence include the social meanings attached to their use, affective enhancement (e.g., pleasure, escaping boredom), and coping (Cooper et al., 2016; Lammers et al., 2013; Piko et al., 2015; Piko et al., 2007).

In Portugal, alcohol and tobacco use is illegal for individuals below 18 years of age (Decree-Law n.º 106/2015; Law n.º 63/2017). Recreational cannabis use is illegal and decriminalized (alongside all other illegal PS). This means that, if caught possessing quantities below what is legally framed as the "average individual consumption," individuals under 16 years of age are legally treated as being "in danger," while individuals aged 16 and above can be subject to sanctions or measures, excluding imprisonment (Law n.º 30/2000). In 2018, cannabis use for therapeutic purposes was legalized in Portugal. There were attempts to legalize recreational use in the same year, which were rejected in 2019 (Faria, 2019; Lopes, 2019).

The Relationship between CC and the Use of Other PS in Adolescence

Data on the relationship between CC and the use of other PS in adolescence come from studies that, again, vary widely in terms of general objectives. This section is organized into studies on genetics and studies with adolescent samples, respectively.

Swanson et al. (1994) reviewed and analyzed the scientific literature on caffeine and nicotine joint use and interactive effects in tobacco withdrawal. They concluded that increased CC was associated with increased cigarette smoking and that individuals who smoked tended to use more cigarettes while consuming coffee. The authors also added that caffeine in coffee may be partially, but not completely, responsible for this relationship (Swanson et al., 1994). A study with a sample of 173 monozygotic and 183 dizygotic male twin pairs aged 52-66 years found a common genetic influence for tobacco, alcohol, and coffee use (Swan et al., 1996). The authors added: "Although these findings suggest that the covariance in the use of these substances results from common genes, it is important to note that residual genetic variance specific to the use of each substance also was identified by this analysis" (Swan et al., 1996, p. 28). Bjørngaard et al. (2017) performed Mendelian randomization analyses to sizeable samples of the adult population in the UK, Norway, and Copenhagen. They concluded that being a tobacco smoker is associated with higher CC; within smokers, tobacco use is positively associated with CC; and that the results provide evidence for heavier smoking causally increasing CC (instead of the opposite or a bidirectional effect).

A study with 437 French male adolescents aged 13-18 years found that participants with a heavier alcohol use also used more coffee and tobacco (Weill & Le Bourhis, 1994). Patton et

al. (1995) found that adolescents consuming two or more cups of coffee per day carried a 2.4-fold risk for regular tobacco smoking when other variables were controlled and found no association between CC and cannabis use. Collins et al. (1997) found, in a sample of 4,325 participants, that 7th graders who consumed more than six cups of coffee per month were more likely to initiate tobacco and/or alcohol use one year later than those who did not consume coffee. Those who drank less than six cups of coffee per month were more likely to have never used tobacco or alcohol when compared with participants who drank more than six cups in the past month. Kristjansson et al. (2015), with a sample of 5,784 Icelandic 16 and 17-year-olds, found that CC was strongly correlated with consumption of alcohol mixed with energy drinks. This research also found a weak association between CC and frequency of drunkenness. Most of the association between CC and drunkenness, for boys and girls, was due to mediation through alcohol mixed with energy drinks (63% and 68%, respectively) (Kristjansson et al., 2015). Another study with a sample of 144 North Americans in grades 6 and 7 found that CC had no association with alcohol use (Miyake & Marmorstein, 2015). Marmorstein (2019), in a sample of 134 North American adolescents in grades 6 and 7, found that CC was positively associated with alcohol use, perceived alcohol drinking by peers and best friend, and social behavior alcohol expectancies (a measure that, according to the author, has been shown to predict future alcohol use). Even after the established risk factors for alcohol use were controlled, CC remained a significant predictor of later alcohol use (Marmorstein, 2019). Finally, in a sample of 40,090 Canadian 9th-12th graders, Fagan et al. (2020) found that the greater the consumption of coffee or tea, the greater the likelihood of being a current tobacco smoker, a former smoker, currently using an e-cigarette, smoking more cigarettes each month, and using more of an e-cigarette each month after controlling all the other variables.

In conclusion, empirical evidence indicates the existence of a relationship between CC and tobacco and alcohol use, especially when coffee, tobacco, and/or alcohol are used more intensely. To our knowledge, only one study evaluated the relationship between CC and cannabis use, so more studies are needed to ascertain this relationship.

The Covid-19 Pandemic and the Use of PS in Adolescence

While working on this dissertation, the covid-19 pandemic emerged and has been changing dramatically all areas of life in the countries affected by it. Global restrictions on travel and other implemented measures caused a provisional disruptive impact on the market of illicit PS, leading to higher prices for and scarceness of some PS (European Monitoring Centre for Drugs

and Drug Addiction [EMCDDA] & Europol, 2020). Consequently, evidence shows that PS users have adjusted their behaviors. For example, "surface web and darknet markets, social media and secure encrypted communication applications now appear to be playing a more prominent role in the sourcing of [illicit] drugs at user level. Home deliveries, less face-to-face dealing and less reliance on cash as a form of payment seem to be increasing for individual transactions and it is possible that behavioural changes, once established, will persist over the longer term" (EMCDDA & Europol, 2020, p. 7). Concerning adolescent users of PS, to our knowledge, only one study aimed to examine adolescent PS use before and during the pandemic's emergency social distancing measures (ESDM). In a sample of 1,054 Canadian adolescents aged 14-18 years, Dumas et al. (2020) found that, from pre-ESDM to post-ESDM, there was a significant decrease in the percentage of adolescents that binge drank (15.7%-9.8%) and used e-cigarettes (16.6%-11.5%) and in the percentage of girls who used cannabis (16.4%-13.4%). For adolescents who kept using PS post-ESDM, there was an increase in alcohol and cannabis use for girls; 49.3% of adolescents had engaged in solitary use; 31.6% used with friends via technology; 23.6% used with friends face-to-face; and 42% used with parents. When analyzing a different categorization of the contexts of post-ESDM adolescent PS use, 20.8% only engaged in solitary use; 13.4% only used with friends; 27.8% only used with parents; and 38% used in multiple contexts. Adolescents who solely used with parents used more alcohol and less cannabis than those who only used with friends and vaped less. Finally, adolescents with a higher fear of covid-19 and with more depressive symptomatology were more likely to engage in solitary use only (Dumas et al., 2020).

The Study's Objectives

The first general objective was to determine the CC patterns of Portuguese adolescents, including a small focus on DC consumption. The second general objective was to evaluate the association between CC and the use of other PS in Portuguese adolescents. These objectives were broken down into the following specific objectives:

- Describe the ages of experimentation and of more regular CC;
- Describe the frequencies of CC in the 12 months prior to the ESDM and in a typical month;
- Describe the frequency of DC in a typical month;
- Describe the reasons for CC;

- Evaluate the associations between CC reasons and CC in the 12 months prior to the ESDM and in a typical month.
- Determine if there are differences between pre-ESDM and the months of ESDM in CC frequency;
- Evaluate the association between CC and alcohol use in the last 12 months pre-ESDM and in the last typical month;
- Evaluate the association between CC and tobacco use in the last 12 months pre-ESDM and in the last typical month;
- Evaluate the association between CC and cannabis use in the last 12 months pre-ESDM and in the last typical month.

Method

The study had a quantitative cross-sectional design. The methodology, including the questionnaire, was approved by the local ethical board of the Faculty of Education and Psychology.

Sample

To be eligible to participate in the study, adolescents had to be between 12 and 18 years of age, be of Portuguese nationality, and have experimented or be a current caffeinated or DC consumer.

A total of 116 adolescents participated in this research. In this sample, 52.6% had solely experimented or drank coffee with caffeine, 33.6% had experimented or drank both caffeinated and DC, and 13.8% had solely experimented or drank DC. The sociodemographic characteristics of each of these sample groups can be consulted in Tables 1, 2 and 3.

Table 1

The Sociodemographic Characteristics of the Sample Group that Solely Experimented or Drank Coffee with Caffeine (n = 61)

Variables	*n*	*M (SD) or %*
Age	61	16.33 (1.54)
Sex		
Female	35	57.0
Male	26	43.0

School year		
7th grade	4	7.0
8th grade	2	3.0
9th grade	4	7.0
10th grade	13	21.0
11th grade	19	31.0
12th grade	19	31.0
Type of school		
Public	38	62.0
Private	23	38.0
Region of Residence		
North	49	80.0
Center	6	10.0
Metropolitan Area of Lisbon	6	10.0

Table 2

The Sociodemographic Characteristics of the Sample Group that Experimented or Drank Both Caffeinated and Decaffeinated Coffee (n = 39)

Variables	*n*	*M (SD) or %*
Age	39	15.95 (1.93)
Sex		
Female	25	64.0
Male	14	36.0
School year		
7th grade	5	13.0
8th grade	1	3.0
9th grade	2	5.0
10th grade	4	10.0
11th grade	14	36.0
12th grade	13	33.0
Type of school		
Public	18	46.0
Private	21	54.0

Region of Residence		
North	37	95.0
Metropolitan Area of Lisbon	2	5.0

Table 3

The Sociodemographic Characteristics of the Sample Group that Solely Experimented or Drank Decaffeinated Coffee (n = 16)

Variables	*n*	*M (SD) or %*
Age	16	15.06 (2.18)
Sex		
Female	11	69.0
Male	5	31.0
School year		
7th grade	6	38.0
8th grade	1	6.0
9th grade	1	6.0
10th grade	2	13.0
11th grade	4	25.0
12th grade	2	13.0
Type of school		
Public	6	38.0
Private	10	62.0
Region of Residence		
North	13	81.0
Center	2	13.0
Metropolitan Area of Lisbon	1	6.0

Instruments: Construction

First, we developed a draft of the questionnaire containing an informed consent, sociodemographic questions, and the self-report instruments about CC and the use of alcohol, tobacco, and cannabis. The response options for the question about region of residence came from the Nomenclature of Territorial Units for Statistical Purposes, cluster II (PORDATA, n.d.). The self-report instruments about CC and other PS were constructed based on the

concepts of content and construct validity and were based on how results in the SICAD 2015 survey are displayed, since they allow us to infer the type of items and response options the SICAD's questionnaire has. Items about reasons for CC were constructed based on the results of Turton et al. (2016) and Ludden et al. (2017). Secondly, the questionnaire was reviewed by three senior investigators, their proposed amendments were discussed, and the necessary corrections were made. Thirdly, two focus groups were conducted to assess the comprehensibility of the instruments' items and response options.

As a result of the covid-19 pandemic, the focus groups' participants were selected through a digital convenience sampling. We advertised the focus groups on a *Facebook* account (Appendix A). Participants contacted us through *Facebook* (n = 1), email (n = 4), *WhatsApp* (n = 1), and phone call (n = 2). Upon having confirmation of their participation and after scheduling the day and timing of the focus group, participants were instructed that 30 minutes before the focus group started, they would receive an informed consent and a document with step-by-step instructions on how to digitally write their signature (Appendices B and C). Although we attempted to standardize and retain the face-to-face authentication of the informed consents, only three participants were able to sign them, while the other participants typed them (n = 3) or gave them through phone call (n = 2). After giving us their informed consent, they received a link and a password to access a virtual room on *Jitsi Meet*, a free and fully encrypted video conferencing website. Each focus group had four participants (N = 8). The first focus group had one 12th grader, one 10th grader, and two 11th graders; while the second one had one 12th grader, two 9th graders, and one 6th grader. The focus groups were conducted in April 2020 and had the duration of one hour. They were semistructured (Appendix D describes the stages). Data were collected through notetaking.

After the draft of the questionnaire was duly corrected with the data of the focus groups, the construction process was finalized. The questionnaire is available in Appendices E and F.

Data Collection and Analysis Procedure

The questionnaire was typed in the Qualtrics Survey Software. Afterward, the study was advertised on a *Facebook* account (Appendix G) and the advertisement post was shared in chat messages and in a *Facebook* group with 91,306 Portuguese-speaking members. Emails advertising the study were also sent to students from two different schools. Therefore, the study followed a digital convenience and snowball sampling. Participants received a reward at the end of the questionnaire, which was a document containing a vast list of activities to do at home

during the ESDM accompanied by a variety of internet resources (Appendix H). Data were collected from May 19 to August 24, 2020.

Data analyses were conducted in the IBM SPSS Software (version 26). In order to accomplish our objectives related to data descriptions, descriptive statistical measures were conducted. With respect to inferential statistics, the Spearman Correlation Coefficient (r_s) test was administered to evaluate the association between CC reasons and CC frequencies, which are all ordinal variables. A Wilcoxon Test (Z) was administered to determine if there are differences between pre-ESDM and during the months of ESDM, two different temporal moments, in terms of CC frequency, our ordinal and dependent variable. Lastly, Chi-Square Tests (χ^2) were conducted to evaluate the associations between CC frequencies and the use of alcohol, tobacco, and cannabis. The PS use variables are nominal and the CC variables are originally ordinal, but they were recategorized as nominal. Thus, consuming coffee 1 = *Never* and 2 = *Rarely* were categorized as 1 = *No* (no CC), while consuming 3 = *Sometimes*, 4 = *At least once a week*, and 5 = *Daily* were categorized as 2 = *Yes* (affirmative CC). One of the assumptions of the Chi-Square Test (χ^2) is that the percentage of cells in the contingency table cannot exceed 20%. When it exceeds 20%, it is necessary to read the Fisher's Exact Test because this test adjusts the results when the previous assumption is not met. However, this test is only available for 2x2 tables (Martins, 2011). In sum, recategorization into nominal was necessary because many of the 4x2 tables did not meet the aforementioned assumption and there was no Fisher's Exact Test available.

Results

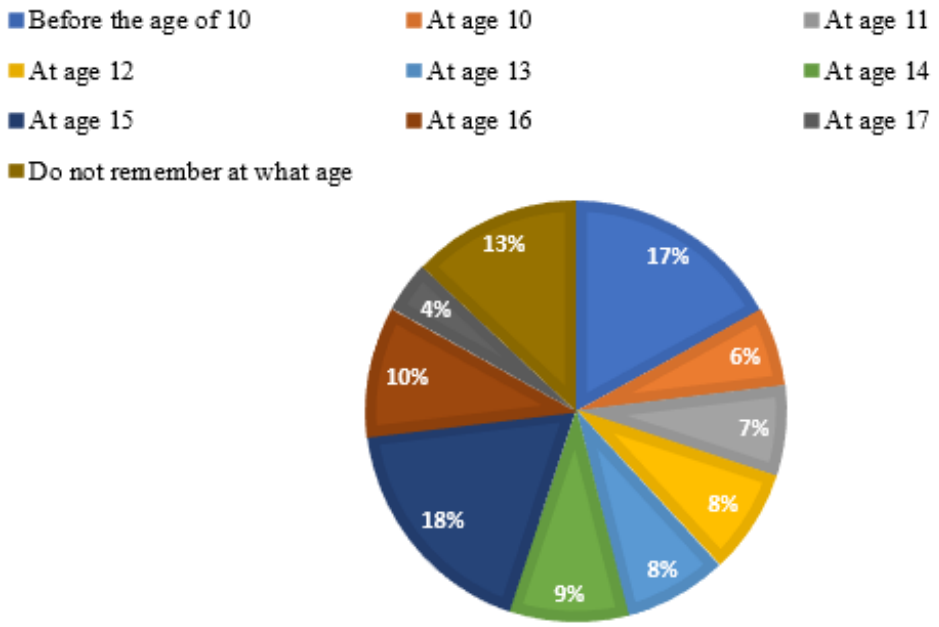
The Patterns of CC

Concerning the ages of CC, a total of 100 participants responded (the n = 61 that solely experimented or drank coffee with caffeine and the n = 39 that experimented or drank both caffeinated and DC).

Regarding ages of experimentation, responses are presented in Figure 1. Of those that experimented before the age of 10 (n = 17), five participants remembered and typed their age of CC experimentation (M = 6.40, SD = 3.21).

Figure 1

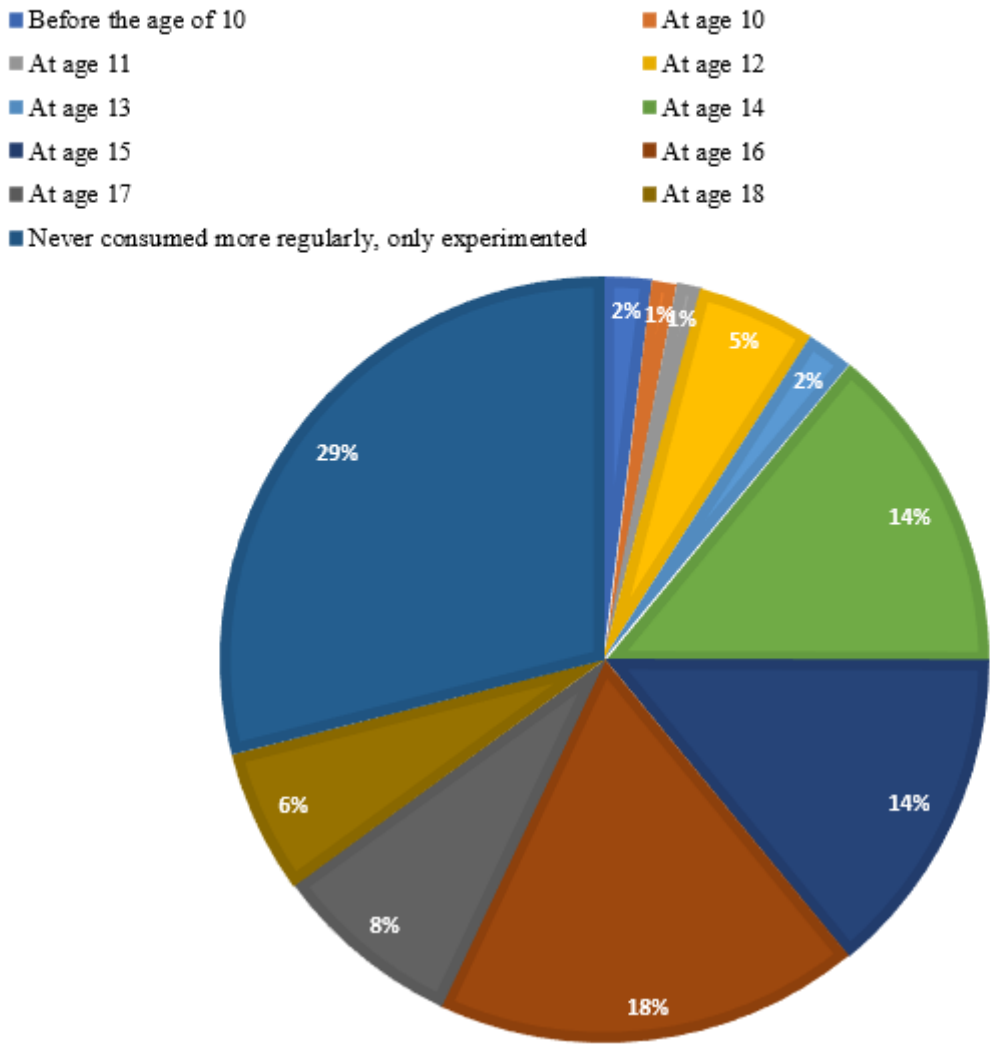
Ages of Coffee Experimentation



Regarding ages of more regular CC, Figure 2 displays the responses. Those that started before the age of 10 (n = 2) remembered their age of more regular CC (M = 7.50, SD = 0.71).

Figure 2

Ages of More Regular Coffee Consumption



With respect to CC frequency, which excludes participants that only experimented ($n = 29$), a total of 71 adolescents responded. Figures 3 and 4 display the responses with reference to CC in the last 12 months pre-ESDM and CC in the last typical month (pre-ESDM), respectively.

Figure 3

Frequency of Coffee Consumption in the Last 12 Months Prior to the Covid-19 Pandemic

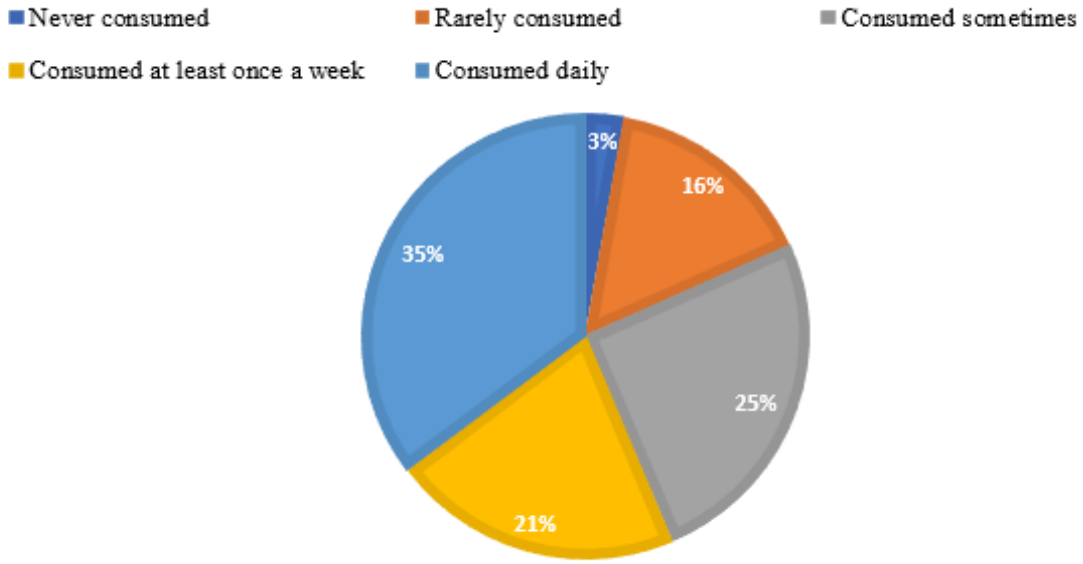
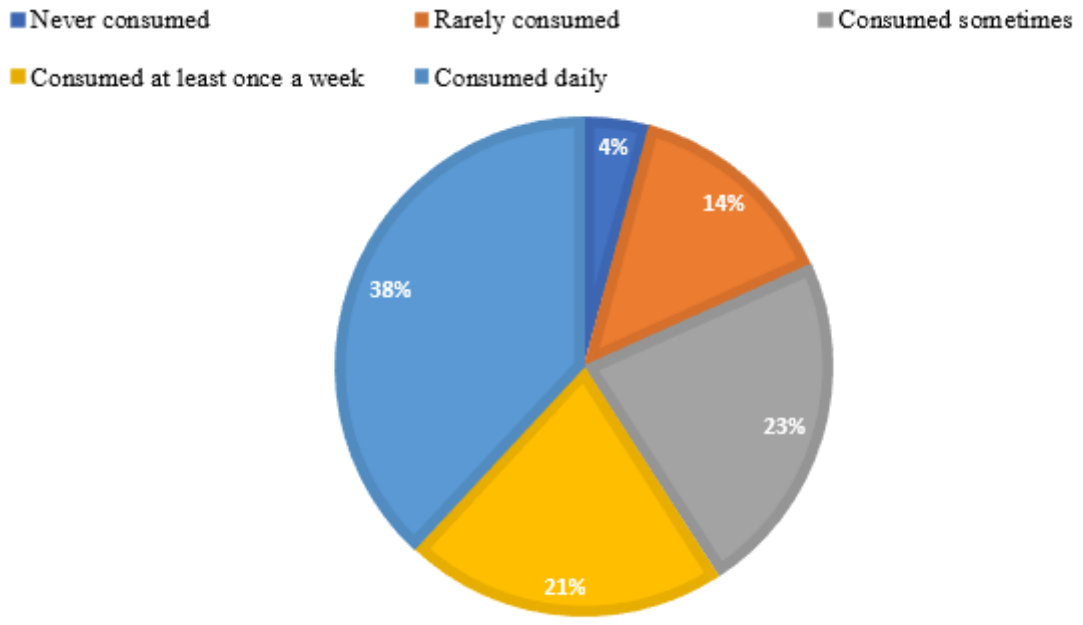


Figure 4

Frequency of Coffee Consumption in the Last Typical Month (Prior to the Covid-19 Pandemic)



With regards to DC consumption frequency, Figures 5 and 6 present the responses of those who experimented or drank both caffeinated and DC (n = 39) and those who only experimented or drank DC (n = 16) in the last typical month (pre-ESDM).

Figure 5

Frequency of Decaffeinated Coffee Consumption in the Last Typical Month (Prior to the Covid-19 Pandemic) for Participants who Experimented or Drank Both Caffeinated and Decaffeinated Coffee

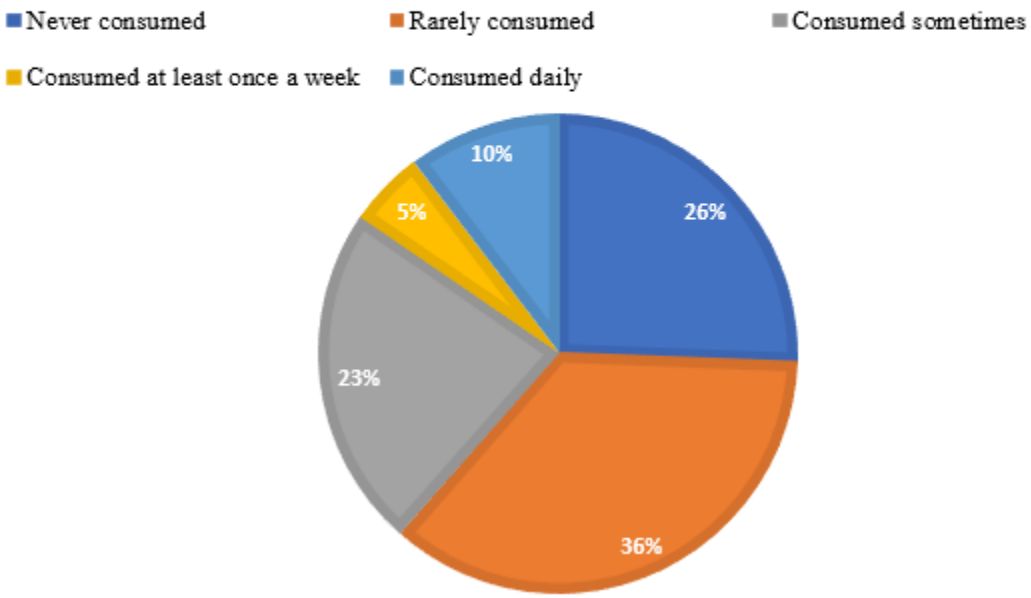
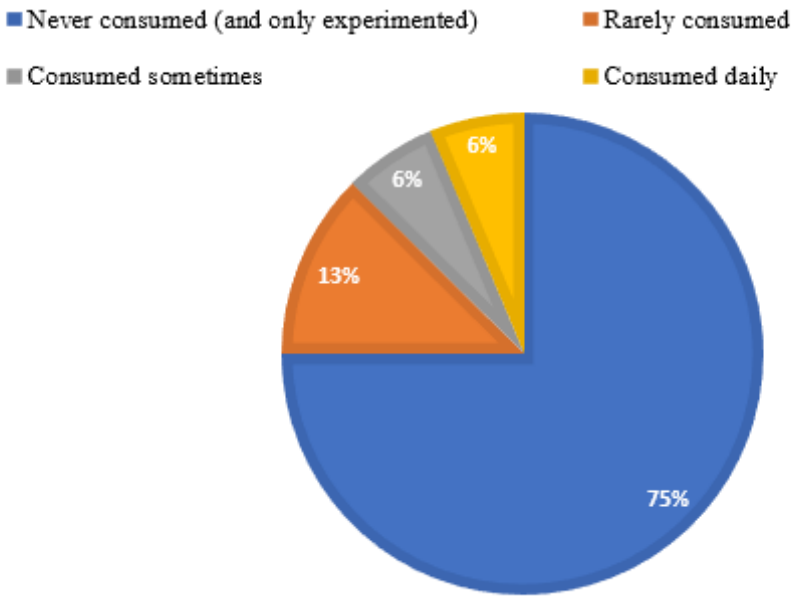


Figure 6

Frequency of Decaffeinated Coffee Consumption in the Last Typical Month (Prior to the Covid-19 Pandemic) for Participants who Solely Experimented or Drank Decaffeinated Coffee



With reference to reasons for CC, these are presented in Table 4.

Table 4

Reasons for Coffee Consumption

Reason	Responses in %				
	I completely disagree	I disagree	I do not agree nor disagree	I agree	I completely agree
1. I drink coffee because it gives me energy	1.4	16.9	23.9	**45.1**	12.7
2. I drink coffee because it helps me wake up or keeps me awake	0	14.1	22.5	**43.7**	19.7
3. I drink coffee because I feel better after drinking it	2.8	12.7	**35.2**	31.0	18.3
4. I drink coffee because I specifically like coffee's taste	2.8	0	19.7	**43.7**	33.8
5. I drink coffee because I specifically like the taste of coffee beverages	4.2	7.0	18.3	**43.7**	26.8
6. I drink coffee because it is easily accessible	22.5	**29.6**	26.8	19.7	1.4

7. I drink coffee because it is easy to carry from one place to another	21.1	29.6	**32.4**	12.7	4.2
8. I drink coffee because it makes me feel more grown-up	**54.9**	31.0	8.5	5.6	0
9. I started drinking coffee because I observed my parents or other family members drinking coffee	23.9	**25.4**	19.7	22.5	8.5
10. I started drinking coffee because my parents or other family members would offer it to me or give me free access to it (for example, on the way to school, at home)	**29.6**	21.1	16.9	26.8	5.6
11. I started drinking coffee because I could drink it with my parents or extended family	23.9	16.9	25.4	**29.6**	4.2

12. I started drinking coffee because I like the advertisements (for example, I think there are advertisements that are cool or fun)	**47.9**	32.4	18.3	1.4	0
13. I started drinking coffee because my friends have that habit and it is an activity we can do together (get a coffee together and/or drink it together)	**43.7**	25.4	11.3	16.9	2.8
14. I started drinking coffee because I did not want to decline a coffee that a friend offered me, even though I did feel like declining	**69.0**	23.9	7.0	0	0
15. I started drinking coffee because I thought I would look cooler in front of friends and/or colleagues	**74.6**	21.1	1.4	2.8	0
16. I started drinking coffee because I	**69.0**	25.4	1.4	4.2	0

thought it would help me fit in at school and/or in my group of friends

Concerning the associations between CC reasons and CC frequencies, Table 5 displays the totality of the results of the Spearman Correlation Coefficient (r_s) test. Having consumed in the last typical month was positively and significantly correlated with drinking coffee due to feeling better after drinking it, $r_s = .29$, $p = .015$; due to specifically liking coffee's taste, $r_s = .33$, $p = .005$; and due to specifically liking the taste of coffee beverages, $r_s = .26$, $p = .027$. Consuming coffee in the last 12 months pre-ESDM was positively and significantly correlated with drinking coffee due to specifically liking the taste of coffee beverages, $r_s = .32$, $p = .006$, and due to being easy to carry coffee from one place to another, $r_s = .28$, $p = .021$.

On determining if there are differences between pre-ESDM and the months of ESDM in CC frequency, the results of the Wilcoxon Test (Z) presented no significant differences, $Z = -.090$, $p = .928$.

The Association between CC and the Use of Other PS

The analyses of the associations between CC and alcohol use frequencies showed no statistically significant correlation between these variables in the last 12 months pre-ESDM, Fisher's Exact Test, $p = 1.000$, and in the last typical month, Fisher's Exact Test, $p = 1.000$. Appendix I displays the results.

Similarly, the analyzes of the associations between CC and tobacco use frequencies presented no statistically significant correlation between these variables in the last 12 months pre-ESDM, $\chi^2(1) = 2.08$, $p = .149$, and in the last typical month, Fisher's Exact Test, $p = .461$. Appendix J presents the results.

Lastly, the analyzes of the associations between CC and cannabis use frequencies showed no statistically significant correlation between these variables in the last 12 months pre-ESDM, Fisher's Exact Test, $p = .491$, as well as in the last typical month, Fisher's Exact Test, $p = .157$. Appendix K exhibits the results.

Table 5

Correlations between Reasons for Coffee Consumption and Drinking Coffee in the Last Typical Month and in the Last 12 Months Prior to the Covid-19 Pandemic

Variable[a]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
17. "In the last 12 months, EXCLUDING the months of social isolation due to covid-19, I drank coffee…"	.163	.116	.221	.224	.326**	-.016	.275*	-.065	.103	.196	.116	.022	-.148	-.053	.078	-.134	-	
18. "In the last TYPICAL month (before the social isolation due to covid-19), I drank coffee…"	.037	.015	.289*	.327**	.263*	-.024	.218	-.057	.028	.107	.104	.028	-.212	-.027	-.008	-.159		-

[a] Variables 1 to 16 are described in Table 2.

* $p < .05$; ** $p < .01$

Discussion and Conclusions

This research aimed to determine the CC patterns of Portuguese adolescents, including a small focus on the frequency of DC consumption. The ages, frequencies, and reasons were presented, as well as the associations between reasons and specific frequencies and the absence of differences between the patterns of CC pre-ESDM and during the months of ESDM. It also aimed to evaluate the association between CC and the use of other PS in the same sample, in which no association was found for alcohol, tobacco, and cannabis.

Considering the ages of coffee experimentation, there is a slow and constant increase in the percentage of adolescents who had experimented coffee from ages 10 to 14 (6%-9%), which peaked at age 15. Two of the four highest percentages were for experimenting at ages 15 (18%) and 16 (10%). These results are consistent with the rapid rise in SS during adolescence that peaks around ages 16-19, which partly explains the experimentation of PS in adolescence (Romer, 2010; Shulman et al., 2015). However, only 4% of adolescents experimented at age 17 and the second highest percentage was for experimentation before the age of 10 (17%). Thus, these results might also be explained by the fact that CC by adolescents is a legal and socially acceptable activity because these factors might allow individuals to experiment coffee earlier in their lives. Indeed, the adolescents in Turton et al. (2016) and Ludden et al. (2017) mentioned accessibility (e.g., the lack of barriers to purchase, such as an age limit); parents either explicitly offering or allowing free access; and drinking with their family, adding that their family introduced them to coffee, as reasons for drinking caffeinated beverages. Additionally, decreased lability of parental solicitation and control is a factor associated with adolescent PS use (Marceau et al., 2020). In the present study, a large percentage of adolescents reportedly started CC because their parents or other family members would offer or give free access to coffee (26.8%), but another substantial percentage of adolescents did not start CC for this reason (29.6%). It seems, then, that adolescents in the latter percentage had other reasons to start consuming coffee. Starting CC because they could drink it with their parents or extended family was a reason reported by a substantial percentage of adolescents (29.6%). Still, another sizeable percentage of adolescents also reported that starting CC because it is easily accessible was not a reason of theirs (29.6%) and that they neither agreed nor disagreed with starting CC because it is easy to carry from one place to another (32.4%). Concerning these last two reasons, it is possible that the items were not worded in a way that effectively conveyed their meaning. To exemplify, the item “I started drinking because it is easily accessible” did not give concrete

examples of what was meant by the abstract concept of accessibility and to easily carry coffee from one place to another seems more of an advantage of CC than a reason to start consuming.

Concerning the ages of more regular CC, a substantial percentage of adolescents solely experimented and percentages remain relatively small between ages 10 to 13. The percentage dramatically increases at age 14 (14%), remains the same at age 15, peaks at age 16 (18%), and starts declining at age 17. Once again, these results might be explained by the rapid rise in SS during adolescence. There are sex differences in SS peaks: For females, it peaks around ages 16–17; for males, around ages 18–19 (Romer, 2010; Shulman et al., 2015). In all of the sample groups of the present study, the majority of participants were female, so these results are probably biased and, therefore, must be interpreted with caution.

Regarding CC frequencies, for both consumption in the last 12 months pre-ESDM and consumption in the last typical month, there are sizeable percentages of adolescents that consumed sometimes, at least once a week, and daily. The percentages for daily consumption (35% and 38%, respectively) are higher than the percentage found by Martins et al. (2018), in which 12.5% of the 46.6% Portuguese adolescent energy drink consumers reportedly drank more than one cup of coffee daily. This contrast in daily CC by Portuguese adolescents is probably due to differences in methodology (e.g., in the present study, adolescent coffee consumers were from three different regions in Portugal, while in Martins et al. (2018), their sample was from a single Portuguese city). In contrast, another study with a sample of Italian adolescents found that 88.7% reported drinking at least one cup of coffee daily (Santangelo et al., 2018). This sizeable disparity in reported daily CC might be explained by the larger sample size in Santangelo et al.'s (2018) research or by differences in some aspect of coffee culture in Italy, for example.

The data on DC consumption in the last typical month were included in the analyses to be compared with the data on CC. Even though the results do not distinguish between those who only experimented and those who actually consume DC, the group that experimented or drank both decaffeinated and caffeinated coffee is characterized by sizeable percentages of adolescents that consumed DC rarely and sometimes in the last pre-ESDM month, and small percentages of adolescents that consumed DC at least once a week and daily. It is possible that DC consumption by this group of consumers is a lot less frequent due to a preference for CC – namely, its psychoactive effects – and that DC consumption fulfills the purpose of avoiding caffeine's negative acute effects. The group of adolescents who only experimented or drank

DC had very low percentages of DC consumption, especially compared to the group that drinks both types of coffee. The low rates of DC consumption frequency in the DC consumption groups follow the reverse order of the rates of CC frequency. The high rates of CC in general, compared to the low rates of DC consumption in the group that only experimented or drank DC, suggest that adolescents seem to prefer coffee's psychoactive effects. Lastly, it is noteworthy that adolescents in the group that experimented or drank both types of coffee consumed more DC than those in the group that experimented or drank solely DC. It is possible that this behavior happens in an attempt to tackle coffee cravings and/or other CUD symptomatology if DC provides a conditioned response. One study found that the prevalence of seven out of nine symptoms of CUD in an adolescent sample was 3.9% among those using caffeine in the past 30 days, while another one found that coffee had a moderate association with CUD (Ágoston et al., 2018; Harstad et al., 2016). It might be relevant to clarify that, while using PS puts individuals at risk for developing PS use-related disorders, the majority of users do not develop these disorders (UNODC, 2020).

With respect to CC reasons, and without addressing reasons that were already discussed, a significant percentage of adolescents completely agreed they drank coffee because it provides energy, helps them wake up or keeps them awake, because they specifically like coffee's taste, because they specifically like the taste of coffee beverages, and agreed that they consumed because they felt better after drinking it. Furthermore, the present research also found that drinking coffee due to feeling better after drinking it, specifically liking coffee's taste, and due to specifically liking the taste of coffee beverages has a strong and significant association with CC in the last typical month, which further strengthens the argument that typical CC is specifically motivated by coffee's psychoactive effects – in this case, mood enhancement – and tastes. These are results supported by scientific literature with adult and adolescent samples (Ludden et al., 2017; Samoggia & Riedel, 2018; Turton et al., 2016). Similarly, affective enhancement is a reason for PS use in adolescence, so a parallelism can be drawn regarding CC due to is mood enhancing effects. It is also arguable whether drinking coffee to wake up or stay awake is a coping strategy, which is another reason for PS use in adolescence (Cooper et al., 2016; Lammers et al., 2013; Piko et al., 2015; Piko et al., 2007). On CC reasons related to familial relationships, 22.5% started CC because they had observed their parents or extended family drink, but 25.4% did not consider this to be one of the reasons. Two studies point out that adolescents observe their parents drink coffee, from which they infer that it is safe and acceptable for consumption, and perceived use by important adult figures and older siblings is

a factor associated with adolescent PS use (Ludden et al., 2017; Schuler et al., 2019; Turton et al., 2016). Yet, the latter percentage evidences heterogeneity in reasons for CC and suggests there are other reasons to start drinking CC, such as the main reasons adolescents in the present research gave for CC. On CC reasons related to peer relationships, no one agreed with starting to consume coffee due to peer pressure, the majority disagreed with starting to consume to fit in, and a large percentage disagreed with starting to drink because their friends have that habit and it is an activity they can do together. The latter result is surprising because of the importance peer relationships gain in adolescence, it contradicts one major reason given by adolescents in Ludden et al. (2017) and Turton et al. (2016), affiliation with peers who use PS is a strong predictor of use during adolescence, and because CC is related to social interaction (French & Cheung, 2018; Lee et al., 2017; Samoggia & Riedel, 2018; Schuler et al., 2019; Tucker, 2017). Once again, it probably suggests that other reasons explain adolescents' path towards a CC habit. On CC reasons related to social meanings, the majority disagreed with drinking coffee because it makes them feel more grown up (54.9%) and the majority disagreed with starting to drink coffee because they thought they would look cooler in front of friends and/or colleagues (74.6%). This is discordant with previous research on CC reasons given by adolescents. Yet, the minority (5.6%) agreed with drinking because it makes them feel more grown up. It seems possible, then, that because Ludden et al. (2017) and Turton et al. (2016) used a focus group methodology (and one of the studies had a very small sample), their studies also picked up on the exceptions to the norm. Lastly, most adolescents disagreed with starting to drink because they like the advertisements, which also contradicts previous research (Ludden et al., 2017; Turton et al., 2016). Coffee culture is not limited to advertisements, so Portuguese adolescents might give other media as reasons for CC (e.g., television shows). It is also possible that Portuguese adolescents simply do not perceive coffee advertisements as persuasive, do not have insight into the persuasiveness of advertisements, or interpreted the questionnaire item as exclusively referring to television advertisements (instead of including magazines, online social media networks, and other media).

At least three hypotheses might explain the absence of significant differences between the patterns of CC pre-ESDM and during the months of ESDM. Firstly, it is possible that due to our small sample size and non-probability sampling, the test failed to detect differences. Secondly, there are many ways to make coffee at home, so adolescents do not need to leave their homes to drink coffee. Thirdly, large percentages of adolescents in the present study reported starting CC because they could drink it with their parents or extended family and

because their parents or other family members would offer or give them free access. Even in the case of other PS, Dumas et al. (2020) found that 42% of adolescents who kept using other PS during ESDM used them with parents, which is a substantial percentage of adolescents.

Lastly, the present research's small sample size and non-probability sampling might explain the absence of statistically signification associations between CC and using alcohol, tobacco, and/or cannabis, since a variety of studies on genetics and with adolescent samples show a significant association between CC and the use of tobacco and alcohol (e.g., Bjørngaard et al., 2017; Marmorstein, 2019; Swan et al., 1996).

In summary, the present research shows that CC in adolescence can have its origins in the individual's childhood, it is a behavior prone to frequent consumption, it is not exactly replaceable by DC consumption, and the main reasons for CC during this developmental period contemplate its psychoactive effects and the taste of coffee and coffee beverages.

This research has its limitations. Again, the small sample size in each sample group and the use of non-probability sampling are issues that interfere with the generalizability of the results to the Portuguese adolescent population. The questionnaire we constructed and used was not psychometrically validated, which influences the validity and reliability of some results. Additionally, self-report instruments rely on an individual's memory of the events, but memory is not completely reliable due to being susceptible to different kinds of errors and biases (e.g., details can get mixed up across place and time; Laney & Loftus, 2019). Lastly, results derived from correlational tests do not provide evidence of causality and directionality. Suggestions for future research comprise the use of probability sampling and the inclusion of larger sample sizes, the use of daily diary accounts to collect data on CC frequencies, and the construction and psychometric validation of a CC ages and reasons questionnaire. More research using qualitative methodologies to study reasons adolescents have for CC is also needed - the amounted evidence of these studies would inform the construction process of the CC questionnaire, for example. Furthermore, caffeinated products are most commonly studied jointly/grouped together, but these products are very distinct from each other. Coffee is a caffeinated product rich in different chemical compounds; it is possible that some its non-caffeine compounds interact synergistically to produce psychoactive effects (Camfield et al., 2013; Cropley et al., 2012); and coffee is possibly differentially associated with particular psychopathological symptoms (Marmorstein, 2016). With regards to CUD, Ágoston et al. (2018) found that "although there are several types of caffeinated products, it seems that they

may have different roles in the development of CUD" (p. 114). Thus, there is a high need for research to study coffee and other caffeinated products separately. The evidence generated from these studies, in addition to the present study, will provide information regarding coffee's importance from a clinical perspective (e.g., its role in a CUD diagnosis, if CUD is added to a future edition of the DSM and/or future editions of other classification manuals) and the pertinence of adding a coffee topic to future harm reduction-based PS education interventions (e.g., Drug Policy Alliance, 2019).

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Appendices

Appendix A

First Version and Final Version of the Advertisements for the Focus Groups

First Version

Estamos a realizar um estudo sobre o consumo de café, álcool e outras substâncias psicoativas em adolescentes portugueses. Nesta primeira etapa é necessário reunir jovens do 8º até ao 12º ano, em pequenos grupos, para percebermos se os questionários que elaborámos sobre os temas mencionados são compreensíveis por todos.

Por esta razão, estamos a pedir a tua participação num grupo de discussão online. A tua opinião acerca das perguntas dos questionários é muito importante para nós e estarás a contribuir para que se tenha mais conhecimento científico sobre o consumo de café e de outras substâncias psicoativas por jovens adolescentes portugueses!

Se ficaste interessado ou quiseres esclarecer alguma dúvida comigo, manda-me email para mluis1001@gmail.com.

(A participação no grupo de discussão é voluntária e não acarreta nenhum prejuízo para os participantes que decidam recusar-se a participar ou que desistam ao longo do grupo de discussão. A informação recolhida será anónima e confidencial, não havendo armazenamento de nenhuma informação relacionada com a tua identificação. Este estudo insere-se num projeto que procura explorar os efeitos do café no funcionamento cognitivo e afetivo no âmbito do Human Neurobehavioral Laboratory (HNL) do Centro de Investigação para o Desenvolvimento Humano da Universidade Católica Portuguesa – Porto.)

Maria Luís Polónia (membro da equipa de investigação do HNL)

Final Version

Dás por ti sem saber o que fazer em casa? Talvez aborrecido?

Ou nem dás, mas gostavas de poder fazer alguma coisa que te fizesse sentir útil?

Gostavas de poder fazer alguma coisa que quebrasse a tua rotina? Algo diferente e, talvez, um bocado estranho?

Porque não dares a tua opinião sobre questões relacionadas com o café, o álcool e outras substâncias psicoativas?

Não importa se costumas ou não tomar alguma destas coisas, só precisas de estar num dos anos escolares mencionados na imagem e de ter nacionalidade portuguesa!

Eu e a minha equipa de investigação estamos a conduzir um estudo sobre o consumo de café, álcool e outras substâncias psicoativas em jovens adolescentes portugueses. Neste momento precisamos de reunir jovens do 8º até ao 12º ano para depois vos pedir que discutam, em grupos online de 5 pessoas no máximo, sobre o que acham das perguntas dos questionários que nós elaborámos (questionários sobre o café e outras substâncias psicoativas).

A tua opinião acerca das perguntas dos questionários é muito importante para nós e estarás a contribuir para que se tenha mais conhecimento científico sobre o consumo destas substâncias em jovens portugueses!

Se ficaste interessado ou quiseres esclarecer alguma dúvida comigo, manda-me email para mluis1001@gmail.com.

Maria Luís Polónia (membro da equipa do Human Neurobehavioral Laboratory (HNL) do Centro de Investigação para o Desenvolvimento Humano da Universidade Católica Portuguesa – Porto)

Appendix B

The Informed Consent Document for the Focus Groups

CATÓLICA
FACULDADE DE EDUCAÇÃO E PSICOLOGIA
PORTO

Caffeine Effects on Cognitive and Affective Performance

Por favor lê com atenção as informações abaixo. Se tiveres dúvidas ou achares que algo não está claro, não hesites em pedir mais informações às investigadoras. Se concordares, assina a parte final.

Estamos a realizar um estudo com o objetivo de caracterizar os padrões de consumo de café dos jovens portugueses e compreender se existe associação com o consumo de outras substâncias psicoativas (por exemplo, o álcool). A primeira etapa deste estudo tem como objetivo reunir grupos de jovens que irão discutir, em grupo, a estrutura das perguntas do questionário que a nossa equipa desenvolveu.

Estima-se que esta atividade terá a duração de aproximadamente uma hora e será realizada via Jitsi, uma plataforma de videochamada simples e segura. A participação no grupo de discussão é totalmente voluntária e podes desistir em qualquer momento da discussão. A informação recolhida será anónima e confidencial, não havendo armazenamento de nenhum dado relacionado com a tua identificação. Os dados fornecidos serão utilizados estritamente para fins de investigação pela equipa do projeto.

Este estudo está a ser realizado pela equipa do *Human Neurobehavioral Laboratory* (HNL) do Centro de Investigação para o Desenvolvimento Humano da Universidade Católica Portuguesa no Porto, e está a ser desenvolvido em parceria com a Delta Cafés sob a orientação da Prof. Dr.ª Patrícia Oliveira-Silva.

Para qualquer esclarecimento, por favor entra em contacto:

Maria Luís Polónia (mluis1001@gmail.com)
Patrícia Oliveira-Silva (posilva@porto.ucp.pt)

Declaração de Consentimento Informado – Autorização

Eu, abaixo-assinado, compreendi a explicação que me foi dada sobre este estudo, bem como em que consiste a minha participação no grupo de discussão. Consiste em: *Discutir o quão compreensíveis são as perguntas sobre o consumo de café e de outras substâncias psicoativas.*

Foi-me assegurado que os dados recolhidos são totalmente anónimos e confidenciais.

Foi-me dada oportunidade de esclarecer possíveis dúvidas sobre o estudo em questão.

Além disso, foi-me afirmado que tenho o direito de recusar a minha participação no grupo de discussão em qualquer altura, sem que isso cause qualquer prejuízo.

Por isso, **aceito participar no grupo de discussão.**

Data: ___ / ___ / 2020.

_____

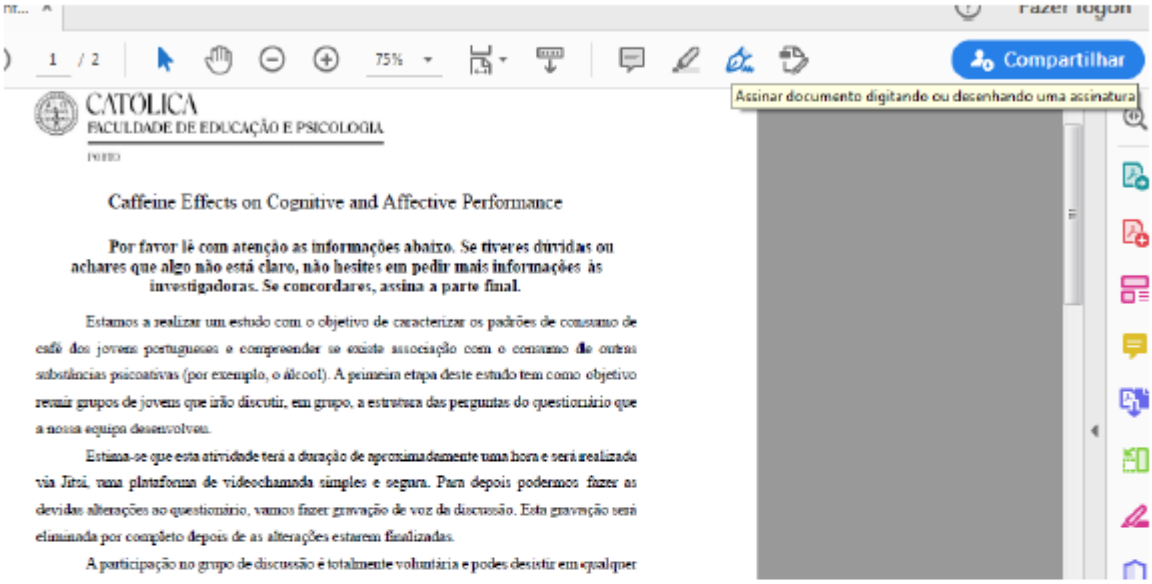
(Assinatura)

Appendix C

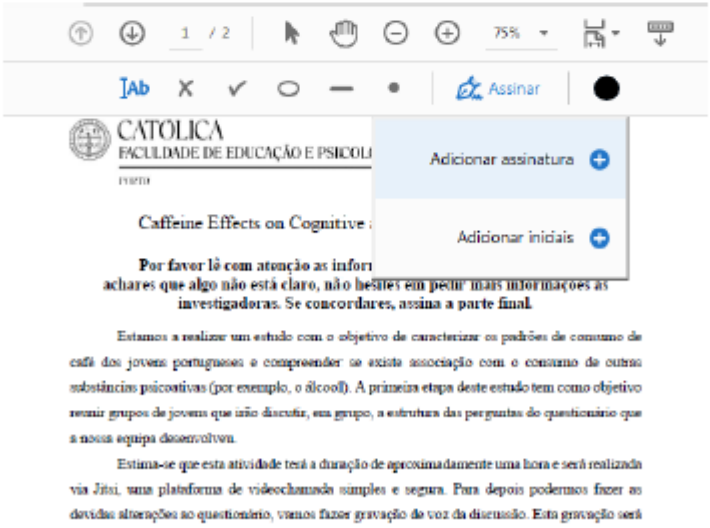
The Document on How to Write a Signature in a Computer

CATÓLICA
FACULDADE DE EDUCAÇÃO E PSICOLOGIA
PORTO

1. Cliquem no ícone assinalado na imagem (à vossa direita, azul), onde abaixo diz "assinar documento digitando ou desenhando uma assinatura".



2. Vai aparecer-vos as seguintes alterações. Cliquem onde diz "adicionar assinatura".

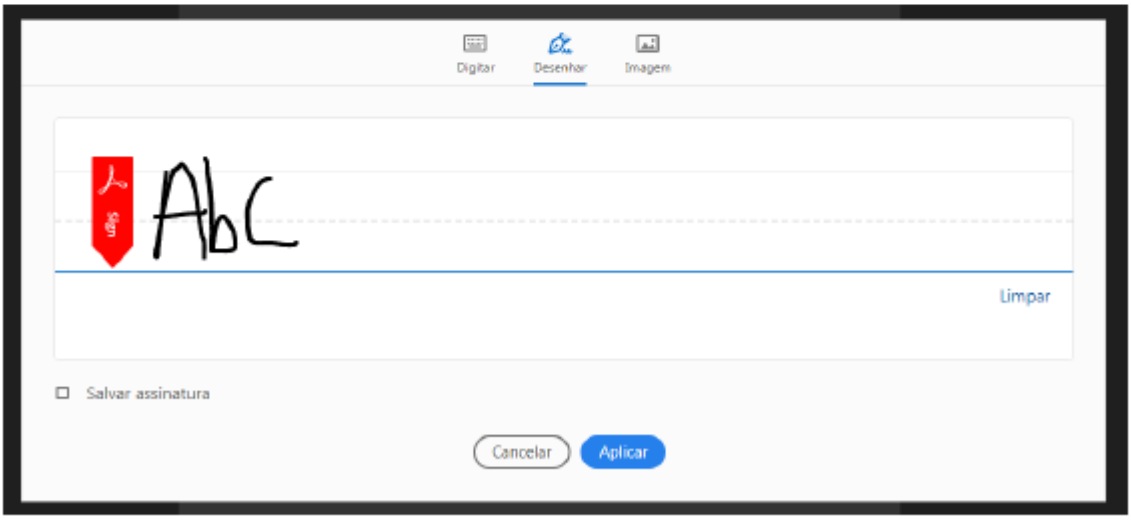


Human Neurobehavioral Laboratory

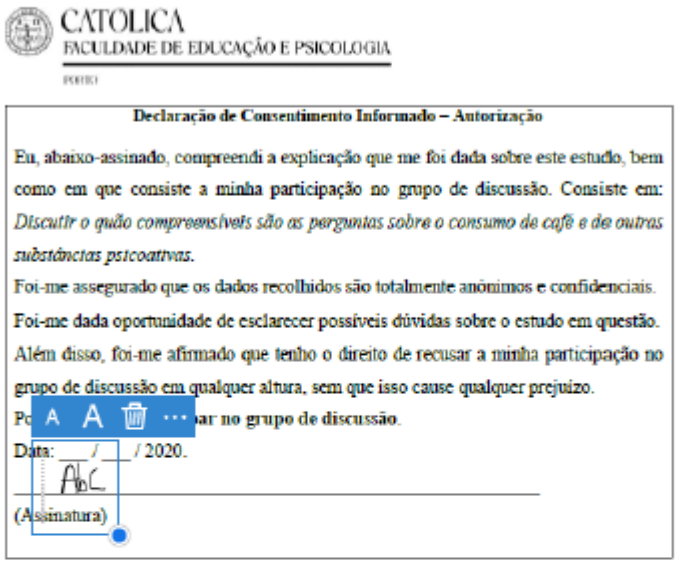
FACULDADE DE EDUCAÇÃO E PSICOLOGIA | Rua Diogo Botelho, 1327, 4169-005 Porto - Portugal | T: (+351) 226 196 200
http://www.fep.porto.ucp.pt/en/HNL

3. Depois de clicarem, é normal que o ecrã fique temporariamente preto. Depois vai aparecer-vos o que está na imagem.

4. Das três opções que vos são disponibilizadas – "digitar", "desenhar" ou "imagem" -, cliquem na opção "desenhar". Depois escrevam a vossa assinatura da melhor forma que conseguirem.



5. Cliquem em "aplicar" e depois coloquem a assinatura no espaço para o efeito!



CATÓLICA
FACULDADE DE EDUCAÇÃO E PSICOLOGIA
PORTO

Declaração de Consentimento Informado – Autorização

Eu, abaixo-assinado, compreendi a explicação que me foi dada sobre este estudo, bem como em que consiste a minha participação no grupo de discussão. Consiste em: *Discutir o quão compreensíveis são as perguntas sobre o consumo de café e de outras substâncias psicoativas.*

Foi-me assegurado que os dados recolhidos são totalmente anónimos e confidenciais.

Foi-me dada oportunidade de esclarecer possíveis dúvidas sobre o estudo em questão.

Além disso, foi-me afirmado que tenho o direito de recusar a minha participação no grupo de discussão em qualquer altura, sem que isso cause qualquer prejuízo.

Po ar no grupo de discussão.

Data: ___ / ___ / 2020.

_____

(Assinatura)

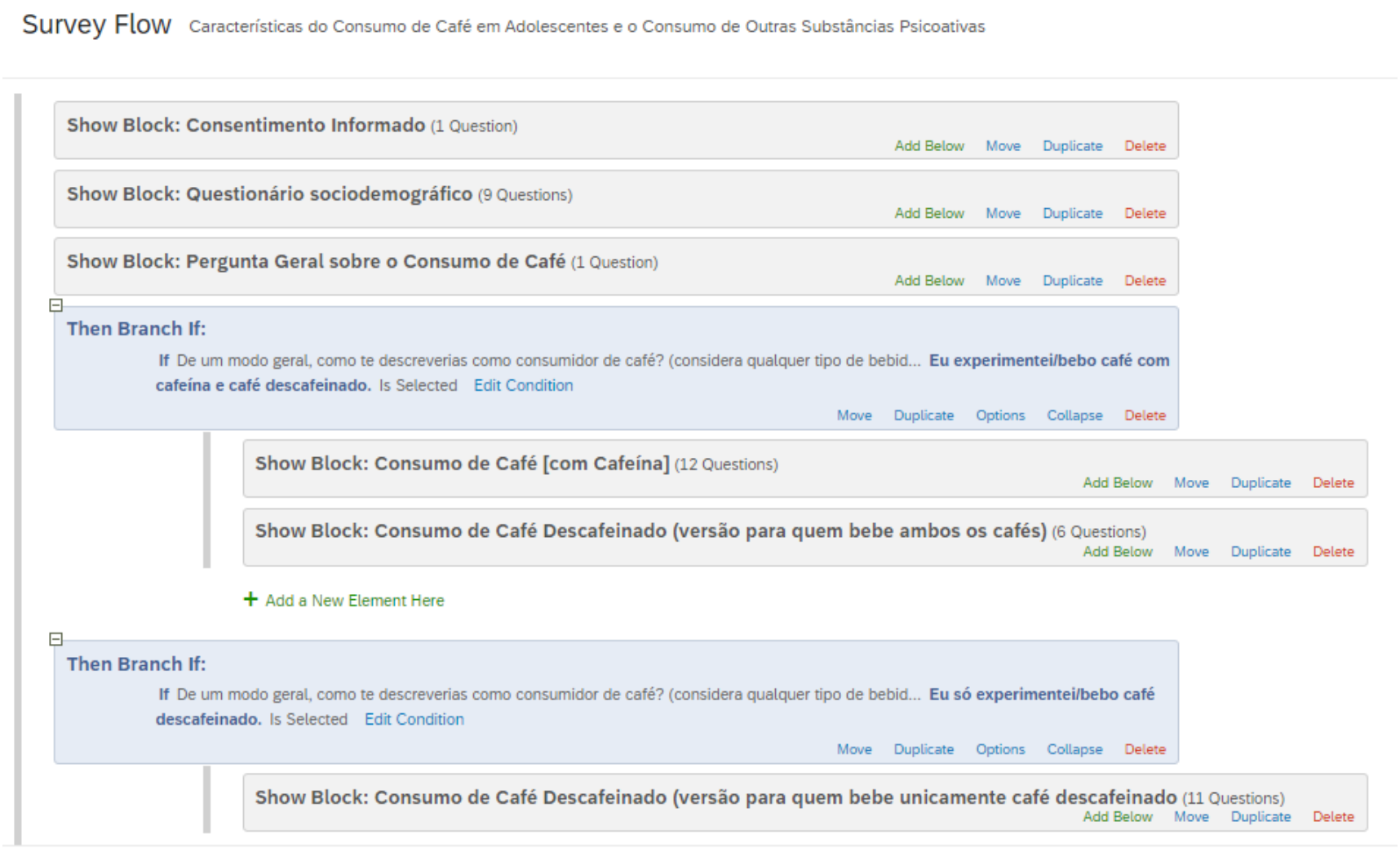
Appendix D

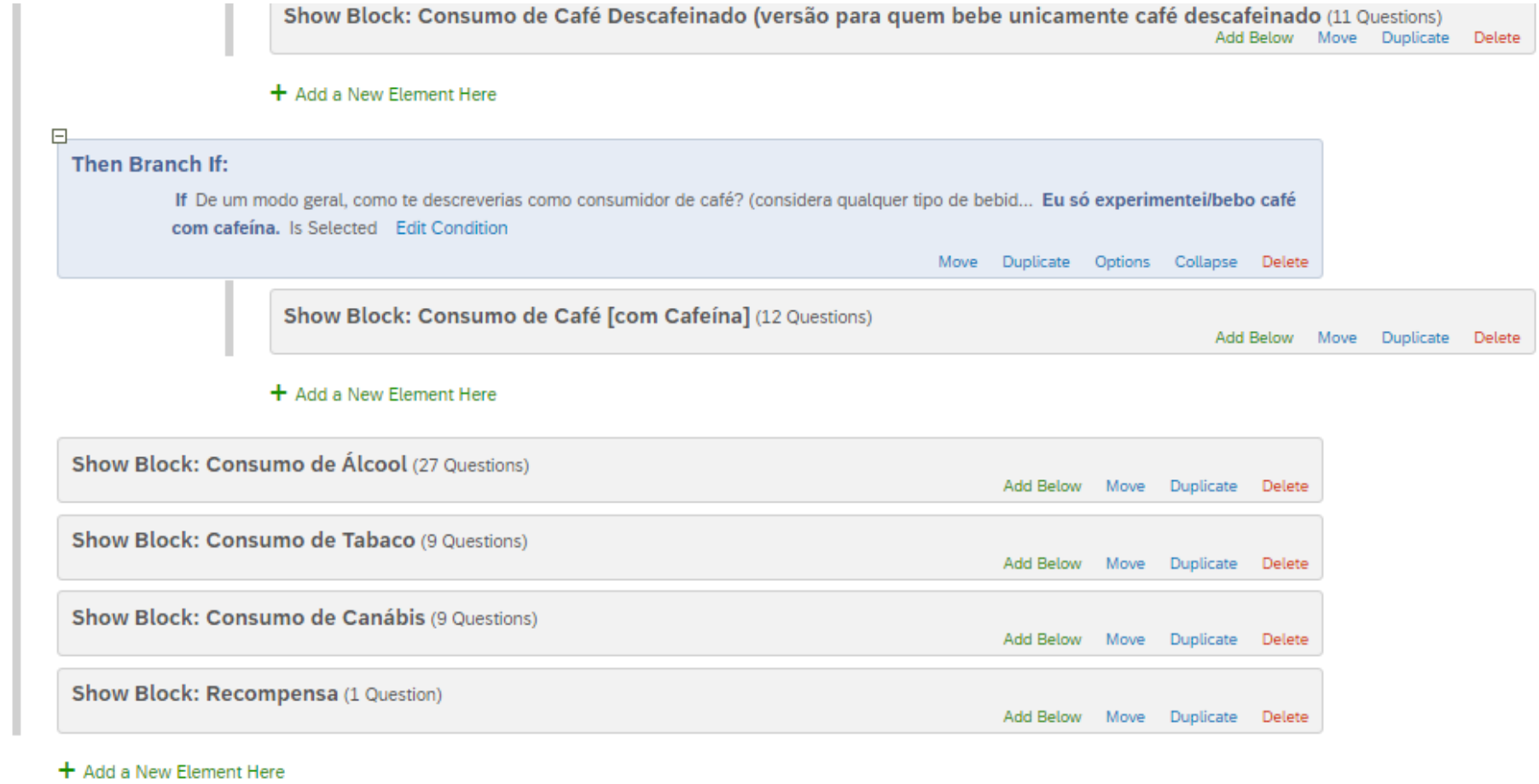
The Stages of the Conducted Focus Groups (based on Finch & Lewis, 2003)

Stage	Description
1	We introduced ourselves; thanked the participants for being present; made friendly conversation; gave background information about the study; highlighted information in the informed consent; explained what is expected from them and gave them reassurance (e.g., that there are no right or wrong answers, that everyone's opinions/thoughts are of interest, that it is normal for different opinions/thoughts to arise, etc.); emphasized why their contributions were very important; asked them if they had questions; and answered questions that they had.
2	Participants were asked if they wanted to introduce themselves by sharing their names and school grades.
3	Participants were instructed that they were going to receive the questionnaire and had 10 minutes to read it as if they were filling it out. While reading, they had to ask themselves questions like "Do I understand this sentence/word?", "Is this sentence/word clear/suitable?", "What are other ways that convey better what the question is asking?", etc. They were reminded again that we were going to ask questions strictly about the comprehensibility of the items and response options, as well as about suggestions for improvement, and not about how they responded or would respond to the items.
4	We asked open-ended questions during most of the time. When it seemed like the participants had no more opinions/thoughts to share, we asked closed questions about specific items, response options, or words (e.g., "Is the sentence *I started drinking coffee because I did not want to decline a coffee that a friend offered me, even though I did feel like declining* clear to you?). With some participants, we often had to directly ask them if they had anything to share.
5	We notified them that the focus group was ending; we thanked them for participating; asked them questions about motivation to fill out the questionnaire (e.g., if they thought the draft was too long, if they thought the pandemic was a facilitating factor towards participation in the study); emphasized that their participation was very helpful; and allowed them to share or ask us anything before we ended the focus group.

Appendix E

The Questionnaire in the Qualtrics Survey Software





The questionnaire (NOTE: Chosen responses are merely illustrative)

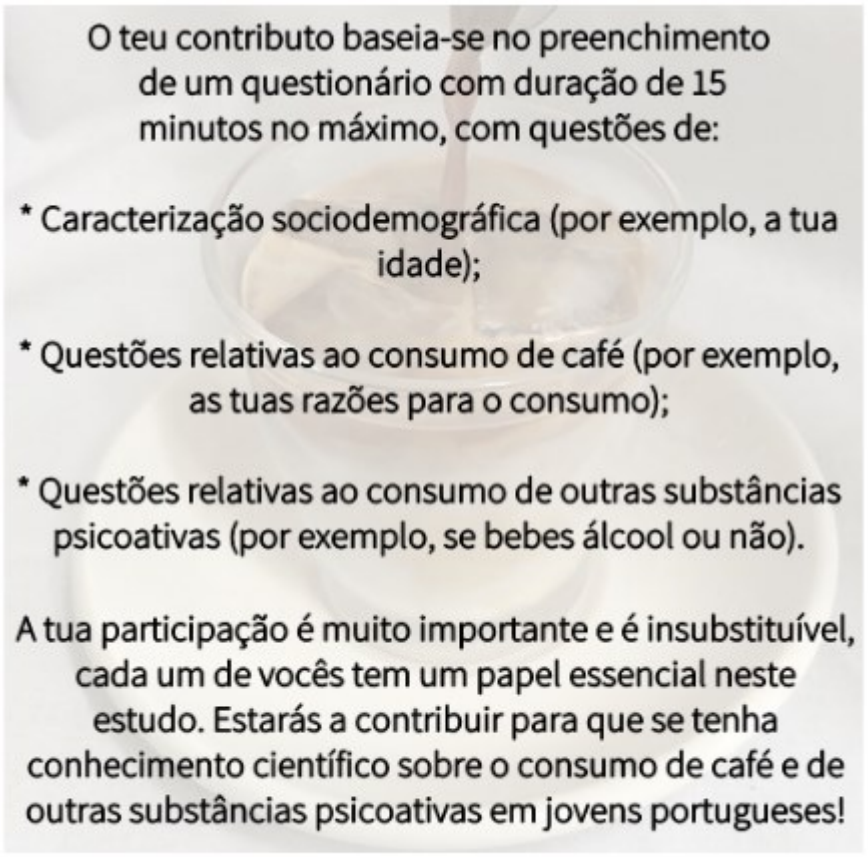
Dás por ti sem saber o que fazer em casa? Talvez aborrecido(a) ou frustrado(a)?

Gostavas de poder fazer alguma coisa que quebrasse a tua rotina?

Ou nem por isso, mas gostavas de poder fazer algo que te fizesse sentir **útil**? Algo em que o teu contributo é **valioso e insubstituível**?

Estamos a pedir a tua participação num estudo sobre o consumo de café (incluindo bebidas à base de café) e o consumo de outras substâncias psicoativas (por exemplo, o álcool). Para participares, basta preencheres os requisitos referidos na imagem anterior - ou seja, não tens de ser obrigatoriamente consumidor de outras substâncias psicoativas para poderes participar, tens é de já ter experimentado OU ser consumidor de café (com cafeína E/OU descafeínado).

Quem participar será recompensado(a) no final com uma lista enorme de recursos da internet com variadíssimas sugestões de coisas para fazer durante este período em que somos obrigados a estar mais tempo em casa!!



Antes de participares, é importante que leias com atenção o seguinte:

- A tua participação é totalmente voluntária e podes desistir em qualquer momento ao longo do preenchimento do questionário;
- A informação que tu nos irás dar é **anónima e confidencial**. Isto significa que **não te vamos pedir informações que te identifiquem** (como o teu nome, a tua morada, o nome da tua escola, etc) **nem vamos conseguir aceder ao teu endereço IP**, por isso **NINGUÉM** vai conseguir saber que foste tu quem deu estas informações;
- As tuas informações serão utilizadas **ESTRITAMENTE para fins de investigação** pela equipa do projeto;
- É fundamental que sejas **honesto(a)** com as tuas respostas. Isto significa que, como a participação é anónima e confidencial, **não tens de te preocupar** em dar respostas que diminuem ou exagerem a realidade dos teus consumos para ficares bem visto(a) e/ou não seres julgado(a);
- Não existem respostas certas ou erradas, só existem respostas que **correspondam à realidade dos teus consumos**!;
- É importante que leias **atentamente** as perguntas porque pode haver algumas que parecem iguais, mas nenhuma é igual.

Se tiveres dúvidas, não hesites em pedir mais informações a mim, Maria Luís Polónia (mluis1001@gmail.com).

Se compreendeste o que está aqui escrito e/ou tiveres as tuas dúvidas resolvidas, seleciona a opção em que aceitas participar! Se não quiseres participar, podes sair desta página.

Este estudo está a ser realizado pela equipa do Human Neurobehavioral Laboratory (HNL) do Centro de Investigação para o Desenvolvimento Humano da Universidade Católica Portuguesa no Porto, e está a ser desenvolvido no âmbito da dissertação de mestrado da aluna investigadora Maria Luís Polónia sob a orientação da Prof. Dr.ª Patrícia Oliveira-Silva (posilva@porto.ucp.pt), em parceria com a Delta Cafés.

Por favor carrega aqui se aceitas participar:
Sim, compreendi o que está aqui escrito e quero participar.

→

És do sexo:

- Feminino
- Masculino
- Outro

Tens _____ de idade:

- 12 anos.
- 13 anos.
- 14 anos.
- 15 anos.
- 16 anos.
- 17 anos.
- 18 anos.

O teu ano de escolaridade é o:

- 6º ano.
- 7º ano.
- 8º ano.
- 9º ano.
- 10º ano.
- 11º ano.
- 12º ano.

Andas numa escola:

- Pública.
- Privada.

És da região:

- Norte (e.g., Porto, Braga, Guimarães, Viana do Castelo).
- Centro (e.g., Aveiro, Coimbra, Figueira da Foz, Leiria).
- Área Metropolitana de Lisboa (e.g., Lisboa, Cascais, Odivelas, Oeiras).
- Alentejo (e.g., Évora, Marvão, Elvas, Estremoz).
- Algarve (e.g., Albufeira, Portimão, Vilamoura, Sagres).
- Açores.
- Madeira.

Tens irmãos mais velhos:

- **Sim.**
- Não.

→

Quantos irmãos mais velhos (insere o número em dígito):

1

Tens irmãos mais novos:

- Sim.
- **Não.**

→

De um modo geral, como te descreverias como consumidor de café? (considera qualquer tipo de bebidas com café; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)

Eu só experimentei/bebo café com cafeína.

Eu só experimentei/bebo café descafeinado.

Eu experimentei/bebo café com cafeína e café descafeinado.

→

Agora vais ler perguntas sobre o teu consumo de café com cafeína ☕. Esta secção começa com perguntas relacionadas com a idade.

Com que idade bebeste café pela **primeira vez**? (considera qualquer tipo de bebidas com café; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)

- Antes dos 10 anos.
- Aos 10 anos.
- Aos 11 anos.
- Aos 12 anos.
- Aos 13 anos.
- Aos 14 anos.
- Aos 15 anos.
- Aos 16 anos.
- Aos 17 anos.
- Aos 18 anos.
- Não me lembro.

→

Com que idade é que o teu consumo de café começou a ser **mais regular** (independentemente de consumires de vez em quando ou habitualmente)? (considera qualquer tipo de bebidas com café; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)?

Nunca consumi de forma mais regular, só experimentei.

Antes dos 10 anos.

Aos 10 anos.

Aos 11 anos.

Aos 12 anos.

Aos 13 anos.

Aos 14 anos.

Aos 15 anos.

Aos 16 anos.

Aos 17 anos.

Aos 18 anos.

→

Agora vais ler perguntas relacionadas com a frequência do teu consumo de café com cafeína.

Nos **últimos 12 meses, SEM contar com os meses de isolamento social devido à covid-19**, eu bebi café (considera qualquer tipo de bebidas com café; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

No **último mês TÍPICO (anterior ao isolamento social devido à covid-19)** eu bebi café (considera qualquer tipo de bebidas com café; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

Numa **semana TÍPICA (antes do isolamento social devido à covid-19)** eu bebo café (considera qualquer tipo de bebidas com café; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

Durante os **meses de isolamento social** eu bebi café (considera qualquer tipo de bebidas com café; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

Nesta **última semana** eu bebi café (considera qualquer tipo de bebidas com café; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

Agora vais ler perguntas sobre razões para consumires café com cafeína.

	1 - Discordo completamente.	2 - Discordo.	3 - Não concordo nem discordo.	4 - Concordo.	5 - Concordo completamente.
Eu bebo café porque dá-me energia.	○	○	○	○	○
Eu bebo café porque ajuda-me a acordar ou porque mantém-me acordado.	○	○	○	○	○
Eu bebo café porque sinto-me mais bem-disposto depois de o tomar.	○	○	○	○	○
Eu bebo café porque gosto especificamente do sabor **a café**.	○	○	○	○	○
Eu bebo café porque gosto especificamente do sabor que as **bebidas com café** têm.	○	○	○	○	○
Eu bebo café porque é algo fácil de se arranjar.	○	○	○	○	○

	1 - Discordo completamente.	2 - Discordo.	3 - Não concordo nem discordo.	4 - Concordo.	5 - Concordo completamente.
Eu bebo café porque é algo que posso trazer de um lado para o outro.	○	○	○	○	○
Eu bebo café porque faz-me sentir mais crescido.	○	○	○	○	○
Comecei a beber café por **observar** os meus pais ou outros familiares a beber café.	○	○	○	○	○
Comecei a beber café porque os meus pais ou outros familiares **ofereciam-me ou davam-me livre acesso** ao café (por exemplo, na ida para a escola, em casa).	○	○	○	○	○
Comecei a beber café porque podia bebê-lo com os meus pais ou família alargada.	○	○	○	○	○
Comecei a beber café porque gosto da publicidade sobre o café (por exemplo, acho que há publicidade fixe ou divertida).	○	○	○	○	○

	1 - Discordo completamente.	2 - Discordo.	3 - Não concordo nem discordo.	4 - Concordo.	5 - Concordo completamente.
Comecei a beber café porque os meus amigos têm esse hábito e é uma atividade que nós podemos fazer em conjunto (ir buscá-lo e/ou bebê-lo acompanhados).	○	○	○	○	○
Comecei a beber café porque não quis recusar o café que um amigo me deu, embora a minha vontade fosse recusar.	○	○	○	○	○
Comecei a beber café porque achei que ia parecer mais fixe perante os meus amigos e/ou colegas.	○	○	○	○	○
Comecei a beber café porque achei que me ia ajudar a estar mais integrado na escola e/ou no meu grupo de amigos.	○	○	○	○	○

→

Agora vais ler perguntas sobre a frequência do teu consumo de café ***descafeinado*** ☕.

Nos **últimos 12 meses, SEM contar com os meses de isolamento social devido à covid-19**, eu bebi café *descafeinado* (considera qualquer tipo de bebidas com café *descafeinado*; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

No **último mês TÍPICO (anterior ao isolamento social devido à covid-19)** eu bebi café *descafeinado* (considera qualquer tipo de bebidas com café *descafeinado*; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

Numa **semana TÍPICA (antes do isolamento social devido à covid-19)** eu bebo café *descafeinado* (considera qualquer tipo de bebidas com café *descafeinado*; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

Durante os **meses de isolamento social** eu bebi café *descafeinado* (considera qualquer tipo de bebidas com café *descafeinado*; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

Nesta **última semana** eu bebi café *descafeinado* (considera qualquer tipo de bebidas com café *descafeinado*; por exemplo, café instantâneo, o espresso ou "shot" de café, cappuccino, iced caffè, latte, mocca, meia de leite, frappuccino; clica aqui e aqui para veres imagens das diferentes bebidas de café)...

1 - Nunca	2 - Raramente	3 - Às vezes	4 - Pelo menos 1 vez por semana	5 - Diariamente

→

Agora vais ler perguntas sobre o teu consumo de álcool 🍸🍺. Relembramos-te que é fundamental que sejas **honesto(a)** com as tuas respostas. Não existem respostas certas ou erradas, só existem respostas que **correspondam à realidade dos teus consumos**!

Em alguma altura da tua vida bebeste alguma bebida alcoólica? (por exemplo, cerveja, vinho, bebidas espirituosas (vodka, rum, gin, whisky, tequila, aguardente), cidra, alcopops (Super Bock com sabor a limão, Desperados), misturas de bebidas de produção caseira (sangria, receita))

Sim.

Não.

→

Por favor indica qual ou quais bebidas alcoólicas:

- Cerveja.
- Vinho.
- Bebidas espirituosas (por exemplo, vodka, rum, gin, whisky, tequila, aguardente).
- Cidra.
- Alcopops (por exemplo, Super Bock com sabor a limão, Desperados).
- Misturas de bebidas de produção caseira (por exemplo, sangria, receita).
- Outra.

→

Bebeste alguma bebida alcoólica nos **últimos 12 meses, SEM contar com os meses de isolamento social devido à covid-19?** (por exemplo, cerveja, vinho, bebidas espirituosas (vodka, rum, gin, whisky, tequila, aguardente), cidra, alcopops (Super Bock com sabor a limão, Desperados), misturas de bebidas de produção caseira (sangria, receita))

- **Sim.**
- Não.

→

Por favor indica qual ou quais bebidas alcoólicas:

- Cerveja.
- Vinho.
- Bebidas espirituosas (por exemplo, vodka, rum, gin, whisky, tequila, aguardente).
- Cidra.
- Alcopops (por exemplo, Super Bock com sabor a limão, Desperados).
- Misturas de bebidas de produção caseira (por exemplo, sangria, receita).
- Outra.

→

Bebeste alguma bebida alcoólica no **último mês TÍPICO (anterior ao isolamento social devido à covid-19)**? (por exemplo, cerveja, vinho, bebidas espirituosas (vodka, rum, gin, whisky, tequila, aguardente), cidra, alcopops (Super Bock com sabor a limão, Desperados), misturas de bebidas de produção caseira (sangria, receita))

- Sim.
- **Não.**

→

Bebeste alguma bebida alcoólica **em alguma ocasião nos meses de isolamento social**? (por exemplo, cerveja, vinho, bebidas espirituosas (vodka, rum, gin, whisky, tequila, aguardente), cidra, alcopops (Super Bock com sabor a limão, Desperados), misturas de bebidas de produção caseira (sangria, receita))

Sim.

Não.

→

Alguma vez te sentiste alcoolizado(a) ao longo da tua vida? (se sentiste os efeitos do álcool)

Sim.

Não.

→

Por favor indica, de acordo com o que tu te lembras, com qual ou quais bebidas alcoólicas te sentiste alcoolizado(a):

- Cerveja.
- Vinho.
- Bebidas espirituosas (por exemplo, vodka, rum, gin, whisky, tequila, aguardente).
- Cidra.
- Alcopops (por exemplo, Super Bock com sabor a limão, Desperados).
- Misturas de bebidas de produção caseira (por exemplo, sangria, receita).
- Outra.

→

Do que tu te lembras, sentiste-te alcoolizado(a) em alguma ocasião **nos últimos 12 meses, SEM contar com os meses de isolamento social devido à covid-19**?

- Sim.
- **Não.**

→

Do que tu te lembras, sentiste-te alcoolizado(a) em alguma ocasião **no último mês TÍPICO (anterior ao isolamento social devido à covid-19)**?

Sim.

Não.

→

Do que tu te lembras, sentiste-te alcoolizado(a) em **alguma ocasião nos meses de isolamento social**?

Sim.

Não.

→

No **último mês TÍPICO (anterior ao isolamento social devido à covid-19)** consumiste 5 ou mais unidades de bebida numa única ocasião?

Sim.

Não.

Não me lembro.

Em **alguma altura nos meses de isolamento social** consumiste 5 ou mais unidades de bebida numa única ocasião?

Sim.

Não.

→

Agora vais ler perguntas sobre o teu consumo de tabaco . Relembramos-te que é fundamental que sejas **honesto(a)** com as tuas respostas. Não existem respostas certas ou erradas, só existem respostas que **correspondam à realidade dos teus consumos**!

Em alguma altura da tua vida fumaste algum produto de tabaco (por exemplo, cigarros, tabaco de enrolar, cigarros eletrónicos)?

Sim.

Não.

→

Por favor indica qual ou quais produtos de tabaco:

- Cigarros.
- Tabaco de enrolar.
- Cigarros eletrónicos.

Fumaste algum produto de tabaco **nos últimos 12 meses, SEM contar com os meses de isolamento social devido à covid-19**? (por exemplo, cigarros, tabaco de enrolar, cigarros eletrónicos)

- Sim.
- Não.

→

Fumaste algum produto de tabaco **no último mês TÍPICO (anterior ao isolamento social devido à covid-19)**? (por exemplo, cigarros, tabaco de enrolar, cigarros eletrónicos)

- Sim.
- Não.

→

Fumaste algum produto de tabaco **em alguma ocasião nos meses de isolamento social**? (por exemplo, cigarros, tabaco de enrolar, cigarros eletrónicos)

Sim.

Não.

→

Agora vais ler perguntas sobre o teu consumo de canábis/marijuana . Estas são as últimas perguntas do questionário. Relembramos-te que é fundamental que sejas **honesto(a)** com as tuas respostas. Não existem respostas certas ou erradas, só existem respostas que **correspondam à realidade dos teus consumos**!

Em alguma altura da tua vida consumiste algum preparado de canábis/marijuana? (por exemplo, erva, haxixe/ganza, pólen, óleo, itens comestíveis)

Sim.

Não.

→

Por favor indica qual ou quais preparados de canábis/marijuana:

- Erva.
- Haxixe/ganza.
- Pólen.
- Óleo.
- Itens comestíveis (por exemplo, brownie).

Consumiste algum preparado de canábis/marijuana **nos últimos 12 meses, SEM contar com os meses de isolamento social devido à covid-19**? (por exemplo, erva, haxixe/ganza, pólen, óleo, itens comestíveis)

- Sim.
- Não.

→

Consumiste algum preparado de canábis/marijuana **no último mês TÍPICO (anterior ao isolamento social devido à covid-19)**? (por exemplo, erva, haxixe/ganza, pólen, óleo, itens comestíveis)

Sim.

Não.

→

Consumiste algum preparado de canábis/marijuana **em alguma ocasião nos meses de isolamento social**? (por exemplo, erva, haxixe/ganza, pólen, óleo, itens comestíveis)

Sim.

Não.

→

Chegaste ao final do questionário! Estamos muito gratos pela tua participação. Clica aqui para fazeres download da recompensa.

→

Agradecemos a sua participação neste inquérito.
A sua resposta foi registada.

Appendix F

The English Version of the Questionnaire

Section	Exposition & Subsections
The Introduction and the Informed Consent	(In an image:) Are you 12 to 18 years old? Are you Portuguese? Do you drink coffee? (In text:) Do you find yourself wondering about what to do at home? Maybe you're bored or frustrated? Would you like to do something different? Or maybe you'd like to do something that makes you feel useful? Something that makes you feel like your contribution is invaluable and irreplaceable? (In an image:) We are requesting your participation in a study about coffee consumption (including coffee-based beverages) and the use of other psychoactive substances (for example, alcohol). To participate, you only need to fulfill the requirements mentioned in the previous image – **you don't have be a consumer** of other psychoactive substances in order to participate; you have to **have experimented OR be a coffee consumer (with caffeine AND/OR decaffeinated)**. Participants will be rewarded at the end with a huge list of internet resources with a variety of suggestions regarding stuff to do at home during this time where we're mandated to spend more time at home!! Your contribution entails fulfilling a questionnaire that will take a maximum of 15 minutes to fill out, with questions on: • Sociodemographic characterization (for example, your age); • Related to your coffee consumption (for example, your reasons for consumption); • Related to the use of other psychoactive substances (for example, if you drink alcohol or not). Your participation is very important and irreplaceable, each one of you had a fundamental role in this study. You will be contributing to the availability of scientific knowledge on the consumption of coffee and other psychoactive substances in Portuguese adolescents! (In text:) Before you participate, it is important you read what follows attentively:

	Your participation is completely voluntary and you can drop out at any time during the completion of the questionnaire; The information that you will give us will be **anonymous and confidential**. This means that we **will not ask you to identify yourself** (through your name, address, school name, etc.), **nor will we have access to your IP address**, so **NO ONE** will know it was you that gave us these data; Your information will be used **STRICTLY for research purposes** by the project's team; It is fundamental that you are **honest** with your responses. This means that, because your participation is anonymous and confidential, you **do not have to worry** about giving answers that decrease or exaggerate the reality of your consumptions in order to look good and/or not be judged; There are no right or wrong answers, only answers that **stay true to the reality of your consumptions**!; It is important that you read the questions **attentively** because there might be some that look the same, but no question asks you the same thing. If you have questions, do not hesitate to ask me, Maria Luís Polónia, for more information: mluis1001@gmail.com. If you understand what you just read and/or you have your questions answered, please select the option where you accept participating in the study! If you do not want to participate, you are free to leave this page. This research is being conducted by the Human Neurobehavioral Laboratory's team of the Research Centre for Human Development (CEDH), which is located in Porto's Universidade Católica Portuguesa, and is being developed by the student researcher Maria Luís Polónia in the context of her master's dissertation under the orientation of Prof. Dr.ª Patrícia Oliveira-Silva (posilva@porto.ucp.pt), in a partnership with Delta Cafés. *Please click here to participate in the study: Yes, I understand what I read and I want to participate.*
Sociodemographic Questionnaire	1. Your sex is: Options range from *female*, *male*, or *other*.

	2. You are _____ of age: Options range from 12-18. 3. You are in grade: Options range from grades 6 to 12. 4. You go to a _____ school: Options are *public* or *private*. 5. Your region of residence is: Options range between *North*, *Center*, *Metropolitan Area of Lisbon*, *Alentejo*, *Algarve*, *Azores*, and *Madeira*. For each region, four examples of locations were given. 6. Do you have older siblings? Options range between *yes* or *no*; 6.1. When *yes* is selected: How many older siblings? (Insert the number in numerals) 7. Do you have younger siblings? Options range between *yes* or *no*; 7.1. When *yes* is selected: How many younger siblings? (Insert the number in numerals)
Coffee Consumption Patterns Self-Report Instrument - General Question	In general, how would you describe yourself as a coffee consumer? Options range between: • *I have only experimented/I drink coffee with caffeine* • *I have only experimented/I drink decaffeinated coffee* • *I have only experimented/drink both caffeinated and decaffeinated coffee*
Coffee Consumption Patterns Self-Report Instrument - Consumption of Coffee (with Caffeine)	Subsection Age: 1. At what age did you drink coffee **for the first time**? Options range from *before the age of 10*, *at 10 years of age*, all the ages up until 18 years of age, and *I don't remember*. 2. At what age did your coffee consumption become **more regular** (regardless of whether your current consumption is habitual or every now and then)? Options range from *I never consumed more regularly, only experimented*; *before the age of 10*; *at 10 years of age*; and all the ages up until 18 years of age. Subsection Frequency:

For all items, options range between 1 = *Never*; 2 = *Rarely*; 3 = *Sometimes*; 4 = *At least once a week*; and 5 = *Daily*.

1. In the **last 12 months, EXCLUDING the months of social isolation due to covid-19**, I drank coffee…
2. In the **last TYPICAL month (before the social isolation due to covid-19**), I drank coffee…
3. In the **last TYPICAL week (before the social isolation due to covid-19)**, I drank coffee…
4. During the **months of social isolation**, I drank coffee…
5. **Last week**, I drank coffee…

Subsection Reasons:

For all items, options range between 1 = *I completely disagree*, 2 = *I disagree*, 3 = *I do not agree nor disagree*, 4 = *I agree*, and 5 = *I completely agree*.

1. I drink coffee because it gives me energy
2. I drink coffee because it helps me wake up or keeps me awake
3. I drink coffee because I feel better after drinking it
4. I drink coffee because I specifically like **coffee's** taste
5. I drink coffee because I specifically like the taste of **coffee beverages**
6. I drink coffee because it is easily accessible
7. I drink coffee because it is easy to carry from one place to another
8. I drink coffee because it makes me feel more grown-up
9. I started drinking coffee because I **observed** my parents or other family members drinking coffee
10. I started drinking coffee because my parents or other family members would **offer it to me or give me free access** to it (for example, on the way to school, at home)
11. I started drinking coffee because I could drink it with my parents or extended family
12. I started drinking coffee because I like the advertisements (for example, I think there are advertisements that are cool or fun)
13. I started drinking coffee because my friends have that habit and it is an activity we can do together (get a coffee together or drink it together)

	14. I started drinking coffee because I did not want to decline a coffee that a friend offered me, even though I did feel like declining 15. I started drinking coffee because I thought I would look cooler in front of friends and/or colleagues 16. I started drinking coffee because I thought it would help me fit in at school and/or in my group of friends
<u>Coffee Consumption Patterns Self-Report Instrument</u> - Consumption of Decaffeinated Coffee, version for participants who drink both coffees	Subsection Frequency: For all items, options range between 1 = *Never*; 2 = *Rarely*; 3 = *Sometimes*; 4 = *At least once a week*; and 5 = *Daily*. 1. In the **last 12 months, EXCLUDING the months of social isolation due to covid-19**, I drank *decaffeinated* coffee… 2. In the **last TYPICAL month (before the social isolation due to covid-19**), I drank *decaffeinated* coffee… 3. In the **last TYPICAL week (before the social isolation due to covid-19)**, I drank *decaffeinated* coffee… 4. During the **months of social isolation**, I drank *decaffeinated* coffee… 5. **Last week**, I drank *decaffeinated* coffee…
<u>Coffee Consumption Patterns Self-Report Instrument</u> - Consumption of Decaffeinated Coffee, version for participants who solely experimented/drink decaffeinated coffee	Subsection Age: 1. At what age did you drink *decaffeinated* coffee **<u>for the first time</u>**? Options range from *before the age of 10*, *at 10 years of age*, all the ages up until 18 years of age, and *I don't remember*. 2. At what age did your *decaffeinated* coffee consumption become **<u>more regular</u>** (regardless of whether your current consumption is habitual or every now and then)? Options range from *I never consumed more regularly, only experimented*; *before the age of 10*; *at 10 years of age*; and all the ages up until 18 years of age. Subsection Frequency: For all items, options range between 1 = *Never*; 2 = *Rarely*; 3 = *Sometimes*; 4 = *At least once a week*; and 5 = *Daily*. 1. In the **last 12 months, EXCLUDING the months of social isolation due to covid-19**, I drank *decaffeinated* coffee… 2. In the **last TYPICAL month (before the social isolation due to covid-19**), I drank *decaffeinated* coffee…

	3. In the **last TYPICAL week (before the social isolation due to covid-19)**, I drank *decaffeinated* coffee… 4. During the **months of social isolation**, I drank *decaffeinated* coffee… 5. **Last week**, I drank *decaffeinated* coffee…
Psychoactive Substance Use Self-Report Instrument - Alcohol	For all items, options range between *yes* or *no*. When *yes* is selected, participants are asked *please choose which alcoholic drink(s)*: • *Beer* • *Wine* • *Spirit drinks (for example, vodka, rum, gin, whiskey, tequila, brandy)* • *Cider* • *Alcopops (for example, Lemon-flavored Super Bock, Desperados)* • *Home-made drink mixes* • *Other drink* When *other drink* is selected, participants are asked *please type the alcoholic drink*. 1. Have you ever drank an alcoholic drink? 2. Did you ever drink an alcoholic drink in the **last 12 months, EXCLUDING the months of social isolation due to covid-19**? 3. Did you ever drink an alcoholic drink in the **last TYPICAL month (before the social isolation due to covid-19**)? 4. Did you ever drink an alcoholic drink during the **months of social isolation**? 5. Have you ever felt drunk? 6. From what you remember, have you felt drunk at some point in the **last 12 months, EXCLUDING the months of social isolation due to covid-19**? 7. From what you remember, have you felt drunk at some point in the **last TYPICAL month (before the social isolation due to covid-19**)? 8. From what you remember, have you felt drunk at some point during the **months of social isolation**? 9. In the **last TYPICAL month (before the social isolation due to covid-19**), did you consume 5 or more units of an alcoholic drink in a single occasion? 10. In the **months of social isolation**, did you consume 5 or more units of alcohol in a single occasion?

Psychoactive Substance Use Self-Report Instrument - Tobacco	For all items, options range between *yes* or *no*. When *yes* is selected, participants are asked *please choose which tobacco product(s)*: • *Cigarettes* • *Hand-rolling tobacco* • *E-cigarettes* 1. Have you ever smoked a tobacco product? 2. Did you ever smoke a tobacco product in the **last 12 months, EXCLUDING the months of social isolation due to covid-19**? 3. Did you ever smoke a tobacco product in the **last TYPICAL month (before the social isolation due to covid-19**)? 4. Did you ever smoke a tobacco product during the **months of social isolation**?
Psychoactive Substance Use Self-Report Instrument - Cannabis	For all items, options range between *yes* or *no*. When *yes* is selected, participants are asked *please choose which cannabis product(s)*: • *Weed* • *Hash* • *Pollen* • *Oil* • *Edible items* 1. Have you ever used a cannabis product? 2. Did you ever use a cannabis product in the **last 12 months, EXCLUDING the months of social isolation due to covid-19**? 3. Did you ever use a cannabis product in the **last TYPICAL month (before the social isolation due to covid-19**)? 4. Did you ever use a cannabis product during the **months of social isolation**?
Reward	You have reached the end of the questionnaire! We are very grateful for your participation. Click here to download the reward.

Note: All items in the age and frequency subsections have a standardized sentence with the terminology of the different coffee drinks and two hyperlinks that show subtitled images of different coffee drinks. This is to help participants remember all the coffee beverages they drank and to clarify which names correspond to which coffee drinks.

Appendix G

The Study's Advertisement on Facebook

**********Estamos a RECOMPENSAR os participantes!!**********

Dás por ti sem saber o que fazer em casa? Talvez aborrecido(a)?

Gostavas de poder fazer alguma coisa que quebrasse a tua rotina?

Ou nem por isso, mas gostavas de poder fazer algo que te fizesse sentir útil? Algo em que o teu contributo é valioso e insubstituível?

Estamos a pedir a tua participação num estudo sobre o consumo de café (incluindo bebidas à base de café) e o consumo de outras substâncias psicoativas (por exemplo, o álcool).

Para participares, basta preencheres os requisitos referidos na imagem - ou seja, não tens de ser obrigatoriamente consumidor(a) de outras substâncias psicoativas para poderes participar, tens é de JÁ TER EXPERIMENTADO ou SER CONSUMIDOR de café (com cafeína e/ou descafeinado)!

Clica no link para saberes mais e participares:
http://ucpcrp.qualtrics.com/jfe/form/SV_bJkxa8UrhbzIRAF

Appendix H

The Reward Document

First Page

CATOLICA
FACULDADE DE EDUCAÇÃO E PSICOLOGIA
PORTO

Autoria: Maria Luís Morais Polónia, finalista do mestrado em psicologia da justiça e do comportamento desviante & membro do HNL em 2019/2020

Considerando que estamos obrigados a estar mais tempo em casa, convém usufruirmos do potencial que a internet tem para nos ajudar a continuarmos saudáveis, psicologicamente e fisicamente, e entretidos. Por forma a seres recompensado(a) pela participação neste estudo, disponibilizamos-te links que te irão ajudar nestes aspetos. Para quem não sabe inglês: Avisamos-te que muitos dos links são em inglês, mas podes tentar usar o Google Tradutor para traduzir páginas da web, embora não faça traduções perfeitas!

Links aleatórios:

- Canal de Youtube The School of Life (os vídeos têm subtítulos em português)
- TEDTalks (alguns vídeos têm subtítulos em português)
- Como é ser-se cego? (em inglês)
- Sabias que há pessoas que não conseguem ver imagens mentalmente? (em inglês)
- O que é que nos aconteceria se não dormíssemos? (tem subtítulos em português)
- Porque é que sonhamos? (tem subtítulos em português)
- Porque é que gostamos das comidas que gostamos? (em inglês)
- A relação entre a música e a saúde. (em inglês)
- Porque é que não gostamos de ouvir a nossa voz? (em inglês)
- Sabias que a timidez e a introversão são coisas diferentes? (em inglês)
- Porque é que há pessoas que atraem mosquitos? (em inglês)
- Porque é que há pessoas com sardas? (tem subtítulos em português)
- Tens a certeza de que andas a lavar corretamente o teu cabelo? (em inglês)
- A história inspiradora de um astronauta que era mau aluno em disciplinas científicas. (em inglês)
- A mensagem que a humanidade enviou para o espaço para o caso de existir vida extraterrestre. (em inglês)
- Esta maquilhadora faz efeitos especiais à filme com a maquilhagem.
- Esta maquilhadora transforma-se em celebridades e personagens.

- Sabias que os animais percebem quando estão a ser tratados de maneira injusta? (em inglês)
- Sabias que os peixes sentem dor como nós a sentimos? (em inglês)
- Sabias que os papagaios têm preferências pessoas por música? (em inglês)
- Este site leva-te a sites inúteis. (em inglês)
- Informações psicológicas dirigidas a ti, que és adolescente, sobre diversos temas.
- Como lidar com a incerteza? (em inglês)

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Second Page

CATOLICA
FACULDADE DE EDUCAÇÃO E PSICOLOGIA
PORTO

Autoria: Maria Luís Morais Polónia, finalista do mestrado em psicologia da justiça e do comportamento desviante & membro do HNL em 2019/2020

- Algumas recomendações para lidares com a ansiedade: Clica aqui (este está em português) e aqui (este em inglês).
- Guia para compreender, resolver e prevenir conflitos em casa.
- Tens irmãos que são crianças e que andam a ser especialmente chatos?

Ideias de atividades:
- Estás no 9º, 11º ou no 12º ano e andas a pensar no que é que gostarias de fazer no futuro? Lê aqui sobre o que é a orientação vocacional e sugestões para tomares uma decisão.
- Vê filmes. Se precisas de ideias, vê aqui listas de filmes ou pesquisa no Google (por ex., “movies lists”). Não te lembras do nome de um filme? Clica aqui.
- Vê séries. Se precisas de ideias, pesquisa no Google (por ex., “tv shows lists”).
- Vê vídeos engraçados no Youtube (por ex., compilações de vídeos engraçados, pessoas a pregarem partidas, compilações de memes).
- Usa o Facebook, o WhatsApp, o Skype ou o Jitsi para interagires com quem é importante para ti. No Skype e no Jitsi existe a possibilidade de partilhar ecrãs. Sabe mais sobre o Jitsi aqui. (está em inglês)

- Queres ver um filme, uma série ou um vídeo com alguém ou um grupo de pessoas importantes para vi? Faz conta no Discord (também tens de fazer download) ou no Watch2gether e vejam juntos à distância.
- Joga videojogos, sozinho ou com amigos. Se tiveres alguma consola em casa que já não usas (por ex., Nintendo, Playstation), considera usar. Faz download da Steam e pensa nos jogos que gostarias de jogar. Podes ver as cotações dos jogos na própria Steam ou pesquisar no Google sugestões.
- Jogas xadrez? Clica aqui para acederes a um manual que te ensina mais de 1,000 táticas. (em inglês)
- Se tiveres jogos em casa (por ex., Uno, Monopólio), joga-os em família.
- Se tocas algum instrumento, pesquisa no Youtube músicas que gostarias de aprender a tocar. Mesmo que elas não sejam originalmente no instrumento que tocas, procura covers porque os autores das covers às vezes disponibilizam pautas. Quem toca guitarra pode ver tablaturas aqui.
- Tens interesses intelectuais ou gostavas de acrescentar algo ao teu currículo? Vê aqui e aqui cursos online. (em inglês)
- Tens interesses intelectuais ou gostavas de ter ajuda para algumas disciplinas? Clica aqui para acederes a um canal de Youtube com playlists de todo o tipo de temas – até tem uma que te ensina a estudar e outra que te ensina a pensares sobre informação

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Last Page

CATÓLICA
FACULDADE DE EDUCAÇÃO E PSICOLOGIA
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Autoria: Maria Luís Morais Polónia, finalista do mestrado em psicologia da justiça e do comportamento desviante & membro do HNL em 2019/2020

digital! Este é outro ótimo canal de Youtube. (têm subtítulos em português).
- Tens um interesse intelectual por temas científicos? Clica aqui para aprenderes sobre temas diferentes. (em inglês)
- Lê livros, em formato digital ou físico. Sabias que ler livros é uma atividade saudável a vários níveis? (em inglês).

- Arruma aquelas coisas que estás por arrumar há imenso tempo.
- Cozinha receitas diferentes – pode ser sopas, saladas, pratos principais, doces ou snacks – com recurso ao Youtube ou Google. Tens aqui algumas sugestões: (x), (x), (x), (x), (x), (x), (x). Sabias que cozinhar é uma atividade saudável para a tua mente?
- Cria uma playlist de música no Youtube, Spotify ou 8Tracks. Podes também ouvir música nova sugerida pelas plataformas.
- Cria conta no Reddit e explora os diferentes Subreddits que existem. Podes também ver aqui um canal de Youtube dedicado a compilar partilhas e discussões do Subreddit r/AskReddit. (em inglês)
- Cria conta no WeHeartIt e/ou no Pininterest para explorares imagens esteticamente agradáveis. Podes também metê-las em pastas temáticas.
- Vê documentários. (em inglês)
- Aprende a maquilhares-te com recurso ao Youtube (clica aqui, por exemplo).
- Aprende a fazeres a tua própria cera depilatória e a depilares-te com ela. (em inglês)
- Aprende línguas de programação (para aprenderes línguas de programação tens mesmo de saber inglês). Também podes verificar se há outros recursos nos links de cursos online^ ou procurar no Google ou Youtube que outros sites ou vídeos existem.
- Pratica yoga (em inglês). Também podes procurar no Google ou Youtube que outros sites ou vídeos existem.
- Faz exercício físico (em inglês). Também podes procurar no Google ou Youtube que outros sites ou vídeos existem.
- Aprende ou melhora as tuas competências de fotografia aqui e aqui (em português e em inglês). Também podes verificar se há outros recursos nos links de cursos online^ ou procurar no Google ou Youtube que outros sites ou vídeos existem.
- Aprende ou melhora as tuas competências de desenho e/ou pintura aqui, aqui e aqui (em inglês). Também podes verificar se há outros recursos nos links de cursos online^ ou procurar no Google ou Youtube que outros sites ou vídeos existem.
- Clica aqui e aqui para fazeres download de softwares de edição de imagem (um deles é parecido com o Photoshop).
- Aprende uma nova língua aqui, aqui, aqui, aqui, aqui, aqui ou aqui.
- Aprende ou melhora a tua análise de filmes aqui e aqui (em inglês).

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Appendix I

The Tables for the Chi-Square Tests (χ^2) on Coffee Consumption and Alcohol Use

Table I1

The association between Coffee Consumption and Alcohol Use in the Last 12 Months Prior to the Covid-19 Pandemic

Responses in *n*			χ^2	*df* (when applicable)	*p* (when applicable)	Fisher's Exact Test *p* (when applicable)
			.000			1.000
	Coffee Consumption: No	Coffee Consumption: Yes				
Alcohol Use: Yes	11	49				
Alcohol Use: No	2	9				

Table I2

The association between Coffee Consumption and Alcohol Use in the Last Typical Month (Prior to the Covid-19 Pandemic)

Responses in *n*			χ^2	*df* (when applicable)	*p* (when applicable)	Fisher's Exact Test *p* (when applicable)
			.009			1.000
	Coffee Consumption: No	Coffee Consumption: Yes				
Alcohol Use: Yes	9	21				
Alcohol Use: No	4	10				

Appendix J

The Tables for the Chi-Square Tests (χ^2) on Coffee Consumption and Tobacco Use

Table J1

The association between Coffee Consumption and Tobacco Use in the Last 12 Months Prior to the Covid-19 Pandemic

Responses in *n*			χ^2	*df* (when applicable)	*p* (when applicable)	Fisher's Exact Test *p* (when applicable)
			2,079	1	.149	
	Coffee Consumption: No	Coffee Consumption: Yes				
Tobacco Use: Yes	3	26				
Tobacco Use: No	10	32				

Table J2

The association between Coffee Consumption and Tobacco Use in the Last Typical Month (Prior to the Covid-19 Pandemic)

Responses in *n*			χ^2	*df* (when applicable)	*p* (when applicable)	Fisher's Exact Test *p* (when applicable)
			.910			.461
	Coffee Consumption: No	Coffee Consumption: Yes				
Tobacco Use: Yes	2	9				
Tobacco Use: No	11	22				

Appendix K

The Tables for the Chi-Square Tests (χ^2) on Coffee Consumption and Cannabis Use

Table K1

The association between Coffee Consumption and Cannabis Use in the Last 12 Months Prior to the Covid-19 Pandemic

Responses in *n*			χ^2	*df* (when applicable)	*p* (when applicable)	Fisher's Exact Test *p* (when applicable)
			1.051			.491
	Coffee Consumption: No	Coffee Consumption: Yes				
Cannabis Use: Yes	2	17				
Cannabis Use: No	11	41				

Table K2

The association between Coffee Consumption and Cannabis Use in the Last Typical Month (Prior to the Covid-19 Pandemic)

Responses in *n*			χ^2	*df* (when applicable)	*p* (when applicable)	Fisher's Exact Test *p* (when applicable)
			2.913			.157
	Coffee Consumption: No	Coffee Consumption: Yes				
Cannabis Use: Yes	0	6				
Cannabis Use: No	13	25				