Adolescent Cannabis Use in Relation to Parents and Peers

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Foreword

Submitted in partial fulfilment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.

Abstract

The aim of the current study was to examine the effect of parental monitoring and peer cannabis-use on adolescent cannabis use. The relationship between the variables was examined using multiple linear hierarchical regression on data collected from a large sample of Icelandic secondary school students, collected by the Icelandic Centre for Social Research and Analysis (ISCRA). Three hypotheses were made: a) parental monitoring predicts decreased cannabis use, b) peer cannabis use predicts increased adolescent cannabis use c) and peer cannabis use and parental monitoring are negatively correlated. The findings of the study were consistent with the first two hypotheses, peer influence increased and parental monitoring decreased the odds of an adolescent having used cannabis. The third hypotheses was not supported

Útdráttur

Markmið rannsóknarinnar var að rannsaka áhrif eftirlits foreldra og kannabisnotkun vina á kannabisneyslu ungmenna. Samband breytanna var rannsakað með fjölbreytu línulegri hierarchical aðhvarfsgreiningu á gögn sem safnað var úr stóru úrtaki Íslenskra grunnskólanema sem unnið var af Rannsókn og Greiningu (R & G). Settar voru fram þrjár tilgátur: a) eftirlit foreldra spáir fyrir um minni kannabisneyslu ungmenna, b) kannabis notkun vina spáir fyrir um aukna kannabisneyslu ungmenna, c) eftirlit foreldra hefur neikvæða fylgni við kannabis notkun vina. Niðurstöðurnar voru í samræmi við fyrstu tvær tilgáturnar, kannabisnotkun vina jók líkur og eftirlit foreldra minnkaði líkur á að ungmenni hefðu prófað kannabis. Þriðja tilgátan stóðst ekki.

Introduction

Cannabis has remained the most widely used illegal drug used by adolescents in developed countries for about two decades. The use has been increasing all over the globe. The United Nation's drug report estimated that worldwide use of cannabis was 3.9% of people in the age range (15-64) or a total 180.6 million people (United Nations & United Nations Office on Drugs and Crime, 2013). Sigfusdottir, Kristjansson, Thorlindsson, & Allegrante (2008) studied the prevalence of substance use in Icelandic adolescents by using the ICSRA data. They concluded that there had been a large drop in 10th grade students who claimed to have used hashish in the years 1995-2006. However, as later reported by Pálsdóttir, Sigfússon, Sigfúsdóttir, & Kristjansson (2013) there were no measures of other cannabis products such as marijuana in the ICSRA surveys until the year 2009. Measures of marijuana use have been relatively stable at around 7%, and marijuana is the cannabis substance used by most adolescents. The users of both substances were not distinct from one another; those who had tried hashish had in most cases also tried marijuana and fewer had tried hashish (Pálsdóttir, Sigfússon, Sigfúsdóttir, & Kristjansson, 2013). According to the United Nations (2013) in the past few years there has been a change in what kind of cannabis is consumed around the world. Cannabis production, whether or not it is done outdoors like in the warmer countries or indoors like in the colder ones, takes place in practically every country in the world and is in most cases in vast enough quantities to feed the local markets. Consumption of locally grown cannabis herb is increasing and replacing imported cannabis resin ("Hashish"). Cannabis resin is decreasing even in its largest production countries Morocco and Afghanistan (United Nations & United Nations Office on Drugs and Crime, 2013).

According to fifth version of the Diagnostic and Statistical Manual of Mental Disorders (2013) the prevalence of Cannabis use disorder has raised both among adolescents

and adults in the past decade. It is lowest in the age group 65 and older (0.01%) and highest in the age range of 18-29 (4.4%). Adult males (2.2%) have had higher prevalence for the disorder than females (0.8) but in adolescents this sex difference is smaller. Prevalence varies between different ethnic groups with Native Americans having the highest prevalence for cannabis use (American Psychiatric Association 2013). Of those who try cannabis it is estimated that eventually 20-30% will become weekly users and 10% will become daily users. Reported use from American students is about 10% for eight grade students, 23% for ninth grade students and 36% for twelfth grade students (Sadock, Sadock, & Ruiz, 2015). The ESPAD report from 2011 reported that on average 17% of adolescents in 37 European countries had tried using cannabis (Hibell, Stergar, & Dernovšček Hafner, 2012) compared to 10% in Iceland (Hibell et al., 2012; Kristjánsson, Sigfússon, Sigfúsdóttir, & Pálsdóttir, 2012).

The active ingredient in Cannabis is called Tetrahydrocannabinol (THC), the short term affects have been linked to distorted perception, loss of coordination, increased heart rate, anxiety, impaired learning and panic attacks. Long term use, especially from younger users has been related to decreased physical function such as cardiovascular diseases and respiratory diseases (Sadock et al., 2015) and impaired mental function such as: schizophrenia (Sadock et al., 2015; Sundram 2006; Amar & Potvin, 2007) and psychotic symptoms (Sadock et al., 2015; Dragt et al., 2010) and disorders (Sadock et al., 2015; Dragt et al., 2010; Amar & Potvin, 2007). Degenhardt (2013) found that the odds of having anxiety at the age of 29 were doubled if the use was heavy and started in adolescence. There was also a weaker but existing association in those who had quit as adults. A meta-analysis of 267 studies from 10 counties concluded that relevant symptoms of anxiety were even related to infrequent cannabis use (Kedzior & Laeber, 2014). Buckner, Mallott, Schmidt, & Taylor (2006) reported a relationship between social anxiety disorder in women and cannabis use

disorder, even after they controlled for problematic alcohol use. Influences of using peers seemed to make these women more vulnerable to cannabis initiation.

Substantial research has been done on the effect peers can have on adolescent cannabis use, and the same can be said about parental monitoring and its protective factor. Tornay (2013) used the Swiss ESPAD data from the year 2007. Their results indicated that adolescent substance use decreased with parental monitoring. The effect of parental monitoring from one parent was not enough to affect cannabis use. Two monitoring parents were needed to have an effect. In addition to having a protective factor on substance use, parental monitoring also affected the influence of peers. With parental monitoring, the odds of having consuming peers decreased. The stronger the parental monitoring was, the less likely the adolescent was to use cannabis and the less likely the adolescent was to have peers who consume the substance. Clark, Shamblen, Ringwalt, & Hanley (2012) found no effect from one or more parental monitoring on adolescent cannabis use, even though parental monitoring affected other types of illicit drug use. They concluded that it would be important to analyze the effect of parental monitoring on different types of drugs.

As reported by D'Amico & McCarthy (2006) perceived peer marijuana and alcohol use predicted onset of marijuana use, but not the other way around. The result indicated that escalation of an onset of one drug like marijuana might be affected by a perception of another drug like alcohol. However, both (D'Amico & McCarthy, 2006; Burlew et al., 2009) found that perceived peer substance use as estimated by adolescents was much higher than their actual use. Hamilton, Danielson, Mann, & Paglia-Boak (2012) used the Ontario student Drug Use and Health Survey from the year 2009 of individuals aged 12 to 19. Cannabis prevalence between different immigrant generations of youth was compared. The results indicated that there were more similarities than differences when it came to the effect family, peers and other variables affect immigrant cannabis consumption. Burlew (2009) studied the effect of

neighborhood risk factors and parental monitoring on low income urban African American elementary school children transitioning to junior high school. Parental monitoring did not only have direct relation to substance use. It also had buffering effects on the effects of neighborhood risk such as seeing someone use drugs or drink.

The older adolescents get the more likely they are to initiate cannabis use. As reported by Jiménez-Iglesias, Moreno, Rivera, & García-Moya (2013) who studied a sample of 14,825 participants of Spanish Health Behavior in School-aged children questionnaire (HBSC). The aim of the study was to see what family related variables were related to three of the most common substances used by adolescents, that is cannabis, alcohol and tobacco. The results indicated that only disclosure to mothers had an effect on cannabis and tobacco use. Pinchevsky (2012) studied 360 individuals who did not use cannabis before college, over a period of four years. The results indicated that parental monitoring in high school and influence from peers in college both affected cannabis use in college. However, two thirds of the students who initiated use in college never attained a monthly pattern of cannabis use. Peer influence had more effect on those students who had started using cannabis in college despite parental monitoring in high school. After having used cannabis, the peers had more effect on use than former parental monitoring. Crano, Siegel, Alvaro, Lac, & Hemovich (2008) ordered first year college students in three groups: Marijuana users, marijuana users likely to initiate use and those who were likely to abstain from use. Over the three years of college the likely to abstain group had 9.2% users after the first wave, 19.3% after the third and 26% after the fourth. However, the likely to use group had 37.5% new users after the first round, 57.8% after the third round and 66.2% had used marijuana in the fourth round. The marijuana users were more likely to have more consuming peers, than the likely to initiate use group. However, the likely to initiate group was more likely to have consuming peers than the unlikely to use group. When it came to intense parental monitoring and parental

warmth, the students who used marijuana did not differ from the likely to use group. The likely to abstain group reported more of both.

Foster & Spencer (2013) reported that marginalized young people who use drugs often have a hard time to separate their drug use from friendship. They hold dear the familial connections and trust they associate with drugs and alcohol and find these moments intimate. The aim should be to have programs that affect these same benefits of friendship, trust and hobbies to potentially decrease drug use in marginalized young people. They argued that policies used to affect drug use don't work and should not be aimed at punishing the user (Foster & Spencer, 2013). Racz & McMahon (2011) recommend primary prevention where they conclude that the parental monitoring needs to be investigated further and should be investigated separately from parental knowledge. Emphasis should be on the broader family system and the context of protective factors. The relationship between conduct problems and parental monitoring has appeared to be bidirectional (Racz & McMahon, 2011). This is in line with (Clark, Shamblen, Ringwalt, & Hanley, 2012; Hamilton, Danielson, Mann, & Paglia-Boak, 2012; Jiménez-Iglesias, Moreno, Rivera, & García-Moya, 2013; Pinchevsky et al., 2012) who all recommend increased parental monitoring to protect against cannabis use. Kirisci, Dunn, Mezzich, & Tarter (2001) found that other variables such as neglect have also been shown to affect adolescent substance use among with substance use of parents, and had a greater effect on boys. Kaltiala-Heino, Koivisto, Marttunen, & Fröjd (2011) found that early pubertal timing defined as 11 years or sooner affected delinquency behavior and substance use, regardless of parental monitoring. The aim of the current study was to examine the relationship between adolescents having tried to use cannabis and peer-influence on one hand and parental monitoring on the other. Based on the vast literature on the subject the following was hypothesized: a) more parental monitoring predicts less adolescent cannabis

use, b) peer cannabis use predicts more adolescent cannabis use and c) peer cannabis use is negatively correlated with parental monitoring.

Method

Participants

There were a total of 1994 participants in the sample, 937 males (47%) and 1039 females (52.1%). There was an equal ratio between grades, 33.1% were in the 8th grade (N=660), 32.8% were in the 9th grade (N=655) and 33.5% were in the 10th grade (N=667). Participants were born between the years of 1994 and 2000. Most participants were born in 1996 (33.1%, N=660), 1997 (33%, N=658) and 1998 (33%, N=658). There were a total of nine participants that were born in any other year, two (0.1 %) were born in 1994, six (0.3 %) were born in 1999 and one (0.1 %) was born in 2000. Those who were absent for some reason during class were excluded and the six participants who claimed to have used the dummy drug "rampant" were removed from the sample as potentially unreliable respondents.

Measures

The independent variable, (parental monitoring) was assessed by asking participants: "How relevant or irrelevant are the following statements". The question was on a four item ordinal-likert-scale and the response options were "It is very relevant for me", "it is rather relevant for me", "it is rather irrelevant for me" and "it is very irrelevant for me". The items concerned rules, both at home and outside of the house, curfew, that parents know where they are, with whom, parents know who friends are, know friends parents. The items for parental monitoring were combined to form a single scale, so a higher score indicated greater parental monitoring.

The independent variable, (peer-cannabis use) was assessed by asking participants: "How many of your friends do you estimate to do the following"? "Smoke hashish or marijuana"?

The response options were on a five item ratio scale: “none”, “not many”, “a few of them”, “most of them”, “almost all of them”.

The dependent variable, (cannabis use) was assessed by asking participants: “How often if ever have you used the following substances”: “Hashish”, “Marijuana” and “Rampant”. The response options were on a seven item ratio scale and were “never”, “1-2 times”, “3-5 times”, “6-9 times”, “10-19 times”, “20-39 times” and “40 times or more”. The variable was compiled by summing up marijuana and hashish into one variable called Cannabis use. Then anyone who answered anything other than “never” when it came to using the drug rampant was removed from the sample.

Procedure

In February 2012 there was conducted a national youth survey by the Icelandic Centre for social Research and Analysis (Kristjansson, Sigfússon, Sigfusdottir, & Pálsdóttir, 2012). The survey was sent to every secondary school in Iceland, where teachers distributed them among all 8-10th grade students that were present that day. Teachers underlined the importance of reading the instructions, that answers could not be traced back to individual participants and to place the instrument into the unmarked envelope after completion. The instrument measured demographics, along with questions about health, substance use, well-being (psychological and physical) and family relationship with a wide array of different scales and variables (Kristjansson et al., 2012). The data was used with the full consent of the employees of ICRA.

Results

Table 1, shows the total number of participants, mean, standard deviation, and range for all the variables in the sample.

Table 1

Descriptive statistics of all variables

N	Variable	Minimum	Maximum	Range	Mean	Standard deviation
1976	Sex	1	2	1	1,525	0,49946
1985	Birth year	1	7	6	4,003	0,83067
1982	Grade	1	3	2	2,003	0,81844
1994	"Rampant"	1	1	0	1	0
1986	Parental-monitoring	2	11	9	2,1485	0,80776
1945	Peer-influence	7	28	21	14,2211	3,99375
1883	Valid					

To gain a better understanding of the relationship between the variables a Pearson correlation was conducted. Table 1, shows that most variables were significantly correlated, however, sex and birth year and sex and grade were not correlated. Peer influence and sex had the lowest significant correlation and it was negative (-.075, $p < .002$) and grade had the highest negative association with birth year (-.987, $p < .001$), that was not surprising given that you move up a grade when you get older. Cannabis was also highly correlated to peer-use (.495, $p < .001$). However, there was a weak but significant positive correlation between cannabis use and parental monitoring (.078, $p < .002$). There was a low significant positive correlation between the independent variables peer influence and parental monitoring (.099, $p < .001$).

Table 2

Pearson correlation between all variables

Variable	Sex	Birth year	Grade	Parental monitoring	Peer use
Sex	_				
Birth year	-.02	_			
Grade	.011	-.987**	_		
Parental-monitoring	-.241**	-.093**	.089**	_	
Peer-influence	-.075*	-.184**	.187**	.099**	_
Cannabis-use	-.097**	-.134**	.132**	.078*	.495**

Note. * $p < 0.002$, ** $p < 0.001$

A hierarchical multiple linear regression was conducted to learn more about the relationship between the variables. As seen in Table 3, the first model included only demographic variables and explained 2.6% of the total variance in cannabis use (F (3, 1879) = 16,860, $p <$ .0001). The sex of the participant was a significant contributor ($\beta = -.097$, $p < .001$), with boys reporting higher use. In the second model parental monitoring and peer use were added. Together these two variables explained 21.9% of variance in cannabis use (F (2, 1877) = 271,707, $p < .0001$), which brought the total explained variance to 24.5%. Peer influence was the strongest single predictor in the model ($\beta = -.476$ $p < .001$). Sex of participant was still significant ($\beta = -.06$, $p < .05$). However, parental monitoring was not a significant contributor to the model ($\beta = .016$ $p > .05$). It was decided to include the interaction term (parental monitoring x peer influence) in the third model to see if it would explain some additional variance. The third model explained an additional 1.4% (F (1, 1876) = 34,998, $p < .0001$) bringing the total explained variance of the model up to 25.9%. There was a strong interaction between parental monitoring and peer influence ($\beta = .514$, $p < .001$). After

controlling for peer use and parental monitoring x peer influence interaction, parental monitoring had a significant affect (β = -.233, $p < .001$) and sex was still significant (β = -.063, $p < .005$) Over all three models the interaction term in model three explained the most variance (β = .514, $p < .001$).

Table 3

Summary of coefficients

	Model 1			Model 2			Model 3		
Variable	B	SE B	β	B	SE B	β	B	SE B	β
Constant	2.725	0.823		1.557	0.732		2.34	0.738	
Sex	-0.151	0.036	-.097**	-0.093*	0.032	-.06	-0.098*	0.032	-.063
Birth year	-0.101	0.137	-.106	-0.036	0.12	-.038	-0.045	0.119	-.047
Grade	0.024	0.138	.025	0.001	0.121	.001	-0.012	0.12	-.013
Parental-monitoring				0.003	0.004	.016	-0.046**	0.009	-.233
peer use				0.679**	0.029	.476	0.095	0.103	.067
Interaction							0.04**	0.007	.514
R2	0.026			0.245			0.259		
R2 change	0.026			0.219			0.014		
F change	16.86			271.707			34.998		
df	3.- 1879			2.- 1877			1.- 1876		
p	0.001			0.001			0.001		

Note. *$p < 0.005$, **$p < 0.001$

Discussion

It was hypothesized that peer cannabis use would increase the odds of adolescents using cannabis. This first hypothesis stands, peer influence explained the most variance overall, with parental influence being a contributing factor only after controlling for peer use and the parental monitoring x peer influence interaction. After peer-influence was added to the second model the R2 change was (21.9%) from (2.6%) to (24.5%) which is an indicator of a large effect size. These results were in line with (D'Amico & McCarthy, 2006; Pinchevsky et al., 2012; Crano, Siegel, Alvaro, Lac, & Hemovich, 2008) who found that

cannabis consuming peers affect cannabis use of adolescents. The second hypothesis was that parental monitoring would decrease adolescent cannabis use. In the first models parental monitoring did not seem to have any effect. However, there was a significant effect after an interaction between parental monitoring and peer influence was added to the third regression model. There was a suppressor effect, after controlling for peer use and including parental monitoring x peer influence interaction among with parental monitoring, parental monitoring had an effect where more parental monitoring was associated with less cannabis use. The interaction suppressed the irrelevant variance in peer influence so parental monitoring became significant. The beta score vas raised from ($\beta = .016$ $p > .05$) in model two to ($\beta = -.233$ $p > .001$) in model three. Therefore, the second hypotheses also stands were parental monitoring decreased the odds of using cannabis. The R2 change between models two and three was (1.4%) and rose from (24.5%) to (25.9%). This was a large effect size. This is in line with (Tornay et al., 2013; Burlew et al., 2009; Pinchevsky et al., 2012; Crano, Siegel, Alvaro, Lac, & Hemovich, 2008) who found that adolescent cannabis use decreased with increased parental monitoring, and (Jiménez-Iglesias et al., 2013) who found an effect only from monitoring mothers. The results are not in line with (Clark et al., 2012) who found that parental monitoring was not associated with decreased adolescent cannabis use. The third hypothesis did not stand; peer cannabis use was positively correlated to parental monitoring. However, the correlation was small ($r = .099$) but significant and it was not sure rather or not it is a real association or merely a product of the large sample. Although (Tornay et al., 2013; Crano, Siegel, Alvaro, Lac, & Hemovich, 2008) showed that high parental monitoring decreases the odds of having consuming peers and (Burlew et al., 2009) who found that parental monitoring had buffering effects on neighborhood risk.

The strength of the present study is the fact it was done on a large sample with a high response ratio. Among the limitations of the study is the fact that it was measured with self-

report data and perception of what is little or much parental monitoring can vary between participants. There is also no perfect way of seeing if participants are answering truthfully. Even though it was tried to weigh out false responses, there fact remains that the data are missing from those six participants who chose to do so and there is no telling if they are important to the sample or not. Of those six who claimed to have used “Rampant”, four claimed to have used it 40 times or more which indicates that they willingly answered untruthfully or seriously misunderstood the question. The same can be said of those absent sick or missing from the data for any reason. Future research might want to assess both monitoring from mothers and fathers separately to see if there is a different effect. To get more precise estimation of cannabis use, daily and weekly use could be estimated as well as different ways of intake. To get a better estimation of peer use, participants could be asked how many of your friends do use the following substances, or have you seen use the following substances as well as asking about parent and sibling use. Because the sample was Icelandic, it cannot be generalized to other samples.

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Appendix

1. Ert þú strákur eða stelpa?

☐ Strákur ☐ Stelpa

2. Hvaða ár ert þú fæddur?

☐ 1994

☐ 1995

☐ 1996

☐ 1997

☐ 1998

☐ 1999

☐ 2000

3. Í hvaða bekk ert þú?

8. bekk	9. Bekk	10. bekk	8. bekk
☐	☐	☐	☐

24. Hversu vel eða illa eiga eftirfarandi fullyrðingar við?

a) Foreldrar mínir setja ákveðnar reglur um hvað ég má gera heima

Á mjög vel við um mig	Á frekar vel við um mig	Á frekar illa við um mig	Á mjög illa við um mig
☐	☐	☐	☐

b) Foreldrar mínir setja ákveðnar reglur um hvað ég má gera utan heimilis

Á mjög vel við um mig	Á frekar vel við um mig	Á frekar illa við um mig	Á mjög illa við um mig
☐	☐	☐	☐

c) Foreldrar mínir setja ákveðnar reglur um hvenær ég á að vera komin(n) heim á kvöldin

Á mjög vel við um mig	Á frekar vel við um mig	Á frekar illa við um mig	Á mjög illa við um mig
☐	☐	☐	☐

d) Foreldrar mínir fylgjast með hverjum ég er með á kvöldin

Á mjög vel við um mig	Á frekar vel við um mig	Á frekar illa við um mig	Á mjög illa við um mig
☐	☐	☐	☐

e) Foreldrar mínir fylgjast með því hvar ég er á kvöldin

Á mjög vel við um mig	Á frekar vel við um mig	Á frekar illa við um mig	Á mjög illa við um mig
☐	☐	☐	☐

f) Foreldrar mínir þekkja vini/vinkonur mína(r)

Á mjög vel við um mig ☐ Á frekar vel við um mig ☐ Á frekar illa við um mig ☐ Á mjög illa við um mig ☐

g) Foreldrar mínir þekkja foreldra vina/vinkvenna minna

Á mjög vel við um mig ☐ Á frekar vel við um mig ☐ Á frekar illa við um mig ☐ Á mjög illa við um mig ☐

61. Hve oft (ef nokkru sinni) hefur þú notað eftirtalin efni? (Merktu í EINN í hverjum lið)

b) Hass

Aldrei ☐ 1-2 sinnum ☐ 3-5 sinnum ☐ 6-9 sinnum ☐10-19 sinnum ☐20-39 sinnum ☐ 40 sinnum eða oftar☐

c) Marijúana

Aldrei ☐ 1-2 sinnum ☐ 3-5 sinnum ☐ 6-9 sinnum ☐10-19 sinnum ☐20-39 sinnum ☐ 40 sinnum eða oftar☐

h) Rampant

Aldrei ☐ 1-2 sinnum ☐ 3-5 sinnum ☐ 6-9 sinnum ☐10-19 sinnum ☐20-39 sinnum ☐ 40 sinnum eða oftar☐

72. Hve margir af vinum þínum telur þú að geri eftirfarandi? (Merktu í einn rétt í hverjum lið)

d) Reykir hass eða marijúana

Engir ☐ Fáir ☐ Nokkrir ☐ Flestir ☐ Nær allir ☐