Depends Who Offers and Where Offered:

The Context of Drug Offers and

First Time Cannabis Use

by

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Abstract

Research has shown that proximal sources (peers) are associated with substance use. Rarely examined, however, is the immediate context or the precise situation in which drugs are offered for the first time. The situation or context includes the nature of the relationship between the person offering and the adolescent receiving the offer, the location in which the offer occurs, and how these may affect the likelihood of accepting or rejecting a first offer. Using a subsample of 171 adolescent cannabis users, this study examines the likelihood of accepting a first offer as a function of social proximity and proximity of location. Results show that both of these elements matter in the decision to accept. More specifically, offers are more likely to be accepted when they come from best friends and when they are made in one's own home. The implications of these results for drug use prevention programs are discussed.

Keywords: cannabis initiation; drug offers; source of offer; location of offer; situational analysis of crime and deviance; context of substance use

To my brother Adem: Without your love, guidance, and emotional and financial support, I would not be the person I am today.

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1.   Introduction

Adolescence is characterized as a period of increased risk for the onset of a wide range of problematic behaviours (Moffitt, 1993). In particular, experimentation with substances is typically initiated during this period with a progression to regular use in late adolescence and young adulthood (Chen and Kandel, 1995; Kreager and Haynie, 2011). Various surveys report that substances such as tobacco, alcohol, and other illicit drugs are commonly used by adolescents of different ages (Goodman and Huang, 2002; Griffin, Botvin, Scheier, Diaz, and Miller, 2000); however cannabis is consistently identified as the most common type of illicit substance that is used (CADUMS, 2011; Monitoring the Future Survey, 2012; European Monitoring Centre for Drugs and Drug Addiction, 2012). Official reports on Canadian youth indicate that in 2011, the rate of past year cannabis use for individuals between the ages of 15 and 24 was 9.1%, a figure which is three times higher that of the national average (CADUMS, 2011)[1]. International comparisons reveal that over 20% of grade 10 students and 35% of grade 12 students in the United States reported to have used cannabis in 2012 (Johnston, O'Malley, Bachman, and Schulenberg, 2013). Furthermore, in Europe it is estimated that among 15 to 24 year old students, 15.4% used cannabis in 2012 (EMCDDA, 2012). These statistics reveal that cannabis remains a substance of choice in adolescence, that is of interest to explore due to the sensitive nature of development and maturation of individuals during this period (Ellickson, Tucker, Klein, and Saner, 2004).

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[1]   Information obtained from Health Canada website: http://www.hc-sc.gc.ca/hc-ps/drugs-drogues/stat/index-eng.php

Correlates of drug initiation are usually categorized into environmental exposures: access to substances and perceived availability (Barret, 1999; Kuntsche and Jordan, 2006); interpersonal relations: quality of relationship between user and friends and/or parents (Kandel, Kessler, and Margulies, 1978; Brook, Brook, Arencibia-Mireles, Richter and Whiteman, 2001); familial processes: parental monitoring (Richardson et al., 1993; DiClemente, Wingwood, Crosby, Sionean, Cobb, Harrington, Hook, and Oh, 2001; Benjet, Borges, Medina-Mora, Blanco, Zambrano, Orozco, Fleiz, Rojas, 2007); and measures of personal characteristics: low self-control (Gottfredson and Hirschi, 1990). These factors have been shown to be important in explaining adolescent delinquent behaviours along with substance use. For example, individuals who are impulsive in nature or have risk-taking personalities are more likely to use alcohol (Gibbs and Giever, 1995; Ernst, Luckenbaugh, Leff, Allen, Eshel, London and Kimes, 2006), drive under the influence of alcohol (Keane, Maxim, Teevan, 1993), and get involved in deviant (Paternoster and Brame, 1998) and imprudent behaviours defined as "behaviors that are not illegal but do have distal consequences" (Arneklev, Elis and Medlicott, 2006, p. 44). In addition, it has been reported that lower levels of parental monitoring (defined as knowledge about a child's whereabouts and whom they hang out with when they are not at home or in school) is strongly related to a wide range of risky behaviours including sexually transmitted diseases, violent behaviour, and illegal substance use (DiClemente et al., 2001). Furthermore, a robust finding in the literature is that availability of and access to substances are particularly important factors related to substance use. Having access to substances at home or having substances available through parents and/or peers has been found to be a significant predictor of tobacco, marijuana, and alcohol use.

The accessibility of cannabis and the resulting implications for illivit substance use cannot be understated. Data from multiple nationally representative surveys have shown that cannabis is highly accessible for adolescents, and that an overwhelming 82% of students in grade 12 report that it would be fairly easy or very easy to obtain cannabis if they wanted to use it (Johnston et al., 2013). Studies that have focused specifically on accessibility and availability report that youth who have access to cannabis are significantly more likely to initiate use than those who do not (Barret, 1999). Furthermore, it has been shown that perceived availability and accessibility increase use not only at the individual level, but also at the school level (Kuntsche and Jordan, 2006, p. 172). Drug involvement, and the transition to regular use, start with initial opportunities to use drugs that typically emerge in social settings where close sources such as peers are present (Warr, 2002). Once individuals find themselves in a situation where an opportunity for substance use arises, the risk of them taking that opportunity increases (van Etten and Anthony, 1997; Delva, van Etten, Gonzales, Cedeno, Penna, Caris, and Anthony, 1999).

Research indicates that there is growing support for situational or contextual elements as important determinants of adolescent's involvement with substances. Numerous works have focused their attention on the situational context of adolescent substance use and have examined how adolescents encounter opportunities to use substances. The current thesis is situated within this body of literature. The research progress that has been made thus far is built upon by introducing a novel unit of analysis that explores the occurrence of first time drug offers. A few studies have looked at drug offers and the triggers that elicit positive responses (acceptance of the drug) or negative responses (refusal of the drug). However, the majority of these works look at episodes of

drug use in general or hypothetical drug offering situations. There has been minimal attention to the specific moment in which an offer to use drugs first occurs, and the specific elements of context present when adolescents make the decision to accept an offer. The present study fills this gap in the literature by investigating the immediate context or the precise situation in which drugs are offered for the first time. This includes the nature of the relationship between the person offering and the adolescent receiving the offer (social proximity or proximity of source), the location in which the offer occurs (proximity of location), and how these elements may affect the likelihood of accepting or rejecting a first offer. In other words, the aim is to determine how adolescents' decisions to initiate cannabis use is influenced by the circumstances and situations in which they find themselves. We believe that proximity of source and proximity of location will be important predictors of acceptance of offers and cannabis use initiation. We expect that offers that are first advanced by best friends (whom might be considered as the most proximal or closest source to an adolescent) and first offers that are made in the adolescent's own home (considered as the closest, most familiar environmental setting for an adolescent) will have a higher likelihood of being accepted right away, rather than postponed or always rejected.

2. Theoretical and Empirical Background

2.1. The Situational Context of Substance Use

Though the main focus of criminological theories has primarily been on personal dispositions, during the past two decades the situational dimensions of criminal and deviant behaviour have received more attention. An important framework that focuses on situational elements and that has guided this thesis is Birkbeck and LaFree's (1993) framework on situational analysis of crime and deviance. Influenced by experimental, symbolic interactionist, and opportunity research, this framework illustrates the importance of the interaction between individual actors and the specific context during the occurrence of a crime or deviant act. The authors explain that:

> ...situational analysis pays significantly more attention to offender decision-making, to variables that are spatio-temporally proximate to empirical acts under study, and to the role of opportunities. The main contribution of situational analysis to criminology involves the identification of patterns of interaction between individuals and situations in the genesis of decisions to commit crime. (Birbeck and LaFree, 1993, p. 130)

Birbeck and LaFree (1993) further note that "crime is a situated event" (p. 123), and that in order to have a complete understanding of how crime and deviance transpire, we need to examine "the offender as a situationally grounded actor" (p. 122) whose interpretation of the situation is very important to consider (p. 120). These ideas on individualism, motivation for crime, and opportunities for crime have all been explored in the past and are not new to the field of criminology. However, prior to Birkbeck and

LaFree's (1993) work, they had been explored separately rather than in conjunction with one another. For the current purposes, Birkbeck and LaFree's (1993) framework is important because it demonstrates that certain settings are more conducive to delinquency than others (p. 123), and that individuals are prompted to get involved in deviant behaviours due to their perceptions of the physical and social cues of their immediate setting (p. 129).

The importance of exploring the role of the social and environmental setting as a potential influence on criminal behaviour has also been discussed in the works of Wikstrom and colleagues (2004, 2006, 2010). Similar to Birkbeck and LaFree (1993), Wikstrom et al. (2006) examined the interaction between individuals and the environment in which they make a choice about whether or not to become involved in criminal or delinquent behaviour. In 2004, Wikstrom introduced his situational action theory (SAT) to unify empirical and theoretical concepts of previous works and further the analysis of the role of the social environment in crime causation (Wikstrom, Ceccato, Hardie, and Treiber, 2010, p. 56). More specifically, the authors state that "Situational Action Theory proposes that the *convergence* (in time and space) between a person's *propensity* ... and *exposure* ... initiates a *perception-choice process* ... whose outcome is an action (or inaction), for example an act of crime" (Wikstrom et al., 2010, p. 60). The situational perspective and the situational action theory are compatible with each other even though Bikbeck and LaFree (1993) focus more on the decisions influenced by the immediate setting and the opportunities a person is presented with, whereas Wikstrom and colleagues (2004, 2006, 2010) emphasize the individual's decision to become

involved in crime (or break moral rules and controls[2]) based on their individual crime propensities (displaying a crime-driven morality and inability to exercise self-control). Both frameworks are important to the current study as they provide us with directions for understanding the situational factors that facilitate deviant behaviour. In other words, both works advise that we must focus our attention on the context or the influence of the immediate setting on the choice to take risks. Accordingly, the decision on whether or not to become involved with illegal substances will be dependent on the social relationship (with "whom") and the physical location (the "where") present in the situation. This decision needs to be analyzed at the "offer level" so that we can distinguish actual use from all other offer situations where use did not occur but it could have happened.

2.2. Influences of Close Sources on Substance Use

One of the most common findings in the literature is that deviant behaviour in adolescence occurs in the presence of social groups. For substance use in particular, research has shown that this behaviour is not a solitary act, but rather a social activity that happens in the presence of others such as friends, siblings, relatives, acquaintances, and sometimes parents (Alberts, Miller-Rassulo, and Hecht, 1991; Newcomb, Chou, Bentler, and Huba, 1988; Erickson and Jensen, 1977). A review of the literature indicates that friends and family members play important roles in drug initiation and drug experiences during adolescence. First, it is known that the peer context is generally believed to be a significant and strong predictor of adolescent substance use

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[2] Wikstrom's et al. (2004, 2006, 2010) characterize acts of crime as breaches of moral rules of conduct defined in the law.

(Erickson and Jensen, 1977). For example, drawing from a sample of 1700 high school students in southern Arizona, Erickson and Jensen (1977) found that between 86% and 92% of marijuana use and between 84% and 98% of drunkenness incidents occurred in peer-dependent social settings (p. 264).

There is some evidence to suggest that peer facilitated substance use provides more than opportunity for use in that it provides for a understanding of the norms and meanings associated with such behaviours. For example, Becker (1953) suggested that individuals learn from experienced peers how to recognize and take pleasure in the effects of being in an altered state induced by cannabis use. Specifically, "the presence of a given kind of behaviour is the result of a sequence of social experiences during which the person acquires a conception of the meaning of the behaviour, and perceptions and judgments of objects and situations, all of which make the activity possible and desirable" (Becker, 1953, p. 235). Furthermore, peers not only influence use of alcohol and cannabis, substances that are commonly available to adolescents, but also influence use of a variety of other hard drugs like heroin and cocaine. For instance, Stenbecka (1990) interviewed a sample of 156 injecting drug users to obtain an extensive and detailed look at the factors surrounding initiation of drug injection, including the type of drug first used, age at first consumption, place of first injection, reasons for first injection, sex of the introducer of drugs, age of the introducer, and relationship to the introducer. This study found that the majority of the participants were introduced to drugs by a close friend. Stenbecka (1990) noted that "the debut into intravenous drug abuse occurred in a home setting, where the novice, the introducer and possibly also another friend or a few peers could continue with their activities

undisturbed" and that "the introducer as a rule is a close, older, male friend, who has himself been involved in intravenous drug abuse for some time" (p. 461).

Further support comes from Roy, Haley, Leclerc, Cedras, and Boivin's (2002) who reported similar findings to those of Stenbecka (1990). Using a sample of street youth (n = 505) between the ages of 14 and 25, Roy et al. (2002) found that participants were in the presence of a close friend when they first injected, and that more than one third (41%) of them reported that their first injection was conducted by a close friend. Finally, Lankenau, Wagner, Jackson, Bloom, Sanders, Hathazi, and Shin (2010) examined the process of how individuals came into contact with injecting methamphetamine, ketamine, heroin, and cocaine. The authors reported that one of the main reasons for injecting drugs is peer influence that sometimes can take the form of passive exposure or active pressure (Lankenau et al., 2010, p. 250).

The existing literature also reveals that influences from other relationships are important. Family members, for example, have been reported to have a strong impact on substance use, even when controlling for peer effects (Bahr, Hoffman and Yang, 2005). One of the earlier studies on the context of substance use initiation is the work of Kandel, Kessler, and Margulies (1978) who set out to investigate how intrapersonal influences between adolescents and their parents and peers affected the decision to initiate substances like hard liquor, cannabis, and other illicit drugs. The authors examined numerous variables including drug related attitudes, availability of drugs from different sources, quality of relationship between respondents and their parents and peers, and parental and peer drug use. All of these variables were included as appropriate measures of three aspects of an adolescent's life: 1) peer influences; 2) parental influences; and 3) adolescent intrapersonal characteristics (Kandel et al., 1978,

p., 19). According to the results of this study, peers and parents have similar influences on adolescents' substance use in general. However, for specific substances (e.g. alcohol or cannabis) there might be different levels of influence from the two groups. For alcohol use (hard liquor), it was shown that only use of alcohol by a parent was a significant predictor, but the remaining variables (parent-child relationship; parental attitudes and values) were not. Conversely, the majority of peer related variables appeared to be significant. For cannabis, it was found that parental attitudes and quality of relationship were small but significant predictors. Peer influences, on the other hand, especially influences from best friends, were the strongest predictors of cannabis use even when controlling for the other social-related factors and individual characteristics. Specifically, "youths ... are more likely to be initiated into the use of marihuana when their friends use, when their friends espouse values and attitudes conducive to use, and when drugs are made available" (Kandel et al., 1978, p. 28). For other drug use, the majority of measures for parental influence and peer influence turned out to be significantly related to initiation.

Kandel et al. (1978) provided support for the notion that parents might have similar influences to those of friends on substance use. Nonetheless, some researchers maintain that the influence of peers is much greater than that of the parents during adolescence. Hussong (2002) explained that "[p]roximal structures may be particularly salient predictors of adolescent substance use because compared to other social relationships adolescents spend more time in their closest friendships, and are more dependent on their closest relationships for support, advice, and problem solving strategies" (p. 208). Like Hussong (2002), Juvonen, Martino, Ellickson, and Longshore (2007), also examined the perceptions of the prevalence of peer drug use and the

subsequent drug use of young adolescents claimed that drug offers from peers are important predictors of not only general use but also of initiation. The authors reported that students who received cannabis offers from their peers in grade seven were more likely to start using by grade eight. This does not come as a surprise considering the overwhelming evidence on the positive relationship between peer context and deviant behaviours. A multitude of studies consistently report that time with or exposure to delinquent peers is an important risk factor that cannot be neglected (McGloin, 2009; Kreager, Rulison, and Moody, 2011). Furthermore, research shows that even in cases when individuals do not approve of their friends' use, they later surrender to the exposure and influence of social relationships and start using drugs (Horocopos et al., 2009).

This division in the literature suggests that research examining the effect of peer versus family influences during adolescence is inconclusive. Taking this into consideration, Bahr et al. (2005) assessed the direct and indirect effects of parental and peer influences in a large sample of 4230 adolescents between the ages of 12 and 19. The main aims of this study were to 1) examine how various family characteristics predict adolescent substance use, and 2) examine how these effects may be altered when controlling for peer influences. The substances assessed were alcohol, excessive use of alcohol, cigarette use, cannabis use, and other illicit drugs. This study found that when family variables were examined without the peer effects, generally they were significantly related to substance use and they went in the expected directions. For example, when parents have more lenient attitudes towards alcohol, cigarettes, and cannabis, the frequency of use of these substances increased. For the remaining two substances binge drinking and other drug use, however, the same conclusion could not

be reached because only a few family variables appeared to be significant (Bahr et al., 2005). The authors also found that once peer variables were included in their models of different substances, they appeared to be the strongest predictors that also altered the strength of most of the family variables. This was evident for all substances. These findings were determined to mean that "the family variables have significant, direct influences on adolescent drug use separate from any peer influences" and that "[t]he cumulative impact of the six family variables is important even though peer influences had the strongest impact of any individual variable" (Bahr et al., 2005, p. 545).

2.3. The Context of Substance Offers

Taken together, it would seem that peers and family members as proximal sources are part of a social context that can certainly be conducive to adolescent substance use. The social context includes a range of indicators such as availability at of substances at home or school, exposure to substances, parental processes, opportunities, and very often explicit drug offers from various sources. When adolescents, are frequently exposed to substances or have them available in their immediate environments they are at a higher risk for drug initiation and elevated rates of use (Ellickson and Morton, 1999; Juvonen et al., 2007). Even adolescents who abstain from use, once they have been given an opportunity, they are more likely to transition to actual use (van Etten and Anthony, 1997). Exposure to substances occurs in different ways, sometimes through peer pressures (Reed and Rountree,1997) and other times from simple offers (Miller, 1998; Moon, Hecht, Jackson, and Spellers,1999; McIntosh, MacDonald, and McKeganey, 2003). Previous work has found that various types of substances are offered to adolescents of different ages and ethnicities (Moon et al.,

1999). For example, Moon and colleagues (1999) examined the relationships among ethnicity, gender, drug use, and drug offers and resistance to drug offers of alcohol, tobacco, marijuana, and other drugs in a sample of 2,622 African-American (AA), Mexican-American (MA), and European-American (EA) students in grades seven and eight. The type of substances offered, the relationship between participant and offerer, the location of offer, and the resistance strategy of young adolescents was examined. This study found that MAs reported the highest rates of offers for almost all types of substances, whereas EAs were more likely to be offered cigarettes.

Other studies have focused specifically on drug offer situations, and some of the factors that have been explored in the past include relationship to the offerer, location of offer, initial responses to offers, and resistance strategies (how individuals handle drug offers or how they would handle an offer if they were to receive one). Miller (1998), for example, explored these factors in great detail and also inquired about the dynamics of the relationship between the person making a drug offer and the person receiving it, and how such relationships affected the decision to accept or refuse an offer. Miller (1998) explains that "[o]ffer-resistance episodes seem to have relational implications" (p. 369) as his participants reported that it was difficult to resist drug offers from close sources, and that they had to convince themselves into accepting substances because of a need to please the offerer or that it would be impolite to reject an offer.

While drug offers are prevalent during adolescence, and different individuals serve as sources of offers during this period. Male friends, for example, are often reported as prevalent sources of drug offers. Trost, Langan, and Kellar-Guenther (2009) found that the majority of their sample of 2166 adolescents were offered by a male friend rather than a boyfriend/girlfriend, parent, brother/male cousin, sister/female cousin,

extended family members, female friend, or strangers. Alternatively, others report that family members, including parents, brothers and sisters, and cousins or other relatives, also serve as primary sources of alcohol, tobacco, and cannabis (Moon et al., 1999).

While there is knowledge about prevalence, there is also reasonable information on who offers drugs to adolescents. However, information on whether the likelihood of accepting an offer is associated with the type of offerer, or how different sources of offers may be associated with different outcomes is lacking. Trost et al. (2009) briefly touched upon this issue explaining that offers from proximal sources are the most difficult to resist. For example, 51% of students who accepted drug offers in his study were more likely to do so if a romantic partner had made the offer. Also, more participants accepted an offer if a brother or male cousin had advanced it, and offers from strangers were the easiest to resist. Trost et al. (2009) emphasized the important role of the social environment and the proximity of the offerer stating that adolescents are at greater risk for substance use while in the presence of friends and family members who use and offer drugs. The closest study that examines different outcomes of drug offer situations was conducted by McIntosh and colleagues (2003). McIntosh et al.'s (2003) study is different from others as it looks at three different offer scenarios: 1) not having been offered but how one would react if ever offered, 2) having been offered but did not accept, and 3) having been offered and accepting the offer. In addition, this study looked at the influence close friends or best friends might play in the decision to refuse or accept offers. The findings in this study indicated that in general, "the ease with which an offer could be declined depended mainly upon two things: who was making the offer and the context in which it was being made" (McIntosh et al., 2003, p. 979). This study reported some interesting differences between the three groups of children.

According to the authors, students who had not received any drug offers in the past believed that dismissal of offers would not be difficult. However, this group also supposed that the decision on whether to accept or refuse an offer would also depend on who is making the offer. For example, they perceived an offer event with a close friend as difficult to handle as rejection would damage their relationship. The group that had actually been offered drugs in the past revealed that it is difficult to resist offers when they come from someone with whom they had a close relationship with. This group noted that offers from close friends were in particular difficult to reject; the next most difficult category were friends, and finally offers from acquaintances and strangers were the easiest to manage. For the last group, students who had been offered and had accepted, the authors found that most participants identified a close/best friend, a close relative, or a sibling as the most common offerer. A very small percentage accepted an offer from an acquaintance or a stranger. Furthermore, the authors found that for the majority of their participants, "the issue of trust", that is usually present in close relationships and absent in distant relationships, played a significant role in the decision to accept or refuse an offer (McIntosh et al., 2003).

Our review of the literature indicated that there are very few studies that explore adolescents' decisions to accept drug offers and subsequently use them, or to reject offers based on the proximity to the person who offers. Even less common are studies that investigate the offer-specific situation of first time substance use. The few studies that we were able to find are conducted with American Indian and Appalachian youth. For example, Rayle, Kulis, Okamoto, Tann, LeCroy, Dustman, and Burke (2006) explored the processes of drug offers in a sample of young American Indian adolescents in order to discover any gender differences that may exist in actual and hypothetical offer

situations. The authors reported that their sample of 71 American Indian middle school students claimed that they had received offers from different sources including parents, siblings, cousins, other family members, and peers. According to the authors, peers were amongst the most identified sources of drug offers. The authors found that females especially were more likely to receive offers from peers and had more difficulty in declining offers.

Using the same sample of students, Kulis, Okamoto, Rayle, and Sen (2006) investigated the importance of situational and relational contexts specific to American Indian youth's substance use. The authors found that 66% of their participants revealed that they had been offered drugs by their friends. This study also found that students who were mostly exposed to drugs from their parents, were more likely to have used alcohol and cigarettes, those who had been exposed to drugs from their cousins were more likely to have used cannabis, and those who had been exposed to drugs from friends, were more likely to use harder drugs (Kulis et al., 2006, p. 36). Similar to previous studies, the authors concluded that the decision whether or not to use drugs is socially influenced through contact with significant others.

The most recent study that investigates the context of drug offers and drug use is conducted by Pettigrew, Miller-Day, Krieger, and Hecht (2012). In this study, 113 rural Appalachian youth were interviewed in order to understand where they encounter and who offers them substances (tobacco, alcohol, cannabis, and other drugs). The authors noted, that the most common context for drug offers in their sample was a party, either with friends or family members. The authors went on to conclude that the sources of drug offers were also diverse. Youth were offered drugs from family members, such as

parents, siblings, cousins or other relatives, as well as acquaintances and strangers. But most importantly, friends were identified as the most common source of drug offers.

The findings raise questions as to what, exactly, it is about peers and other close relationships that makes it hard to resist involvement in illegal and anti-social behaviour even when adolescents are disinclined to participate? Adolescence is a period of considerable rapid physical, emotional, and psychological change, during which individuals face many questions, problems, and consequently choices that they have to make. Both parental and peer influence are important during this period, however, the strength of influence from each source dominates different areas of life which depend on the type of situation or dilemma that adolescents are faced with (Wilks, 1986; Warr, 2002). In order to deal with these rapid changes, individuals often turn to their peers for companionship, emotional and social support, and acquisition of self-esteem (Warr, 2002; Kreager, 2004). Adolescents also use their peers as a point of reference in other more normative behaviours or daily life situations such as dating, dressing, hobbies, and social events (Wilks, 1986). It makes sense that peers are very influential in decision-making processes during adolescence. This period is characterized by a dramatic increase in time spent with peers as most engage in twice as many peer related activities than in family oriented ones during an average week (Barnes, Hoffman, Welte, Farrell, and Dintcheff, 2007).

During adolescence, close relationships with peers are formed where high levels of self-disclosure and mutual trust are observed (Youniss and Smollar, 1985). Therefore, more often than not, people will conform with the actions of their peers in order to solidify the relationship, gain status, or avoid damaging the relationship or the consequences that might result from noncompliance. In general, among adolescent groups there seems

to be support for substance use. For example Kreager et al. (2011) found that alcohol using groups tend to be more popular than other groups, therefore, involvement in substance-use behaviours tends to lead to social value and social status (Kreager et al., 2011). Even in cases when adolescents do not wish to participate in such behaviours, there is an expectation that the adolescent take part because of shared norms and activities. McIntosh et al. (2003) explained that when it comes to drug offer situations, it is difficult for adolescents to reject offers because of the expectation that group members take part in shared activities, and such expectation is stronger when close friends are involved. Hechter (1987) suggests that when people "invest" in their relationships, for example close relationships (i.e. best friends), there is a "tax" that is imposed upon each member (p. 10). Therefore, exiting the group and damaging the relationship is costly, often leading to social isolation and rejection, something that it is assumed that people prefer to circumvent. This notion of noncompliance with the referent group is also present in Miller's (1998) work where he explains that "the risk of disappointing ... carries a threat to the maintenance of the relationship and may violate the norms of the relationship. There is a threat in noncompliance and the costs are potentially high" (p. 363). Some of these costs include fear of loss of status, which often means loss of identity, prestige and respect within the peer group, or fear of ridicule and gossip (Warr, 2002). According to Warr (2002), "the mere risk of such costs will be sufficient to provoke participation in behaviour that is undeniably dangerous, illegal, and morally reprehensible" (p. 46).

2.3.1. Location of Offers

Another important factor that influences substance use and responses to drug offers is location. The literature reports that substance use is also a function of the

environmental context. Drug use and drug offers emerge in different settings including home, public spaces and school grounds (Moon et al., 1999; Reid, Lynskey, and Copeland, 2000; Pettigrew et al., 2012; Sussman, Stacey, Ames, and Freedman, 1998; Sussman, Ames, Dent, and Stacey, 2001; Goncy and Mrug, 2012). In their study of seventh grade students, Moon et al. (1999) found that African Americans were most likely to be offered drugs in the park, European Americans were most likely to be offered drugs at a friend's house or on a street, and Mexican Americans were most likely to be offered drugs at a party (Moon et al., 1999, p. 1068). The authors also noted that the most reported setting for drug use is a friend's home place. Pettigrew et al. (2012) found that youth were exposed to drug offers at different locations such as at their own home or other people's home (usually when parents are absent), and other outside locations while hanging out. Similarly, Reid et al. (2000) also examined location as a trigger to substance use and found that that the majority of participants (80.5%) reported a friend's house as the most common location of substance use.

The location of substance use is something that we also explore in the current thesis. It is expected that an adolescent's own house will be the most robust location that influences adolescent substance use initiation. In our view, an invitation to initiate cannabis in own home is more enticing than in other locations (i.e. a different house, school grounds, or public spaces) for different reasons. First and foremost, considering the relatively young age at first offer of our participants (between 13 and 14 years old), the majority of them most likely had fewer opportunities to be free from parents outside the house and socialize with their peers in other settings. Therefore, it is logical that young adolescents are more likely to initiate cannabis use in their own home where they spend most of their time (Pettigrew et al., 2012). Previous work has shown that this is

the case. Goncy and Mrug (2012) explained that younger adolescents are more likely to use various substances, including cannabis, in their own house and older adolescents (age 16 and onwards) are more likely to use substances in other locations while in the presence of peers during unstructured socializing. Second, in their own home young adolescents are more familiar with their environment and their parents' schedules, something that allows them a certain level of certainty to carry on with their activities undisturbed. Whereas in other locations, such as school grounds, adolescents are subjected to greater amounts of structure, constant adult supervision, and authoritative disciplining, therefore, they are less likely to use substances (Sussman et al., 1998; Goncy and Mrug, 2012). Finally, even when parents are present in the house, it is not for certain that they monitor or supervisor the behaviour of their children. Sussman et al. (1998) reported that parental monitoring or supervision of an adolescent's bedroom, is very limited, therefore, the luxury of privacy in one's own bedroom will often contribute to substance use.

2.4. Current Study

Previous work has established that when adolescents are presented with opportunities to use drugs (through explicit offers that are often accompanied with pressures, or simple encouragement) from proximal sources (i.e. peers and family members), they are more likely to accept and subsequently use drugs. Rarely examined, however, is the immediate context or the precise situation in which drugs are offered for the first time. This includes the nature of the relationship between the person offering and the adolescent receiving the offer, the location in which the offer occurs, and how these elements may affect the likelihood of accepting or rejecting a first offer. The

existing literature illustrates important limitations that require exploration. First, the majority of studies on drug offers examine resistance strategies on general episodes of drug use, rather than the first time an individual is offered drugs and the outcome based on the social and situational context surrounding the situation. Furthermore, these works explore drug offers as secondary purposes. Hence, it is unclear whether the decision to accept a drug offer the first time is affected by the relationship between the person making the offer and the person receiving it. The few studies that have examined the "first time" are exploratory or descriptive in nature and do not identify which factors are most important to consider. In addition, these works have been conducted with older samples and have examined "harder" drugs (i.e. cocaine, heroin) that are not very common among adolescents. We argue that in order to understand adolescent substance initiation and use, there is a need to focus first on commonly available substances like cannabis, and then move on to other types of "harder" drugs. Finally, some studies on the social and situational context of first time substance use exist (see Rayle et al., 2006; Kulis et al., 2006; Pettigrew et al., 2012) which provide us with important information; however, these studies are specific to cultural contexts and therefore cannot be generalized to other mainstream adolescent populations.

Using a sample of adolescents attending secondary schools in a large Canadian city, the current thesis provides important information related to the decision of accepting a cannabis offer for the first time as a function of social proximity between the person offering and the adolescent receiving the offer, as well as the location where offers are presented. We first look at the differences between four categories of adolescents: 1) cannabis users who have been offered and accepted the first time they were offered (immediate users); 2) cannabis users who have been offered but received more than

one offer before accepting to try (late users); 3) non-users who have been offered but never accepted; and 4) adolescents who have never been offered nor have used. Next, we focus on a sample of 171 cannabis users to examine the role of best friends and own house in the precise situation when drugs are offered for the first time. Our primary aim is to identify whether the difference between a rejected offer and an accepted offer can be attributed to a change in the type of person making the offer while also controlling for individual characteristics that have been shown to be important in explaining adolescent substance use.

3. Data and Methods

3.1. Instrument Development and Data Collection

In the spring of 2010, professor Martin Bouchard and I collaborated with the manager of youth services of the Burnaby School District, in British Columbia, Canada to design a self-report survey that examined the factors related to adolescent substance use initiation. After obtaining approval from the ethics board of the Simon Fraser University and the Burnaby School District Board (BSDB), the process of creating the questionnaire started in the summer of 2010. Following the completion of the questionnaire and a careful review of the questions included, an initial draft was sent out to the BSDB and the manager of youth services for review. Meanwhile, the questionnaire was distributed to a few faculty members at the School of Criminology at Simon Fraser University, and a pre-test with three adolescents was conducted to assess clarity and observe any possible problems that may have not been foreseen by the researchers while designing the instrument. All the feedback received from the different parties was then taken into consideration and consolidated into the final version of the questionnaire.

The final version of the questionnaire focused mainly on two types of substances: cannabis and prescription pills. The first part of the survey started with standard socio-demographic information (sex, age, SES, ethnicity) and frequency of use (past month and past year) questions. The second part included several enquiries about the specific context in which drug offers occur. For example, participants were asked questions such

as: *Have you ever been offered cannabis; How many offers did you receive before accepting to try the substance; How old were you when you were first offered; How old were you when you first accepted an offer; The person who first offered was;* and *Where were you when you received the first offer.* Following this, participants were asked specifically about the factors that may be important in influencing their decision whether or not to accept an offer. Some examples include: *Did you accept cannabis on first offer; When you first accepted an offer, the person who made the offer was; Where were you when you tried the substance for the first time; The person who instructed me how to use was;* and *The most important reason for trying the first time was.* The last part of the survey briefly asked about other substances such as tobacco, alcohol, ecstasy, hallucinogens, crystal meth, magic mushrooms, inhalants, and cocaine, as well as questions related to delinquency involvement and individual characteristics such as low self-control.

The BSDB determined that the survey be delivered to students enrolled in their Planning 10 course that addresses a range of curriculum inclusing careers, financial planning, health, as well as issues related to substance use. The age range for students enrolled in these classes varies between 15 and 18. For our purposes, this is an appropriate age range to study as it represents the period of greatest risk of exposure to and onset of substance use (van Etten et al., 1999; Brook, Kessler, and Cohen, 1999; Wagner and Anthony, 2002; Ellickson et al., 2004; Behrendt, Wittchen, Hofler, Lieb, and Beesdo, 2009). All the facilitators of Planning 10 classes within the eight Burnaby School District secondary schools were invited to participate in the study. They were sent a copy of the questionnaire along with letters of information and passive consent forms to be forwarded to parents of the students in advance in order to allow them sufficient time to

review the documents. The letter of information explained that participation was completely voluntary, that the survey was anonymous and confidential, and that the data collected would be safely stored and no one except the researchers would have access to them. The passive consent form required parents to sign and return the form if they refused to allow their child to participate in the survey. Parents who did not return any forms were assumed to have granted permission. This method of obtaining consent was selected as it is more efficient than the procedure of active consent where parents or guardians are required to show their permission in writing (Hass-Bieber and Leavy, 2011). Research has shown that active consent is a complex process that is time consuming and expensive to implement and often leads to low response rates and low prevalence estimates of specific groups (Ellickson and Hawes-Dawson, 1989, p. 8). Unless rigorous efforts are made to ensure adequate representation, research that utilizes active consent procedures risks obtaining data that are limited in validity and generalizability. Passive consent typically results in higher response rates and also potentially yields a non-biased sample for school-based population surveys. This method is commonly used by major contemporary adolescent surveys such as the McCreary Adolescent Health Survey in Canada, and Monitoring the Future and The National Longitudinal Study of Adolescent Health (Add Health) in the United States.

Six out of eight schools within the Burnaby School District agreed to participate in the survey, bringing the total number of classrooms to be surveyed to 34, and a total recruitment rate of 831 students. The data collection stage commenced in March of 2011 during which the principal investigator and at least one trained research assistant went into classrooms to provide verbal instructions, administer the questionnaire, and assist with any questions. Teachers were asked to leave the classroom in order to emphasize

confidentiality. Doing so prevented them from seeing the students' responses, and also allowed students to feel more comfortable during the completion of the survey. Before starting the survey, students were informed verbally that anything that they reported was completely confidential, that their participation was voluntary, and that they could stop taking the survey at any time. They were then asked to sign an informed consent document that outlined the objectives of the study, the purpose of their involvement, as well as information on how to contact the principal investigator. The questionnaire administered contained 70 multiple choice and fill-in-the-blanks questions and took about 40 minutes to complete. After the survey, as per BSDB's requirements, an education session on drugs and alcohol was delivered by the district's prevention worker during which useful information on the physical and emotional ramifications of substance use was presented. Such sessions were delivered to 24 classrooms participating in the survey and could not be accommodated for the remaining 10 because in some schools several classes were surveyed simultaneously and could not be combined in order to receive the session at the same time.

The number of participants in our survey is 831; however, 2 questionnaires with multiple missing information were dropped before the data was entered bringing the total number to 829. In the current thesis, an additional ten cases were excluded from the dataset because they either had missing information on sex or on the main independent variables. This brought the final number of respondents to 819. Our sample is comprised of four categories of adolescents: 1) cannabis users who have been offered cannabis and accepted the first time they were offered (immediate users; n = 43); 2) cannabis users who have been offered but received more than one offer before accepting to try (late users; n = 128); 3) adolescents who have been offered but choose to not to use (n

= 157); and 4) adolescents who have never been offered cannabis nor have used it in the past (n = 482).

Since the primary aim of this thesis is to explore the context of first time adolescent cannabis use, and the majority of the analyses focus specifically on the 171 (20.8% of full sample) adolescents who have been offered and have used cannabis in the past. This percentage of cannabis users is more than double than the national average of 15 years and older that was reported to be 9.1% in 2010 (CADUMS, 2011; Health Canada, 2013). From our sample of users 15.8% (27 individuals) have used cannabis only once in the past and the majority (84.2%; 144 individuals) have used it more than once.

3.2. Measures

3.2.1. Dependent Variable

The dependent variable in the multivariate analyses asked cannabis users who have been offered in the past to reveal whether they accepted a cannabis offer the first time it occurred. This measure is retained in its original binary coding (1 = yes and 0 = no) response categories. A total of 43 (25.1%) users reported that they accepted cannabis the first time they were offered (Table 1).

3.2.2. Independent Variables

The variables used to measure the situational context of cannabis use include 1) social proximity of the offerer, and 2) proximity of the location where the offer occurs. Social proximity is operationalized from a question that asks respondents to specify the

nature of the relationship with the person who made the offer when they first accepted to try cannabis. The original response categories for this item were 1) a best friend; 2) a male friend; 3) a female friend; 4) a parent; 5) a sibling or relative; 6) an acquaintance; and 7) a stranger. The intent was to focus on the most proximate source during adolescence in order to discover how closeness between two individuals may play a role in the decision on whether or not to accept a first offer. In line with the assumptions that guided our study, the original variable was recoded into 1 = best friend (as the most proximate source), 2 = family member (parent and sibling or relative), 3 = any friend (male friend and female friend), and 4 = acquaintance/stranger (as the least proximate source). Because the current literature does not provide a clear distinction between family members and best friends as the most proximate source when it comes to drug initiation, we decided to split this item into multiple dummy variables with best friend as the reference category. This allows comparison of best friends and family members directly, along with a comparison of best friends to other sources. In our sample of cannabis users, an overwhelming 57.3% of adolescents were first offered by a friend, while 21.6% were first offered by a best friend, and the remaining participants were offered by an acquaintance/stranger (14.6%) or a family member (6.4%) (Table 1).

Our second contextual variable is measured by a question that asked individuals to indicate the location in which they received their first cannabis offer. The original response categories for this item were 1) in my own house (not a party context); 2) in a house other than own (party context); 3) at a friend's house (not a party context); 4) on school grounds; 5) in the park or outside in the street; 6) at the mall or other public space; and 7) in a car. Whereas "social proximity" was our focus above, here the interest was in "proximity to home". We want to examine if adolescents offered in their own

house may be more persuaded to accept an offer than when the proposition occurs in a different setting. To simplify categories based on the above, and ensure adequate representation in each category, the original variable was recoded into 1 = own house; 2 = other than their own house (in a house and at a friend's house); 3 = on school grounds; and 4 = public space (park or outside, at the mall or other public space, and in a car). A small proportion of participants, specifically only 6.4% indicated having been offered in their own house the first time. A larger proportion of cannabis users indicated that they were first offered in a public space (40.4%) and at a different house (35.7%), and the remaining indicated that they had been offered on school grounds (17.5%).

3.2.3. Control Variables

Control variables used in previous research are also included in this study. Gender, ethnicity and socioeconomic status (SES) have been reported as important correlates in adolescent delinquency and substance use research (Bahr et al., 2005). In addition, we include age at first cannabis offer as a control variable in our analyses. Gender and age at first offer were retained in their original coding. The sample of cannabis users is slightly skewed towards males (59.1%). The current age of respondents ranges between 14 and 19 years, and the average is 15.5 years (SD= 0.79). The original categories for ethnicity 1) White/Caucasian; 2) Black; 3) Latino; 4) Asian; 5) Aboriginal; and 6) Other were recoded into 1 = White (reference category); 2 = Asian; and 3 = Other due to very low frequencies in most categories and also to reflect local demographics. In our full sample, 27.2% of adolescents are of White background, 48.6% are of Asian background, and 24.2% are of Other backgrounds (Table 1). In our sample of cannabis users, half are White (50.3%), and the remainder of the sample consists of Asian (18.1%) and Other (31.6%) ethnic backgrounds. SES was originally

measured by two items that asked participants whether 1) their family owns or rents their residence (rents apartment = 0; rents house = 1; owns apartment = 2; owns house = 3); and 2) if their family owns a vacation house/cabin (0 = no and 1 = yes). Because there were two different measures of SES and the scales among these measures varied, these two questions were standardized and the *z* scores were summed in order to achieve a single score for SES. Higher values indicate higher SES.

Recall that the current thesis is interested in exploring whether social proximity is a strong predictor of cannabis acceptance even when individual characteristics are accounted for. Controlling for variations in low self-control in this sample is thus important. There are two different approaches to the examination of low self-control: behavioral measures and attitudinal measures. While behavioral measures are difficult to obtain, a large body of research has chosen to collect and examine attitudinal measures. The most frequently employed attitudinal instrument is Grasmick et al.'s (1993) scale of self-control. Nonetheless, other similar measures such as the ones that Add Health uses, along with measures derived from parents' accounts on their children's behaviours (see for example, Matsueda, Kreager, and Huizinga, 2006) have proven to yield similar results. As a result, the measure of self-control "is not contingent on the use of the Grasmick et al. scale or any other individual measure" (Beaver, Wright, DeLisi, Vaughn, 2008, p. 10) as has been found appropriate in past research.

Our measure of low self-control is comprised of seven items, the first four of which ask students to report whether they strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree with the following statements: 1) when you have a problem to solve, one of the first things you do is get as many facts about the problem at hand; 2) when you are attempting to find a solution to a problem, you usually try to

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think of as many different ways to approach the problem as possible; 3) when making decisions, you generally use a systematic method for judging and comparing different choices; 4) after carrying out a solution to a problem, you usually try to analyze what went right and what went wrong. The next two measures ask respondents to identify how often they: "have had trouble paying attention in school in the past year" and "how often have you had trouble getting your homework done in the past year?" Original response categories for these questions are: a) never; b) just a few times; c) about once a week; d) almost every day; and e) every day. And the last question: "have you had trouble keeping your mind on what you were doing during the past year?" has options a) "never or rarely; b) sometimes; c) a lot of the time; d) most/all of the time as response categories. The seven items of low self-control are adopted from the Add Health survey. These measures have been frequently used in past research and have been established as good representations of three sub-components of low self-control: impulsivity, preference for simple tasks, and preference for physical activities (Perrone, Sullivan, Pratt, and Margaryan, 2004; Vazsonyi, Cleveland, and Wiebe, 2006; Beaver et al., 2008; and McGloin and Shermer, 2009). This thesis uses McGloin and Shermer's (2009) and Gallupe and Bouchard's (2013) method of combined low self-control index for measuring low self-control among participants. The z scores of the seven items were summed together and higher scores identify lower self-control. The Cronbach's alpha of 0.72 obtained from the summation of the standardized scores provides further evidence that there is acceptable internal consistency and that the items are measuring the same underlying construct of low self-control.

3.2.4.   Other Variable of Interest

In this thesis we are also interested in exploring the level of delinquency involvement of adolescents who have been exposed to cannabis offers in the past. We are aware that the temporal order for delinquency involvement and exposure to cannabis offers and initiation could be reversed for many of the respondents. Thus, our aim is not to include delinquency as a contributor to initiation, but rather to explore the nature of lifestyle of these adolescents. More specifically, we want to discover whether or not the sample of users is simply more delinquent than the sample of non-users. Delinquency involvement was originally measured by the following behaviours: 1) property damage (includes any damage done to items such as cars, homes, and schools, including vandalism, graffiti, and arson); 2) money oriented property crime (includes breaking and entering, burglary, theft, and/or fraud); 3) violent behaviour (defined as any verbal or nonverbal action that has caused another person bodily harm, or has left another person feeling harassed, threatened, or intimidated); 4) involvement in the cannabis industry (includes any role that one can occupy in cultivation (i.e. growing, tending to plants, surveillance, and harvesting); and 5) drug dealing activities (includes selling or distributing drugs to family, friends, or strangers for the purposes of monetary gain). Students were asked to report how often they had been involved in the behaviours in the past 12 months. Original response categories for the first four measures included option a) where students could write down the exact number of times, option b) I have participated, but not in the past 12 months, and option c) I have never participated or been involved. Response categories for the drug dealing measure included: a) once, b) occasionally, c) on a regular basis, d) I have been involved but not in the past 12 months, and e) I have never been involved. Finally, the response categories for involvement in the cannabis cultivation industry were: a) once, b) occasionally in one

site, c) on a regular basis in one site, d) occasionally in multiple sites, e) on a regular basis in multiple sites, f) I have participated but not in the past 12 months, and g) I have never participated. These behaviours were recoded into 0 = not participating and 1 = participating and were then summed together in order to obtain a scale for delinquency (Cronbach's α = 0.627). Delinquency scales have been widely used by researchers seeking to measure adolescent delinquency (Haynie, 2001; Kreager, 2004; Bouchard and Spindler, 2010; Kreager et al., 2011). Fifty two percent of our full sample (426/819) and over 80% of cannabis users (137/171) have been involved in one or more delinquent acts.

Table 1:   Descriptive Information

	Full Sample (N = 819)	All Offered (N = 328)	Offered but did not Accept (N = 157)	Cannabis Users (N = 171)	Never Offered, Never Used (N = 482)
	%	%	%	%	%
Sex					
Male	53.4 (437)	61.3 (201)	63.7 (100)	59.1 (101)	47.3 (228)
Female	46.6 (382)	38.7 (127)	36.3 (57)	40.9 (70)	52.7 (254)
Current Age (mean)	15.50 (SD 0.79)	15.38 (SD 0.62)	15.34 (SD 0.62)	15.42 (SD 0.63)	15.56 (SD 0.88)
Age at First Offer (mean)	--	13.52 (SD 1.39)	13.77 (SD 1.12)	13.29 (SD 1.57)	--
SES (mean)	0.00 (SD 1.49)	0.16 (SD 1.59)	0.00 (SD 1.51)	0.29 (SD 1.65)	-0.09 (SD 1.40)
Ethnicity					
White	27.2 (223)	41.8 (137)	32.5 (51)	50.3 (86)	17.4 (84)
Asian	48.6 (398)	23.8 (78)	29.9 (47)	18.1 (31)	66.0 (80)
Other	24.2 (198)	34.5 (113)	37.6 (47)	31.6 (54)	16.6 (80)
Delinquency (mean)	0.99 (SD 1.21)	1.54 (SD 1.35)	1.12 (SD 1.06)	1.92 (SD 1.46)	0.61 (SD 0.94)
Low Self-Control (mean)	0.00 (SD 4.11)	1.32 (SD 4.48)	0.96 (SD 4.35)	1.66 (SD 4.59)	-0.88 (SD 3.58)
Person Who Offered First					
Best Friend	--	15.5 (51)	8.9 (14)	21.6 (37)	--
Family Member	--	8.2 (27)	10.2 (16)	6.4 (11)	--
Friend	--	53.0 (174)	48.4 (76)	57.3 (98)	--
Acquaintance/ Stranger	--	23.2 (76)	32.5 (51)	14.6 (25)	--
Place Where Offered First					
Own House	--	4.9 (16)	3.2 (5)	6.4 (11)	--
House	--	27.1 (89)	17.8 (28)	35.7 (61)	--
School Grounds	--	26.5 (87)	36.3 (57)	17.4 (30)	--
Public Space	--	41.5 (136)	42.7 (67)	40.4 (69)	--

3.3. Analytical Strategy

To start the analyses, the association between the variables was first examined .

Most of the variables used are at least moderately associated with each other, but none

to the extent of creating the possibility of multicollinearity (see correlation matrix in Appendix). After this important consideration, we conducted bivariate analyses to examine any differences between immediate users, late users, adolescents who have been offered but never accepted to use (offered but no use), and adolescents who were never offered and never used (no offer no use). Chi-square tests measured whether there are any significant differences between our categorical dependent variable and the categorical independent variables (sex, ethnicity, social proximity, and proximity of location); whereas t-tests and analysis of variance (ANOVA) was used to examine differences between the different groups and our continuous variables (age at first offer, SES, delinquency involvement, and low self-control).

Next, we used multivariate analyses and employed sequential logistic regression models to test the relationship between the dependent variable (did you accept cannabis on first offer) and the proximity measures while controlling for demographic effects and individual characteristics. Logistic regression analyses are appropriate when we want to predict a binary outcome, and want to obtain knowledge about the relationship among the variables, and the strength of each predictor in the model. Logistic regression techniques resolve the problems associated with dichotomous dependent data and avoid the stringent assumptions of other regression methods. For example, logistic regression does not require that the dependent variable be normally distributed (Norusis, 2012), something that is very rare with adolescent delinquency data. The first model of the logistic regression analyses examined the associations between the control variables and the dependent variable. In the second model we entered our social proximity measure in order to determine whether a close source is more likely to influence an adolescent's decision to accept a first offer. In the third model we removed social

proximity and added proximity of location in order to examine whether being in a familiar setting influences the decision to accept. Finally, the last model we included both proximity variables together, as well as the control variables that are present in all models. In the final stages of the analyses, the two independent variables were examined more closely, with a specific focus on the best friend category for social proximity and own house category for proximity of location. Using chi-square tests and one way ANOVAs, we assessed for differences related to these two contextual/situational variables. All analyses in this study were conducted in SPSS, version 19.0.

4.   Results

The following chapter provides the results obtained from three sets of analyses using all variables included in the study and different sub-samples of participants. We start the analyses with a comparison of adolescents who have been offered cannabis in the past. This sample includes immediate users, late users, and adolescents who have been offered but did not accept any offers. Through comparison of these groups it is possible to explore the role that contextual/situational (social proximity and proximity of location) variables play in the decision to initiate substances immediately, later on, or refuse initiation based on the person who offers and where the adolescent is located when they are first offered. We conclude with a comparison of adolescents who have been offered in the past and those who have not.

The second set of analyses examine a sub-sample of adolescent cannabis users who have been offered cannabis in the past using sequential logistic regression models to determine the strength of our contextual/situational variables as predictors on the decision to accept cannabis the very first time one is presented with an offer. The primary aim of this section is to analyze the influence of best friends as the most proximal source, and the role of own house as the most proximal location in the decision to accept a cannabis without any delay or wait a certain amount of time before accepting another offer.

Finally, the last set of analyses look closely at the different categories of the two main independent variables. For these analyses we include our sub-sample of

adolescents who have been offered cannabis regardless of whether they have initiated use or not. The purpose of these analyses is to identify any differences in sex, age at first offer, ethnicity, SES, delinquency, and low self-control between those who are first offered in their own house and others who are offered in other locations, and those who are first offered by a best friend and those who are first offered from less proximate sources.

4.1. Differences between Categories

4.1.1. *Immediate Users versus Late Users versus Offered but Never Used*

The first comparison looks at all students that have been offered cannabis in the past, regardless of whether they chose to accept an offer right away (immediate users), wait a certain amount of time before accepting (late users), or resisted offers altogether (offered but never used). As previously noted, the main purpose of comparing these groups is to discover how contextual or situational elements influence the decision to initiate or decline use based on the person who offers and where the adolescent is located when they are first offered. In other words, we are interested in understanding why it is that some adolescents choose to accept an offer to use cannabis, and others do not. Our comparison starts with the basic socio-demographic characteristics of the three different groups, then differences in low self-control and delinquency involvement are explored, and finally, the context-relevant measures (social proximity and proximity of location) are examined in detail. Our results show that for socio-demographic characteristics, only age at first offer and ethnicity are significant. Cannabis users tend to be younger in age when they are first offered (IU ~13.3 and LU ~13.2) than non-users

(~13.7). In addition, we notice that there are more White adolescents in the immediate users category and more Asians in the offered but never use category (Table 2). Despite these differences among the three groups, we believe that in general, we cannot draw any conclusions on whether or not cannabis offers will be accepted right away, later on, or always rejected based solely on adolescents' socio-demographic information because no differences are observed in the other socio-demographic characteristics. This finding is in line with our assumption that the immediate context is crucial to explore in understanding acceptance or refusals of drug offers. Delinquency and low self-control appear to be both significant variables. For delinquency involvement, immediate users are the group with the highest mean frequency score of involvement in violent behaviour, money oriented property crime, damage to property, drug dealing, and/or the cannabis cultivation industry, followed by late users, and finally non-users who have been offered. Table 2 illustrates that the mean score for delinquency involvement for immediate users is 2.40, whereas the mean score for late users is 1.76 and for non-users is 1.12, that is the lowest of all groups. Similar results are found for low self-control. Adolescents who accept cannabis on first offer score highest on low self-control (2.94), followed by late users (1.23), and non-users (0.96). As expected, adolescents who tend to have more impulsive or risk-taking personalities are also more likely to try a new substance the first chance that they have, while those who are able to control their impulses are more likely to say no and refuse to accept an offer.

Next we focus specifically on the immediate context of drug offers expecting that adolescents who are offered by a close source and those who are offered in their own house will be more likely to accept on first offer. Both our measures of context appear to be significant and important to consider. Therefore, depending on who advances the

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offer and where the offer is made influences one's decision to say "yes" or "no" to a cannabis offer the very first time. As expected, for the proximity of source measure, which looks at the relationship between an offerer and the adolescent who receives the offer, it is apparent that for those who are first offered by a best friend a higher proportion are immediate users (34.9%), and less are late users (17.2%) or non-users (8.9%). The same result is found for the family member category where there is a higher proportion of immediate users (11.6%) than late users (4.7%) or offered but never used (10.2%). The same cannot be concluded for those who were first introduced by a regular friend or an acquaintance/stranger. The results show that there is a higher proportion of adolescents who declined their first offer but chose to accept later (61.2%) or rejected all offers and never used (48.4%), than chose to accept right away (44.2%). In addition, a higher proportion of adolescents who rejected and never used (32.5%), and rejected first offer but accepted later (16.4%) is found among those who were first offered by a an acquaintance or stranger. According to these results, it is safe to conclude that when adolescents are first exposed to cannabis through the most proximate sources (i.e. best friend or a family member), they are more likely to accept the drug immediately rather than reject it. When they are offered by less proximate but not completely distant (i.e. any friend), they will still accept an offer but at a later time. Finally, those who are offered by the least proximate sources (i.e. acquaintances or strangers), they are more likely to always refuse offers.

When proximity of location is considered, it becomes evident that when the offer is delivered at one's own home, there are much higher percentage of adolescents belonging to the immediate user category than the late user or offered but never used categories (16.3% vs. 3.1% vs. 3.2%). The results for offers occurring in a public space

are less clear. Adolescents who are offered outside their own house and in a less familiar setting, are similarly likely to accept right away (44.2%) but also to reject offers and never use (42.7%). The majority of adolescents who are offered in a different house are also more likely to be users, either immediate users (25.6%) or late users (39.1%), than non-users (17.8%). Finally, those who were first offered on school grounds are more likely to be non-users (36.3%) rather than late users (18.8%) or immediate users (14%). These results validate our initial suspicion that being in a familiar place facilitates the decision to accept cannabis and make this decision without any delay.

Table 2: Bivariate Results for Immediate Users versus Late Users versus Offered but Never Used (N = 328)

	Immediate Users (%)	Late Users (%)	Offered but Never Used (%)	X^2/ F-value
Sex				0.99
Male	55.8	60.2	63.7	
Female	44.2	39.5	36.3	
Age at first offer[a] (mean)	13.3	13.2	13.7	5.00**
SES[a] (mean)	0.26	0.30	0.96	1.34
Ethnicity				12.45*
White	53.5	49.2	32.5	
Asian	14.0	19.5	29.9	
Other	32.6	31.3	37.6	
Delinquency[a] (mean)	2.40	1.76	1.12	20.01***
Low Self-Control[a] (mean)	2.94	1.23	0.96	3.39*
Person Who First Offered				33.55***
Best Friend	34.9	17.2	8.9	
Family Member	11.6	4.7	10.2	
Friend	44.2	61.7	48.4	
Acquaintance/Stranger	9.3	16.4	32.5	
Place Where First Offered				36.39***
Own House	16.3	3.1	3.2	
House	25.6	39.1	17.8	
School Grounds	14.0	18.8	36.3	
Public Space	44.2	39.1	42.7	

*** p ≤.001   ** p ≤ .01   *p ≤ .05
  a. F-value reported

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4.1.2. *Offered but Never Used versus Never Offered and Never Used*

Another comparison that we believe is important to consider is between non-users who have been offered cannabis and non-users who have never been offered. A consistent finding that emerges from the literature is that adolescents who are involved in delinquency and those who have risk-taking personalities are more likely to be exposed to situations conducive to substance use. Following this line of thought, we decided to examine any possible differences between adolescents who found themselves in a situation where the opportunity for an offer arose, and those who did not. Table 3 shows that five out of six variables are statistically significant. All socio-demographic variables, with the exception of SES, are significant, and so is delinquency involvement and low self-control. First, it appears that males are more likely than females to be faced with an opportunity to use cannabis. In addition, White students and those from Other ethnic backgrounds are more likely to find themselves in a situation where an opportunity for an offer occurs than adolescents from Asian backgrounds. As is illustrated in table 3, an overwhelming majority of Asians have never been offered and never used (66%), rather than have been offered (~30%). Differences in age between these two groups are trivial; those who have been offered are slightly younger. Another notable difference is for delinquency involvement. Our findings corroborate previous work that states adolescents who are involved in delinquency behaviour are presented with opportunities to use different substances. In our sample, adolescents who have been offered cannabis report higher mean scores of delinquent behaviour (1.12) than those who have never been offered (0.61). Finally, non-users who have been offered have higher levels of low self-control (0.96) than those who have not (-0.88).

Table 3: *Bivariate Results for Offered but Never Used versus Never Offered and Never Used (N = 639)*

	Offered but Never Used	Never Offered and Never Used	X^2/t-test
Sex			12.736***
Male	63.7	47.3	
Female	36.3	52.7	
Current Age[a] (mean)	15.3	15.6	-3.81*
SES[a] (mean)	0.96	-0.09	0.77
Ethnicity			63.60***
White	32.5	17.4	
Asian	29.9	66.0	
Other	37.6	16.6	
Delinquency[a] (mean)	1.12	0.61	5.41***
Low Self-Control[a] (mean)	0.96	-0.88	4.807***

*** p ≤ .001   ** p ≤ .01   *p ≤ .05
a. t-value reported

4.2. Multivariate Analyses Predicting Acceptance of Cannabis on First Offer

The results from our first set of analyses indicated that the most robust indicators are social proximity and proximity of location. In general, there were statistically significant differences between the different categories of these two variables. Taking this into consideration, we decided to further examine the strength of these two predictors using sequential logistic regression models for our offered and used cannabis sample of 171 adolescents. Here we focus specifically on the likelihood of accepting a cannabis offer the very first time based on who makes the offer and where the offer occurs. By using sequential logistic regression models we are able to determine the strength of association between our contextual/situational predictors and our dependent variable while controlling for socio-demographic effects and individual characteristics. In comparison to the bivariate analyses, the multivariate analyses provide a slightly

different but more complete story of what is going on with the data. For ease of interpretation, the odds ratios (OR) for each variable and its categories are presented.

Model 1, *Controls*, in Table 4 examines the relationships between the dependent variable and the demographic variables (sex, age at first offer, ethnicity, SES) as well as low self-control. The multivariate results in this model are mostly consistent with the bivariate results. First, we notice that sex, age at first offer, ethnicity, and SES are not associated with accepting cannabis on first offer. In terms of statistically significant predictors, there is evidence to believe that adolescents who have higher levels of low self-control also have higher odds of accepting to try cannabis the first time they have a chance. Results indicate that for a one unit increase in levels of low self-control, the odds of accepting cannabis increase by 1.083. In summary, the results from our first model indicate that only low self-control increases the odds of accepting cannabis on first offer, whereas, being male or female, being younger or older, coming from different ethnic backgrounds, or being of lower or higher socio-economic status do not.

The predictive power of the first contextual variable (person who first offered cannabis) while controlling for basic socio-demographic characteristics and low self-control is examined in model 2, *Proximity of Source*. Table 4 reveals a well fitted model (χ^2 = 15.86) as well as similar significant effects to those found in the first model. For example, none of the control variables, with the exception of low self-control, prove significant. The chances of accepting cannabis right away increase for those who display higher levels of low self-control when compared to those who display lower levels of low self-control (OR = 1.098).

What is essential for the purposes of the current work is how well the proximity to source measure predicts the dependent variable. In model 2 we include this measure in order to compare the odds of accepting cannabis of those who were first offered by a best friend to those who were first offered by other sources such as family, any regular friend, or an acquaintance/stranger. In doing so, we are able to assess whether different sources exert different influences on adolescent decision making regarding the onset of cannabis use. According to the results, when compared to those who were first offered by a best friend, adolescents who were first offered by any other friend are less likely to accept the offer (OR = 0.294).The same can be concluded for the acquaintance/stranger category. Model 2 reveals that the probability of accepting a cannabis offer from an acquaintance or a stranger is lower than the probability of accepting an offer from a best friend (OR = 0.256). The odds ratios for the friend and acquaintance/stranger categories suggest that the chances of an offer being accepted decline considerably when we move away from a closer to a further source. In model 2 it is also possible to directly compare family members to best friends and determine whether one or the other have stronger influences on adolescent cannabis use initiation. However, we see that the family member category is not statistically significant. This finding suggests that there are no differences in influence between best friends and family members for our sample of adolescents.

Entry of the proximate measure resulted in a significant and strong predictor for our main category best friend. Therefore it can be concluded that proximity to a source does matter and it is important to consider when we examine one's decision to accept or refuse a first cannabis offer. Further support for this argument is evident in the increase of the explained variance as well as the chi-square coefficient in model 2. The pseudo R^2

increases from 3% in model 1 to 8% in model 2. The model chi-square also improves considerably from 5.12 in model 1 to 15.86 in model 2.

Table 4: *Sequential Logistic Regression Predicting Acceptance of Cannabis on First Offer (N = 171)*

	Model 1 Controls	Model 2 Proximity of Source	Model 3 Proximity of Location	Full Model
Sex	1.198	1.301	1.191	1.315
Age at first offer	1.054	1.052	1.092	1.060
SES	0.990	0.996	1.005	1.046
Ethnicity				
White (reference category)				
Asian	0.745	0.740	0.707	0.665
Other	0.936	0.907	1.00	1.005
Low Self-Control	1.083*	1.098*	1.082	1.092*
Person who First Offered				
Best Friend (reference category)	--		--	
Family Member	--	1.077	--	0.537
Friend	--	0.294**	--	0.267**
Acquaintance/Stranger	--	0.256*	--	0.164*
Place Where First Offered				
Own House (reference category)	--	--		
House	--	--	0.118**	0.098**
School Grounds	--	--	0.134*	0.167*
Public Space	--	--	0.194*	0.201*
Constant	0.14	0.31	0.48	1.86
Overall % Predicted	74.9	76.6	77.8	77.2
X^2 p	5.12	15.86	14.70	25.11
Cox and Snell pseudo R^2	0.03	0.08	0.08	0.13

*** $p \leq .001$ ** $p \leq .01$ * $p \leq .05$
Note 1: Reference categories: for ethnicity is "White", for proximity to source is "Best Friend; for proximity of location is "Own House".

In model 3, *Proximity of Location,* we are interested in a different contextual variable, the environmental setting where a first offer occurs. This model compares the odds of accepting cannabis when first offered at one's own house (reference category) versus the odds of accepting when offered in a different location such as on school

grounds, at a public space, or any house other than own. In order to evaluate the importance of the location only, in model 3 (Table 4) we removed the first contextual measure and entered proximity of location in addition to the variables included in model 1. The *Proximity of Location* model significantly improves with the addition of this measure. For example, the chi-square coefficient endures a considerable increase (χ^2 = 14.70) and the Cox and Snell pseudo R^2 also improves from 3% in model 1 to 8% in model 3. These results suggest that location matters when it comes to accepting a cannabis offer the very first time an adolescent is presented with an opportunity.

In terms of demographic characteristics of the sample, there is not a lot of change from model 1 to model 3. Once again it appears that sex, SES, age at first offer, and ethnicity are not statistically significant predictors. However, in this model we notice that low self-control loses its significance suggesting that individual characteristics are not important to consider when the location of the first offer is taken into account. Our reason for including the proximity of location measure is to assess whether the odds of accepting cannabis decrease when we move away from a student's own house to a setting that is less familiar to them. The results confirm that this is indeed the case. According to model 3, the odds of accepting to use cannabis are much lower when the offer occurs at a different house (OR = 0.118), on school grounds (OR = 0.134), or in a public space (OR = 0.194) than when the offer occurs at a student's own house. All these results are significant at either the 0.01 or 0.05 level. This means that an offer that comes in one's own house has a higher likelihood of acceptance than any other location. Therefore, we argue that it is important to consider exactly where the first offer takes place when examining the context of first time adolescent cannabis offers.

The last model, *Full Model*, in Table 4 takes into consideration all predictors at the same time and appears to be our best model so far with the greatest improvement in the Cox and Snell pseudo R^2 and X^2 coefficients. This full model mostly corroborates the findings of the previous models. We see that socio-demographic characteristics are not important, but low self-control is. Low self-control reappears as significant in the full model, indicating that for a one unit increase in the level of low self-control, the odds of accepting an offer right away are 1.092 times greater. .

The most compelling finding in the full model is that both situational variables are significant and make a difference in predicting a cannabis offer that is accepted and one that is not. The full model shows that even after controlling for several other important variables, the likelihood of accepting a cannabis offer from a proximate source is higher than accepting an offer from a more distant source. Taken together, the findings show that the odds of accepting an offer from a friend (OR = 0.267) or a stranger/acquaintance (OR = 0.164) are much lower as opposed to an offer from a best friend. Therefore, we suggest that the difference between a "best friend" and "a friend" is enough to lead many adolescents to accept cannabis without any delay. The same can be concluded for proximity of location. Model 4 reveals that even after various factors are controlled for, an offer that occurs in one's own home has a higher likelihood of acceptance than any other location. The distinction between "own house" and "any other house" (OR = 0.098), or "school grounds" (OR = 0.167), or "public space" (OR = 0.201) appears to be enough to influence the decision to accept or reject an offer.

4.3. Additional Analyses

The findings of the previous analyses suggest that the likelihood of a cannabis offer being accepted is much higher when the offer comes from close sources and is made in a familiar setting. Taking these results into consideration, we decided to focus specifically on the two contextual/situational predictors in order to obtain a more detailed understanding of any possible differences for all categories within these variables. In other words, it was necessary to explore what differences in sex, age, ethnicity, SES, delinquency, and low self-control exist between adolescents who are first offered in their own home and others who are offered in different locations, and those who are first offered by a best friend and others who are offered from other sources. These analyses focus on our sub-sample of adolescents that have been offered cannabis in the past, including immediate users, late users, and non-users[3]. The results are presented in Tables 5 and 6.

4.3.1. Social Proximity

We start the last set of analyses by looking at social proximity and its four categories: best friend; family member; friend; and acquaintance/stranger. In Table 5 we see that although some variations exist in most variables, these differences are not significant. Among males, more individuals are first offered by a family member (70.4%), an acquaintance/stranger (64.5%), or a best friend (62.7%). Fewer males are offered by a regular friend (58%). Among females, more are first offered by a friend (42%), and almost equal proportions are first offered by either a best friend (37.3%) or an acquaintance/stranger (35.5%). Fewer females are first offered by a family member

[3] We also ran similar analyses on a sample of users only. Overall the results were very similar.

(29.6%). Some differences are noted for age at first offer. Those first offered by best friends and friends were older at the initial offer (~13.5 and 13.7 respectively), and those offered by family members and acquaintances and strangers were younger (~13.3 and 13.0 respectively). In terms of ethnic background, more Whites belong to offered by best friend category (47.1%) and acquaintance/stranger (48.7%), than to the regular friend (39.7%) and family member category (25.9%). The opposite is found for Asians, where there are more adolescents offered by a family member (37%), than other sources. Among students of other ethnic backgrounds, slightly more are offered by friends (38.5%) and family members (37%).

Table 5 also reveals that differences in delinquency and low self-control across the four categories of social proximity are not significant. The only significant effect we find are for location of offer. In these bivariate analyses we see that the person who offers and the location where offered are not fully independent, but instead they interact[4]. For instance amongst adolescents that were offered in their own house, the majority were first offered by a family member (18.5%). Best friends, friends, and acquaintances/strangers have much lower proportions of offering within an adolescents own home (3.9%, 3.4%, 3.9% respectively). Among those offered in a different house, the majority are offered by a best friend (45.21%), followed by friends (30.5%), a family member (25.9%), and an acquaintance/stranger (7.9%). Among those offered on school grounds, more individuals are being offered by a family member (37%), followed by acquaintance/stranger (30.3%), then a friend (24.7%) and best friend (21.6%). Lastly, among those who are offered at a public space, more are offered by strangers or

[4] Interaction effects for person who offers and place where offered were also explored in the multivariate analyses; however, none of the interactions resulted as significant. This could be due to the possibility that there are small numbers present in each category.

acquaintances (87.9%) and friends (41.4%), than best friends (29.4%) or family members (18.5%).

Table 5: *Proximity of Source for all Offered (N = 328)*

	Best Friend (%)	Family Member (%)	Friend (%)	Acquaintance/ Stranger (%)	X^2/F-value[*]
Sex					2.08
Male	62.7	70.4	58.0	64.5	
Female	37.3	29.6	42.0	35.5	
Age at first offer[a] (mean)	13.5	13.3	13.7	13.0	3.87**
SES[a] (mean)	0.01	0.32	0.04	0.447	1.37
Ethnicity					7.93
White	47.1	25.9	39.7	48.7	
Asian	21.6	37.0	21.8	25.0	
Other	31.4	37.0	38.5	26.3	
Delinquency[a] (mean)	1.67	1.78	1.40	1.68	1.38
Low Self-Control[a] (mean)	1.31	1.41	1.28	1.41	0.02
Place Where First Offered					40.79***
Own House	3.9	18.5	3.4	3.9	
House	45.1	25.9	30.5	7.9	
School Grounds	21.6	37.0	24.7	30.3	
Public Space	29.4	18.5	41.4	57.9	

*** p ≤.001   ** p ≤ .01   *p ≤ .05
 a. F-value reported

4.3.2.   *Proximity of Location*

Next we look at the different categories of location: own house; house; school grounds; and public space. In these analyses, we notice that only sex and proximity of offer result as significant, and the remaining socio-demographic variables, as well as delinquency and low self-control do not (table 6). The results indicate that males are mostly offered on school grounds (66.7%) and at public spaces (66.2%), followed by own houses (56.3%) and lastly different houses (49.4%). Females, on the other hand,

are predominantly offered cannabis at a different house (50.6%) and own house (43.8%), followed by public space (33.8%) and school grounds (33.8%).

Table 6:   Proximity of Location for all Offered (N = 328)

	Own House (%)	House (%)	School Grounds (%)	Public Space (%)	X^2/ F-value[*]
Sex					7.87*
Male	56.3	49.4	66.7	66.2	
Female	43.8	50.6	33.3	33.8	
Age at first offer[a](mean)	13.1	13.4	13.6	13.5	0.740
SES[a] (mean)	0.26	0.33	0.25	-0.03	0.35
Ethnicity					5.49
White	50.0	48.3	32.2	42.6	
Asian	18.8	20.2	28.7	23.5	
Other	31.3	31.5	39.1	33.8	
Delinquency[a] (mean)	2.00	1.37	1.48	1.63	1.33
Low Self-Control[a] (mean)	2.69	0.64	1.00	1.82	1.92
Person Who First Offered					40.79***
Best Friend	12.5	25.8	12.6	11.0	
Family Member	31.3	7.9	11.5	3.7	
Friend	37.5	59.6	49.4	52.9	
Acquaintance/Stranger	18.8	6.7	26.4	32.4	

*** p ≤.001   ** p ≤ .01   *p ≤ .05
a. F-value reported

Among adolescents who were first offered by a best friend, more are found in a different house category (25.8%), followed by school grounds (12.6%) and own house (12.5%), then at a public space (11%). Among those who were offered by a friend, more are found in a different house (59.6%), public space (52.9%), and school grounds (49.4%) categories, and less are found within the "own house" category (37.5%). For adolescents who were offered by a family member, considerably more are found within the own house (31.3%) category then the remaining categories (different house: 7.9%; school grounds: 11.5%; and public space: 3.7%). Finally, for students who were first offered by an acquaintance or a stranger, the majority are offered either at a public

space (32.4%) or on school grounds (26.4%), less are offered by acquaintances/strangers at their own house (18.8%) or in a different house (6.7%).

5. Discussion and Conclusion

Despite the well established literature on the situational characteristics associated with adolescent drug use and the consequences and outcomes associated with such behaviour, little research has been directed towards understanding the immediate context of the earliest phases of involvement with substances - initiation of use. It is clear that adolescents often come into contact with substances and this exposure is likely to lead to actual use. In addition, it is known that there are different sourcing channels available to adolescents. Best friends, friends, and family members serve as 'offerers' of legal substances such as tobacco and alcohol, as well as illegal substances such as cannabis. Most of the previous work that looks at the context of drug offers examines general episodes of offers without considering the details of the very first time an adolescent is presented with an offer or an opportunity to use. Therefore, the majority of the available studies neglect to identify the most important factors that influence the transition from a first offer to actual use. These factors are important to consider as they would allow us to have a better knowledge of the mechanisms that put some adolescents at risk of cannabis onset, and also identify aspects that need to be considered by policy makers and prevention programs.

Consistent with previous work, this thesis showed that best friends, friends, and family members play an important role in drug offer situations (Miller, 1998; Moon et al, 1999; McIntosh et al., 2003; Rayle et al., 2006; Kulis et al., 2006; Trost et al., 2009; Pettigrew et al., 2012). More importantly, we found that the closer the relationship

between the adolescent receiving an offer and the person making the offer, the higher the likelihood that the offer will be accepted right away. This finding was supported in the bivariate analyses and reinforced in the multivariate analyses. Best friends, as the most proximal source, were the most likely category to receive a positive response when they offered drugs. A higher percentage of those who reported being offered by their best friend were categorized as immediate users because they had accepted cannabis on a first offer, rather than late users - adolescents who rejected a first offer and postponed use, or non users - adolescents who rejected all offers. These findings echo similar conclusions reached by McIntosh et al. (2003). In their study of adolescent cannabis use in Scotland, McIntosh et al. (2003) concluded that "the ease with which an offer could be declined depended mainly upon two things: who was making the offer and the context in which it was being made" (McIntosh et al., 2003, p. 979). Similarly, family members also appeared to be important influences on the decision to accept cannabis the first time one is offered. Our bivariate analyses showed that from all those offered by family members the majority had chosen to accept an offer the first time. Much like previous literature, we found that offers mostly came from friends, not family members, even if exposure at home has been shown to play a role in prevalence of use (Kulis et al., 2006). But the particularity of the current study is the examination of the likelihood of accepting that offer depending on the source. That first time is a significant event, and our results show that adolescents are more likely to accept when the person offering is significant for them as well.

In addition, our multivariate analyses revealed that when compared to those who were first offered by a best friend, adolescents who were first offered by any other friend or an acquaintance/stranger had lower odds of accepting cannabis on first offer.

However, when we directly compared family members to best friends we obtained a non-significant effect for this category. An explanation for this finding is that family members and best friends can be similarly close and influential sources to adolescents, a notion that has been supported in previous work (Bahr et al., 2005). Parents, siblings, cousins, and other family members might have just as strong of an impact on adolescent substance use initiation as close friends do. Our results also showed that among adolescent males that have been offered cannabis, in general, more were offered by a family member than other people; while among females, more were offered by a regular friend. As expected, adolescents who were first offered in their own house, were mostly offered from a family member, and those offered in a public space mostly received offers from acquaintances/strangers. An unexpected result, that needs further consideration, is that among those offered on school grounds, the largest category was offered by a family member. Our rationale for this is that siblings often frequent the same school, and as a result they might provide each-other with opportunities to use substances in a safe place (that is, outside of their parents' view).

This thesis also corroborates previous studies that have found that drug offers occur in various settings including somebody's own house, a different house, school grounds, and public spaces (Stenbecka, 1990; Moon et al., 1999; Reid et al., 2000; Pettigrew et al., 2012). Our results showed that for adolescents, the decision whether or not to accept a cannabis offer the first time is associated with a sense of familiarity of their environment meaning that when they are offered in their own house they have higher odds of accepting an offer than when the proposition occurs in a different setting. Conversely, those who were first offered in a different house were more likely to reject their first offer and postpone use, while those who were first offered on school grounds

were more likely to reject all offers. The literature on the location of offers is scarce, but our finding that an adolescent's own home increases the likelihood of accepting an offer is echoed by Reid et al.'s (2000) result that most cannabis users initiate use in their own home. Reid et al. (2000), like others, did not ask about rejected offers, so it is impossible to compare our findings further.

But is it really about "context", or accepting a cannabis offer is also about impulsivity, or having a risk-taking personality? Following Birkbeck and LaFree's (1993) and Wikstorm and colleagues' (2004; 2006; 2010) advice on including individual characteristics when studying crime and deviant behaviours, we included a measure of low self-control in our analyses to determine: 1) how it predicts accepting an offer the first time it is made, and 2) how contextual variables change when individual characteristics are taken into account. We found supportive results for the claim that there is an association between low self-control and substance use initiation. Adolescents who accepted to use cannabis on first offer displayed higher levels of low self-control than those who waited before accepting an offer, and those who never accepted an offer. Despite these results, the inclusion of low self-control in our multivariate analyses did not change the robustness of our main predictors. This allows us to conclude that the decision to accept cannabis on first offer might be more situational than individual in our sample of adolescent cannabis users.

Immediate users and late initiators were also more likely than non-users to display higher levels of delinquent behaviour. This finding is consistent with the literature that reports that adolescents who use substances are more likely to be involved in a range of problematic behaviours (Ellickson et al., 2004). In terms of socio-demographic characteristics we found no significant differences in sex between those who accepted

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on first offer, those who waited, and those who have never accepted. This is consistent with the literature that reports that there are no gender differences in the estimated probability of use once an opportunity to do so has emerged (Delva et al., 1999; Van Etten et al., 1999). We were also able to determine that adolescents from different ethnic backgrounds are offered in different locations, something that is consistent with Moon et al.'s (1999) study that examined this issue. The majority of White students were offered in their own house, whereas the majority of Asians and those from other ethnic backgrounds were mostly offered in a public space. Overall, there were not any significant effects in socio-demographic characteristics for adolescents who accepted on first offer, those who accepted later, and those who never accepted. The only significant effects we noticed were for those who have been offered and the ones who have not. In general, adolescents who found themselves in a situation where an opportunity for an offer emerged tend to be male, and tend to be of White or other ethnic background.

Our results showed that there are important differences between the four groups of adolescents included in this study (immediate users, late users, offered but never used, and never offered and never used). First, when focusing exclusively on cannabis users there are not only differences in the adolescent's past behaviour when they were younger, for example, both groups were first offered around the same age (13.3 years old), but the late users decided to accept after a seven month interval from first offer to first acceptance (around 14 years old). On average, late users received about seven to eight offers before deciding to initiate cannabis use. These groups also had different profiles at the data collection stage. Immediate users reported higher prevalence of cannabis use in the past month as well as in the past year than late users. Immediate users had an average of cannabis use in the past month of 11 times, whereas late users

had an average of 4.4 times (analyses not shown). In addition, a higher percentage of immediate users (16.3%) reported to have used cannabis more than seven times a week in the past year than late users (5.5%) (analyses not shown). Differences in past month and past year of cannabis use are statistically significant. Other notable differences between users include higher levels of impulsiveness and delinquency for immediate users.

Second, when users as a whole group to those who never accepted were compared, we notice that there are also some interesting and important differences worthy of discussion. Users are mostly offered in home settings by close individuals, whereas non-users are mostly offered by strangers in public and school settings. Furthermore, users are more impulsive and delinquent than non-users. Finally, we observed that adolescents who have been offered in the past are different from those who have never been exposed to any offers. In fact, it is safe to assume that those who have been offered but did not accept (yet) are more similar to users than to those who have never been offered. Therefore, it is important to explore the future fate of the "offered but no use" category - will these adolescents continue to refuse offers or will they surrender after they receive a certain number of offers, or when they find themselves in the appropriate context (perhaps when a best friend offers or when the offer occurs in a home setting).

In 2002, Mark Warr wrote: "Despite strong and persistent evidence of peer influence in the etiology of delinquency, investigators have as yet failed to identify the precise mechanism(s) by which peers 'transmit' or encourage delinquent behaviour among one another" (p. 44). He also advised that "investigators could pinpoint or even narrow the number of mechanisms by which peer influence operates" (Warr, 2002, p.

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44). In this thesis, a first step in answering Warr's (2002) call for a closer examination of how peers influence or "transmit" delinquency to one another has been made. The current work showed that the transition from a first time drug offer to first time cannabis use occurs as a result of the influence of person making the offer, as well as the location in which the offer is made. In other words, the nature of the relationship between the person offering and the adolescent receiving the offer, and the location in which the offer occurs, is important as it affects the likelihood of accepting or resisting a first drug offer. Using data from a recent survey that was designed specifically to examine the immediate context of drug-offer situations, we assessed variations in exposure to first offers and the decision to accept or refuse cannabis offers. We specifically looked at two elements present in the context of first time drug offers: 1) person who makes the offer (proximity of the offerer) and 2) where the adolescent is situated when they receive an offer (location in which the offer occurs). Both of these context-dependent measures emerged as the most robust indicators of cannabis acceptance on first offer even when controlling for other effects. Therefore, we argue that taking into account social and location elements of cannabis offers is very important in predicting cannabis onset, and failing to examine these factors would result in an incomplete understanding of the etiology of substance use.

5.1. Limitations

The findings of this thesis should be interpreted in light of the following limitations. While self-report surveys have been shown to provide valid measures of substance use among adolescents, the fact that we tried to get many of the details of a specific situation (first offer, and first use) may have created accuracy and recall

problems for some respondents. We were asking respondents to think back a few years in some cases, and the subsequent substance use episodes (for those who continued to use) may have affected their memory. However, we do not consider recall problems to be overly detrimental to the study since we feel that the first time offer, like many first times in general, is a memorable event that should be easier to recall than others. In addition, this study could not measure all aspects of the context of adolescent substance use onset. Multiple other factors such as absence of parents or authority figures, which can prevent risky behaviours, may play a role in the decision to accept substance offers from friends. For example, were the offers occurring at home always done in the absence of parents? Other factors that need consideration include prior use of other substances such as tobacco and alcohol, since the literature has shown that adolescents who are already familiar with these will be more likely to be exposed to opportunities for cannabis use (Wagner and Anthony, 2002). Furthermore, because our survey mainly focused on the context of offers and use, it was not possible to explore other important risk and protective factors associated with adolescent delinquent behaviour and substance use initiation. For instance, it would have been ideal to obtain information on adolescents' ties and social bonds (or lack thereof) to their peers, family, school, and communities as these have been shown to inhibit drug involvement during adolescence. Also, an examination of attitudes towards drug use might have proved to be useful as prior work has shown that adolescents who have favorable attitudes and beliefs regarding drug use are more likely to initiate use (Kandel et al., 1978). It is important to note that although we believe that the context of substance offers and use is very important to examine, we consider it as part of the puzzle, not the only one. Therefore, other factors that we did not have access to and could not measure might have strengthened our analyses and improved our understanding of the etiology of

substance use. Finally, we are not able to determine whether the findings from our sample can be generalized to other groups of adolescents, such as those who were not present on the day of the survey (which we suspect include many substance users), those of different age groups (we only could distribute the survey in grade 10 classes), and those who have dropped out of the school system.

5.2. Contributions

The main contribution that we make to the existing literature on drug offer situations is that we introduce a new level of analysis - first time offers - that not only examines the emergence of a deviant behaviour (acceptance of substances), but also looks at situations in which such acts did not occur (refusal of substances). Furthermore, we employ a direct measure of influence to look at context which asked respondents to identify the person who first offered them drugs, rather than rely on hypothetical situations or indirect measures (e.g. parental and peer attitudes towards drugs or the number of delinquent friends that an adolescent has). Finally, due to the nature of the data, measurement of proximal influence or influence by best friends in a way that we can avoid the issue of *selection*[5] has been made possible - this was possible by examining pre-existing friendships and a new behaviour that is initiated (see Maxwell, 2002 and Alexander, Piazza, Mekos, and Valente, 2001 for more information).

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[5] *Selection* has been reported to weaken the strength of peer influence during adolescence because it assumes that individuals will self-select into groups that have similar characteristics.

5.3. Implications

The current thesis argues that understanding the precursors to adolescent substance initiation is a complex task that requires the integration of social and location elements. Understanding the factors associated with adolescent substance initiation is critical in developing intervention and prevention policies and school-based programs which aim to prevent substance use or reduce the escalation of other substance using behaviours in general. The process of evaluating drug prevention and drug education programs' effectiveness is not a simple task. There has been great debate among scholars regarding the effectiveness of these programs. Various researchers support the program validity (Skara and Sussman, 2003; Coggans, 2006; Talpade, Lattimore, and Graham, 2008). However, on the other hand, there is an extensive body of literature that argues in the contrary. For example, West and O'Neal (2004) argue that all adolescents experiment with drugs and alcohol during their teenage years regardless of exposure to drug prevention programs. The idea that adolescents experiment with all kinds of antisocial behaviour during their teenage years appears legitimate. However, we argue that West and O'Neal's (2004) argument that prevention programs are not useful is debatable. Like many other proponents, we recognize that through appropriate measurement of the risk factors and their inclusion in intervention and prevention programs we might be able to delay adolescents' first time exposure to and experimentation with substances as much as possible.

During the past three decades, there has been considerable progress in identifying effective drug abuse education and prevention programs. Interactive programs such as social influence resistance programs, for example, have received considerable positive feedback as they have shown to reduce the onset and prevalence

of substance use (Tobler, Lessard, Marshall, Ochshorn, and Roona, 1999; Skara and Sussman, 2003). These approaches view substance use as resulting from social influences from peers, as well as exposure to drug-using role models, among many other things (Tobler et al., 1999). According to these programs, something that is confirmed in our results, influences from peers are very important to consider in order to prevent or mediate adolescent substance use. These approaches are appealing because they "teach students through instruction, modeling, and role play to identify and resist influences to use drugs and, in some cases, to prepare for associated difficulties and stresses anticipated in the process of resisting such influences" (Hawkins et al., 1992, p. 89). Based on the current findings, the curricula of such strategies should be incorporated in universal programs, (programs that focus on the general student population), as well as selective programs (programs that target high-risk groups) and indicated programs (programs designed specifically for youth who are already involved in delinquent behaviours). Information and strategies on social influence should start universally at the elementary school level so that young children are aware of the possible drug offer and drug use scenarios/situations that they might face in their near future or once they make the transition to high school. In addition, delivering this type of information at a young stage is beneficial because elementary students might be more receptive to the information as they have not yet been entrenched in the peer-focused culture which usually happens later in adolescence. In addition, targeted groups in selective and indicated programs would benefit in receiving information and tools from social influence resistance programs in an interactive environment as they would be armed with information on how to appropriately use counter arguments to substance offers and social influences when they find themselves in difficult situations.

We also recommend that these programs emphasize not only peer influences but also family and other close relationship influences. It might also be beneficial to integrate parents in these programs as this would teach them how to recognize the signs that their children are being exposed to substances, how to help their children resist social pressures to use drugs, and acknowledge the harmful consequences of their actions when they knowingly or unknowingly serve as sources of drugs to their children. Furthermore, we advise parents to closely supervise the activities of their children inside the house as this was primarily the high-risk location of initiation. Lastly, because school-based social influence programs focus mainly on social relationships, they appear to neglect the role of the environmental setting or the location in which drug offers and use occur. We recommend that these programs integrate a component addressing the location where drug offers and drug use take place in their curriculum. The findings showed that certain settings were more conducive to substance use onset than others. Most students were offered cannabis in locations away from school and they were more likely to accept when cannabis was presented to them in home-setting locations. Adolescents may not be exposed to substances in similar settings, therefore they do not have the same experiences. Consequently, it is important to consider different high risk situations and environmental settings in order for programs to accomplish their purpose of preventing or mediating adolescent substance use. Once again, we call for increased parental involvement in monitoring adolescents' behaviours especially in locations (i.e. own house) that are relatively easier to monitor. In conclusion, we suggest that the implementation of these programs include the cooperative efforts of not only students and school staff, but also of parents and other community members that can provide adolescents with knowledge and skills to effectively avoid or appropriately handle situations where drug offers and drug use are likely to occur.

5.4. Future Research

This section proposes some avenues for future research to explore in order to have a more complete understanding of adolescent substance use. First, future surveys should measure the exact total number of cannabis offers that adolescents receive. This is especially important for the "offered but never used" (ONU) category, as this would allow us to directly compare them to the "late users" (LU) category and determine any similarities or differences between the two groups. With such information available, we can also determine if there is a cumulative effect for exposure to offers - is it possible that the more one is exposed to cannabis offers, the more likely he/she will be to accept an offer, or is it truly about the context in which the offer occurs? This brings us to another recommendation that future surveys should take into consideration. We need to directly ask the ONU group to project future situations and report their hypothetical decision to accept or reject offers if the appropriate social and environmental context presented itself. Second, it has been established that offers are more likely to receive a positive response when they are advanced by close sources (best friends). The next step is to identify the reasons why offers from these sources are difficult to resist. Examining adolescents' subjective process of decision making when accepting an offer would help in this regard. Third, much more remains to be learned about different types of cannabis users. The etiology of adolescent substance use is multifaceted and very complex and in order to appropriately assist policy makers and prevention program planners we need to distinguish between different types of adolescent cannabis users and not limit the analyses to immediate and late users. Currently, we present very little information on the patterns and prevalence of cannabis use. Future research should examine differences between current (occasional, frequent/daily) and past

(experimenters) users in order to determine the magnitude of this problem. In particular, examine the using patterns of current users: how often do they use, who do they use with, number of people present when using, and is the social and environmental context also relevant to current use? Fourth, we need to collect data from different samples and age groups, and adolescents who are no longer in the school system as opportunities for delinquent behaviour and substance use are typically greater among these samples.

Finally, in order to form solid conclusions about the context of substance use, we need to follow our sample longitudinally to document: 1) Any changes in the ONU category - will these adolescents continue to refuse offers or will they surrender to the right context or the cumulative effect of many offers; 2) Does influence shift from one source (e.g. best friends) to another (e.g. romantic partners) from early adolescence to late adolescence, and young adulthood? And is influence important in continuing drug use in addition to initiation?; 3) Any changes in the prevalence and patterns, and possible desistance from cannabis use over time?. We recommend the adoption of a (minimally) three wave design that would survey adolescents at the start (13-14 years old), middle (15-16 years old), and late time periods (17-18 years old) when they are most likely to receive offers to use drugs.

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Appendix.

Correlation matrix of all variables

	Sex (1)	Age (2)	Ethnicity (3)	SES (4)	Delinquency (5)	Low Self-Control (6)	Social Proximity (7)	Proximity to Location (8)
(1)	1.00	0.035	0.090*	0.014	0.220***	0.086**	0.080	0.155*
(2)		1.00	0.152***	0.012	-0.050	-0.091**	0.092	0.099
(3)			1.00	0.188***	0.252***	0.172***	-0.029	0.031
(4)				1.00	0.064	0.019	0.112	0.100
(5)					1.00	0.275***	0.112	0.110
(6)						1.00	0.013	0.132
(7)							1.00	0.183**
(8)								1.00

*** $p \leq .001$ ** $p \leq .01$ * $p \leq .05$

Note: Pearson presented for cont x cont; Cramer's V presented for dico x 3+ categ; and Eta presented for cont x dico and cont x 3+ categ.