



**BSc in Psychology**  
**Department of Psychology**

Association Between Mental Health,  
Subjective Income Status, Perceived Parental  
and Peer Support, and Substance Use in  
Icelandic College Students

June, 2020

Sonja M. Júlíusdóttir Jacobsen

180596-2759

### Foreword

Submitted in partial fulfillment 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. This thesis was completed in the Spring of 2020 and may therefore have been significantly impacted by the COVID-19 pandemic. The thesis and its findings should be viewed in light of that.

### Abstract

Substance use among adolescents has been a growing concern for decades. Researchers have tried to understand what might lead to usage in hopes of preventing it. Internal and external factors have been researched throughout the years as a cause of substance use in adolescents by assessing what might be a risk or protective factor. The current study was conducted using data from a nationally representative study conducted by the Icelandic Centre for Social Research & Analysis. Participants were 2129 college students in Iceland. The study aimed to investigate how mental health, subjective income status, parental- and peer support, a combination of internal and external factors, might encourage substance use in adolescents. Regression was used to assess the relationship between substance use and all variables. Results showed that all variables had a significant relationship with substance use which is consistent with previous studies. Having good mental health, receiving parental support, and coming from a home with average or higher income were all protective factors for substance use whilst peer support appeared to be a risk factor. Results show the importance of supporting adolescents that come from poverty, do not receive support from parental figures, or are struggling with mental illnesses.

Keywords: substance use, adolescents, mental health, support, subjective income status

### Útdráttur

Vímuefnanotkun unglunga hefur lengi verið áhyggjuefni. Rannsakendur hafa reynt að varpa ljósi á þá áhrifaþætti sem gætu átt þátt í því að unglingar sækist í vímuefni í þeirri von um að koma í veg fyrir það. Innri og ytri áhrifaþættir hafa verið rannsakaðir í gegnum árin sem orsök vímuefnaneyslu með því markmiði að meta hvað gætu verið áhættu- og verndandi þættir. Notast var við gögn frá Rannsóknir & Greining þar sem spurningalisti var sendur til franhaldsskóla á Íslandi en þátttakendur voru 2129 talsins. Tilgangur rannsóknar var að rannsaka hvernig andleg heilsa, fjárhagsstaða, stuðningur foreldra og vina gætu haft áhrif á vímuefnanotkun unglunga. Aðhvarfsgreining var notuð til að meta sambandið á milli vímuefnanotkunar og allra breyta. Niðurstöður sýndu að allar breytur höfðu marktækt samband með vímuefnanotkun en það er í samræmi við fyrrum rannsóknir. Að hafa góða andlega heilsu, fá stuðning frá foreldrum og að koma frá fjárhagslega öruggu heimili voru allt verndandi þættir en stuðningur félaga var áhættuþáttur. Niðurstöður sýna fram á mikilvægi þess að styðja við unglunga sem koma frá fátækt, hafa ekki stuðning frá foreldrum eða eru að takast á við geðsjúkdóma.

Lykilorð: vímuefnanotkun, unglingar, andleg heilsa, stuðningur, fjárhagsstaða

Association between mental health, subjective income status, perceived parental and peer support, and substance use in Icelandic college students

Substance use in adolescents has been a public health concern for decades and researched throughout the years in hopes of identifying what might influence usage and how to prevent it (Griffin & Botwin, 2010). Substance use is the problematic use of alcohol or drugs with individuals often experiencing loss of control and suffering from negative consequences following usage (Mersy, 2003). Identifying risk factors is important to increase the likelihood of developing adequate prevention efforts to target youths who are at risk for an early onset of substance use (Malmberg, Overbeek, Monshouwer, Lammers, Vollebergh & Engels, 2010). The earlier the age of onset of regular substance use, the more likely it is for the individual to develop substance use disorder in adulthood (Conrod, Castellanos & Mackie, 2008).

To understand what may mediate the usage of substances in adolescence, researchers have investigated both internal and external factors (Syvertsen, Cleveland, Gayles, Tibbits & Faulk, 2010; Moore & Werch, 2005). External factors are influences that do not occur from within the individual but occur from elsewhere, like the environment and others around you whilst internal factors are individual characteristics that influence our behaviors and actions (Chan, Dennis & Funk, 2008; Pruessner, Iyer, Faridi, Joobar & Malla, 2011). An example of external factors can be subjective income status, peers, and family members whilst mental health would be considered to be an internal factor.

### **Subjective income status**

Subjective income status is defined as how one perceives himself financially compared to others in regards to income, referring to one's current financial position (Rubin, Denson, Kilpatrick, Matthews, Stehlik & Zyngier, 2014). Previous studies have been conducted to find if subjective income status can contribute to substance use in adolescence.

It has found to be a problem in those coming from poverty and wealthy backgrounds (Liddle, Rowe, Dakof, Henderson & Greenbaum, 2009; Humensky, 2010). Patrick, Wightman, Schoeni & Schulenberg found that both alcohol and marijuana use was more common in participants coming from a wealthier background (2012). Farmer & Hanratty, however, found that those who grew up in poverty were less likely to use substances if their mental health was good (2012).

### **Peer support**

Peers play an important role in adolescents' lives by influencing the development and how one perceives themselves during these years (Oberle, Schonert-Reichl & Zumpo, 2011). Peers can either act as a risk or protective factor in regards to how they influence peers they associate with, either applying pressure or support. Peer pressure is defined as when individuals your age pressure you to do something with no consideration to if you want to or not (Santor, Messervey & Kusumakar, 2000) while peer support is when individuals have key principles regarding respect, mutual agreement, and shared responsibility (Mead, Hilton & Curtis, 2001). Previous studies have found an increased likelihood of substance use in adolescence if individuals associate themselves with other adolescents who themselves use substances (Simons-Morton & Chen, 2006).

### **Parental support**

Previous studies have reported the importance of adolescence having supportive parental figures in their lives. Having supportive parental figures has been shown to act as a protective factor against substance use in adolescence (Barnes, Reifman, Farrell & Dintcheff, 2000). Stronski, Ireland, Michaud, Narring & Resnick found that when adolescents can communicate with parental figures and discuss personal matters, these characteristics act as protective factors against substance use (2000) which is consistent with previous findings showing the importance of good communication with parental figures (Eisenberg, Olson,

Neumark-Sztainer, Story & Bearinger, 2004; Stattinn & Kerr, 2000). Cripps & Zyromski reported that adolescents who grew up with a poor relationship with their parental figures were at greater risk for substance use and mental health problems later in life (2009).

### **Mental health**

Mental health is defined as “ a state of wellbeing in which the individual realizes his or her abilities, can cope with normal stresses of life, can work productively and fruitfully, and can contribute to their community” (*World Health Organization, 2004*). Having poor mental health can lead to mental illnesses, e.g. depression, anxiety, or other disorders (Bower & Gilbody, 2005). A study conducted by Wu et al. investigated how mental disorders can influence substance use in adolescence and found that those who are struggling with mental disorders are at risk for substance use. It is, however, difficult to assess if adolescents use substances because of their poor mental health or if they have poor mental health because of substance use (Miller & Plant, 2002).

### **Gender differences**

Previous studies have been done to investigate if there is a gender difference in substance use, what the prevalence is, in hopes of understanding what substances genders are more prone to use (Andrews, Bell, Foster & Mash, 2005). Chassin, Pitts & Prost found that though both females and males seem to use the same substances, males are more often heavy users while women are occasional users. They also reported that the earlier the onset of usage, the more likely it is for it to turn into abuse later in life (2002). The prevalence of substance use based on gender indicates that males are more prone to using substances compared to females, especially when surrounded by peers who use substances themselves. A study conducted by Lundborg examined whether peers influence males or females differently and found that males were more vulnerable to peer drinking compared to females

(2006). Chassin & Hussong (2009) reported results from Johnston et al. (2007) that males use marijuana and alcohol at higher rates compared to females.

### **Current study**

Previous studies have been conducted on factors that may influence substance use in adolescence by investigating one or more factors or even a combination of them. There is, however, a lack of studies that investigate mental health with these three external factors; parental and peer support, and subjective income status. Studies have examined mental health with a combination of external factors using a specific sample ((Maynard, Salas-Wright & Vaughn, 2015; Keller, Salazar & Courtney, 2010) which causes it to be difficult to transfer their findings onto the general population. Other studies that have been conducted by using samples from nationally representative studies often research mental health and how it influences substance use but exclude other factors (Lee-Winn, Mendelson & Johnson, 2018; Bogard, 2005 & Eisenberg, Toumbourou, Catalano & Hemphill, 2014). Researching how internal and external factors can influence substance use, either alone or together, is important. By doing so it is possible to use these results to better understand possible risk and protective factors.

Based on previous studies, the following hypothesis are as mentioned: 1) Those who come from low subjective income households and have worse mental health and are more likely to use substances; 2) Those who receive little support from peers and have worse mental health are more likely to use substances compared to those who do receive support from peers and have good mental health; 3) Those who have worse mental health are more likely to use substances; 4) Boys are more likely to have used alcohol and marijuana more often than girls; 5) Those who grow up in higher subjective income households but receive little support from parents are more likely to use substances compared to those who do receive adequate parental support.

## Method

### Participants

Participants were college students in Iceland in 2016. Participants were mostly born from 1995-2002 ( $M_{age} = 18$  years). Valid surveys were conducted from 10,717 participants which are around 71% of the population in this age group (ISCRA, 2017). The sample was chosen randomly and includes 2129 participants, 48.9% ( $n = 1048$ ) boys, and 49.5% ( $n = 1071$ ) girls but of those 2129 participants, 1.7% ( $n = 36$ ) either did not answer the question or did not want to define their gender.

### Measures

**Substance use.** Participants were asked “*How often (if ever) have you used any of the following substances in your lifetime?*”. Original question regarding substance use contained 14 different substances, however, in this study four main substances were chosen; marijuana, sedative drugs, cocaine, and alcohol. Previous studies have used alcohol, marijuana, sedatives, and cocaine in studies in regards to the prevalence of substance use (Kendler, Jacobson, Prescott & Neale, 2003). Alcohol was chosen since it has been described as a “gateway drug” and consumption of it can often lead to usage of these illicit substances (Vanyukov et al., 2012). After calculating the frequency of each substance and reporting it, all four substances were computed into a new variable by adding data from each substance together and then divided by four to get overall mean for substance use. This variable was then supposed to represent substance use throughout this study and in further reporting of the results.

**Gender.** Participants were asked what gender they were and were given options of “boy” or “girl”. Gender was given the values of 1 = *boy*, and 2 = *girl*.

**Mental health.** The questionnaire from ISCRA did not have a subcategory in regards to mental health so the mental health of participants was based on a self-assessment by asking



*‘‘How good is your mental health?’’*. The scale was a four-point scale, measured from 1-4 (1 = *poor*, 2 = *fairly good*, 3 = *good*, 4 = *very good*). This question was recoded since the most positive answer had the lowest value. Original values were 1 = *very good*, 2 = *good*, 3 = *fairly good*, and 4 = *poor*.

**Parental support.** The original question in regards to parental support was *‘‘How easy or difficult is it for you to get the following from your parents?’’* followed by five different statements. There were, however, only two statements used in this study since they revolve around general support from parents. Those statements were *‘‘care and warmth’’* and *‘‘discussion about personal matters’’*. The other three statements revolved around school, other subjects, and projects and were not thought to be necessary for this study. The two statements used were then computed into a new variable by adding data from each statement together and then dividing them by two to get an overall representation of parental support. Values were; 1 = *very difficult*, 2 = *difficult*, 3 = *easy*, 4 = *very easy*. The scale used has been proven to be internally consistent and reliable in previous studies (Kristjansson, Sigfusdottir, Karlsson & Allegrante, 2011).

**Peer support.** As in parental support, the original question was *‘‘How easy or difficult is it for you to get the following from your peers?’’* and contained the same five statements. The same two statements were used as in parental support, *‘‘care and warmth’’* and *‘‘discussion about personal matters’’*. The other three statements revolved around school, other subjects, and projects and were not thought to be necessary for this study. The two statements that were used were then computed into a new variable by adding data from each statement together and then dividing them by two to get an overall representation of peer support. Values were; 1 = *very difficult*, 2 = *difficult*, 3 = *easy*, 4 = *very easy*.

**Subjective income status.** As a measure of participants' financial situation, they were asked about *‘‘Families financial position compared to others’’*. It was measured on a scale

from 1-7, however, the most positive answer had the lowest value. Original values were 1 = *much better off*, 2 = *better off*, 3 = *a little better off*, 4 = *similar to others*, 5 = *a little worse off*, 6 = *worse off*, 7 = *much worse off*. The variable was then recoded into a new one and given the values of 1 = *much worse off*, 2 = *worse off*, 3 = *little worse off*, 4 = *similar to others*, 5 = *a little better off*, 6 = *better off*, 7 = *much better off*. There was no other question regarding participants' financial situation in the questionnaire that could have given a better representation, however, as in mental health this was a self assessment question.

### **Procedure**

The research was conducted by ISCRA in February of 2016. Questionnaires were sent to all colleges in Iceland and everyone present at school that day was asked to participate. Teachers were asked to hand out the questionnaires to students in class. Students were told that their answers would be treated as confidentiality and were asked to not write their names, their social security number, or anything that could make it possible to trace their questionnaires back to them. They were also asked to take their time to read each question, ask for help if something was unclear, and answer honestly since each answered questionnaire is valuable to ISCRA. When participants were done, they put their questionnaires in an unmarked envelope, sealed it, and gave it back to their teacher.

### **Data analysis**

All data were put through IBM SPSS Statistics version 26. To analyze the data and, regression was used since there were five independent variables against one dependent variable. Using regression gives the ability to predict substance use in adolescence concerning these five independent variables. Descriptive analyses were used for each variable.

The dependent variable is continuous, meaning that substance use is measured by how often participants have used substances, meeting the assumption for a variable that is

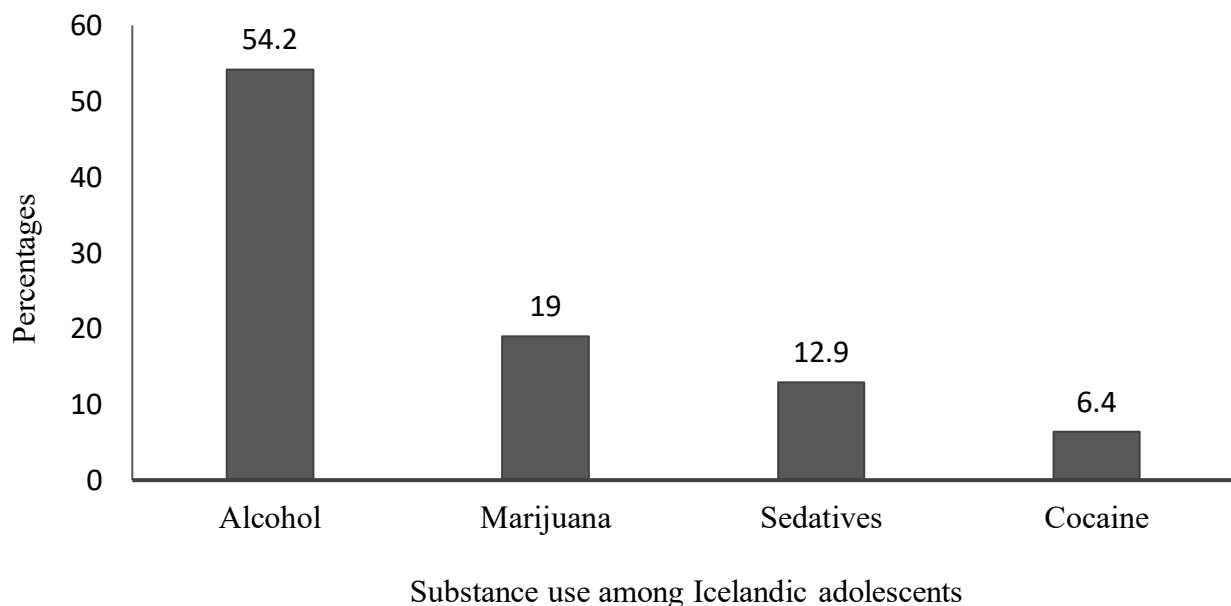
measured on a continuous level. The assumption regarding the size of the sample was met since there were 2129 participants and six variables. All questions had a scale that fits the requirement of using linear regression. All measures had their independence since there was only one questionnaire per participant and no repetitive measures. Testing for the independence of observation was done using the Durbin-Watson test, showing that there was an independence of residuals statistics of 1.829. Linearity was between the dependent variable and each of the independent variables, therefore that assumption was met. Testing showed that there was homoscedasticity which was assessed by visually inspecting a plot of unstandardized predicted values versus studentized residuals. None of the independent variables correlated greater than 0.7 according to Correlations table. Tolerance for each variable was greater than 0.1 meeting the assumption of not having a problem with collinearity.

Independent sample t-test was used to investigate gender differences in substance use among participants and determine if there was a difference in means between the two groups. As mentioned, the substance use variable is continuous and the independent variable consists of two independent groups. The assumption for independence of observation was met, however, engagement score for each level of gender was not normally distributed since they were significant, as assessed by Shapiro-Wilk's test ( $p < 0.05$ ). Engagement scores were non normally distributed for boys with skewness of 1.175 (SE = 0.077) and with kurtosis of 0.316 (SE = 0.154) and non normally distributed for girls with skewness of 1.201 (SE = 0.075) and with kurtosis of 0.759 (SE = 0.151). There were outliers in the data as assessed by inspection of a boxplot, therefore the assumption of no significant outliers was not met.

## Results

### Substance use

Substance use in Icelandic adolescents was investigated by taking five different independent variables that were thought to influence substance use. Only valid answers were used by excluding those who did not answer any particular question included in the study. Overall there were 95.2% (n = 2066) participants that answered what substances they have used and how often they had used them in their lifetime. Figure 1 shows the percentage of those who had used each substance at least once in their lifetime.



*Figure 1.* Substance use among participants that have used them at least once in their lifetime.

1,134 reported having used alcohol, 396 had used marijuana, 270 had used sedative drugs, and 133 cocaine. Alcohol consumption among participants was much higher than the usage of any other substance as can be seen in Table 1. There was, however, a clear difference in usage between marijuana, sedative drugs, and cocaine with marijuana being the

most used substance after alcohol. The overall mean for drug use was 2.22 (Std. = 1.16), which would be considered low since the scale for substance use was measured from 1-7.

Table 1.

Frequency table of how often participants had used each substance in their lifetime.

	Alcohol	Marijuana	Sedative drugs	Cocaine
Never	960	1685	1820	1949
1-2 times	197	117	124	52
3-5 times	148	67	54	27
6-9 times	141	47	26	17
10-19 times	176	48	22	16
20-39 times	200	34	13	5
40 times or over	272	83	31	16

### **Descriptive information for independent variables**

As can be seen in Table 2, 64% (n = 1386) reported that their mental health was good or very good with 34% (n = 715) reporting it as very poor or fair. 51.3% (n = 1110) of participants reported that their subjective income status was over average with 8.7% (n = 189) reporting that they would consider themselves to be below average, and 38.3% (n = 830) considered themselves to be average. Majority of participants found it easy or very easy to receive parental support (87.3%, n = 1833) while 12.6% (n = 265) found it difficult or very difficult. 13.8% (n = 288) reported it being very difficult or difficult for them to receive support from peers and 86.2% (n = 1805) found it very easy or easy.

### **Correlation for substance use and all independent variables**

As can be seen in Table 3, all variables had a rather low correlation with substance use according to Pearson Correlation. Three independent variables had a negative

relationship with substance use; mental health, parental support, and subjective income status. Since the relationships are negative, it indicates that as these variables increase, substance use decreases. Mental health had the strongest relationship with substance use out of all the independent variables. Parental support had the second strongest relationship with substance use whilst subjective income status was the third strongest. Peer support and gender were positively correlated with substance use, indicating that as these variables increase, substance use also increases. Peer support was stronger than gender, however, gender was the only independent variable out of the five that did not have a significant relationship with substance use. Furthermore, the correlation between gender and substance use was very low, almost nonexistent.

Table 2.

*Statistics for each variable included in this study*

Variables	<i>N</i>	Mean	Std. Deviation	Maximum	Minimum
Substance use	2060	2.22	1.16	1	7
Mental health	2101	2.85	0.97	1	4
Subjective income status	2129	4.68	1.05	1	7
Parental support	2098	3.53	0.33	1	4
Peer support	2093	3.45	0.34	1	4

Table 3

*Correlations for substance use against other independent variables*

		Substance Use	Gender	Mental Health	Parental Support	Peer Support	Subjective financial status
Substance Use	Pearson Correlation	1	0.009	-0.185**	-0.130**	0.064**	-0.80**

\*\* . Correlation is significant on the 0.01 level (2-tailed).

### Regression for all variables

By running regression results showed that the five independent variables explained 6.1% ( $R^2 = 0.061$ ) of the variance in substance use. Mental health explained 3% in substance use ( $R^2 = 3\%$ ), parental support 2.1% ( $R^2 = 0.021$ ), subjective income status 1.3% ( $R^2 = 0.013$ ), peer support 0.4% ( $R^2 = 0.004$ ), and gender did not explain anything with ( $R^2 = 0.000$ ). When observing Table 4, four out of five variables had a negative relationship with substance use; gender, mental health, subjective income status, and parental support. It is apparent that mental health still had the most effect on substance use when all other variables remain controlled. As in correlation, this indicates that when mental health increases substance use decreases. Parental support had the second strongest negative relationship with substance use, gender the third, and subjective income status the fourth. Peer support still had a positive relationship with substance use, further indicating that the more peer support adolescents receive, the more substance use decreases.

Table 4

#### *Regression for substance use among adolescence*

	B	$\beta$	Sig.	Tolerance	VIF
(Constant)	3.075		>0.000		
Gender	-0.139	-0.060	>0.000	0.859	1.164
Mental health	-0.218	-0.183	>0.000	0.820	1.220
Subjective financial status	-0.041	-0.037	>0.000	0.946	1.058
Parental support	-0.205	-0.121	>0.000	0.842	1.187
Peer support	0.257	0.152	>0.000	0.837	1.194

Interestingly, peer support had the second strongest relationship with substance use out of all the variables. As previously mentioned, the correlation between substance use and all variables showed that peer support had the second weakest relationship with substance use. Since it is now the second strongest, it indicates that peer support matters more when all other variables are being held constant.

### Moderation

The process tool was used to examine how parental support can moderate substance use in adolescence coming from different subjective incomes. Results showed that parental support and subjective income status explained 22.2% ( $R^2 = 0.022$ ) in substance use. As can be seen in Table 5, both parental support ( $p = 0.0013$ ) and subjective income status ( $p = 0.0142$ ) had a significant relationship with substance use and when calculated were negatively correlated with substance use, indicating that those who come from higher subjective income households and received support from parental figures were less likely to use substances.

Table 5

Linear model of predictors of substance use

	b	SE B	t	Sig.
Constant	4.15 [3.17, 5.13]	0.499	8.309	$p < 0.001$
Subjective income status	-0.26 [0.47, -0.05]	0.107	-2.454	$p = 0.014$
Parental support	-0.46 [-0.74, -0.18]	0.143	-3.225	$p = 0.001$
Subjective income status x Parental support	0.05 [-0.00, 0.11]	0.030	1.843	$p = 0.065$



There was, however, a non-significant relationship as shown in interaction effect,  $b = 0.056$ , 95% CI [-0.003, 0.116],  $t = 1.843$ ,  $p = 0.065$ . This indicates that the relationship between substance use and subjective income status is not moderated by parental support.

### **Gender difference in substance use**

It was hypothesized that boys were more likely to have used marijuana and alcohol more often compared to girls. Independent sample t-test was conducted to test that hypothesis with 1003 boys and 1051 girls. Results showed that substance use was more among boys ( $M = 2.36$ ,  $SD = 1.75$ ) than girls ( $M = 2.26$ ,  $SD = 1.54$ ) and Levene's test for equality of variances was statistically significant ( $p > 0.05$ ), meaning that variances were homogeneous. Boys' mean substance use was 0.10 ( $SE = 0.72$ ) higher than girls' substance use. There was, however, not a statistically significant difference ( $p = 0.172$ ) between substance use among boys and girls and therefore the hypothesis was not met.

### **Discussion**

This study aimed to investigate the association between substance use and five independent variables; gender, mental health, subjective income status, parental support, and peer support to assess substance use in Icelandic college students. Mental health was an important factor in this study. Though it is an internal factor that is often included in studies regarding substance use, there is a lack of nationally representative studies. Not many focus on mental health with external factors that are present or affect most adolescents in their everyday lives; subjective income status, perceived parental and peer support. It was also investigated how parental support can moderate substance use in adolescents growing up in different subjective income households among gender differences in substance use. By researching risk and protective factors, it gives an idea of what might influence substance use in adolescence and with that information providing a possibility of preventing it.

Five hypotheses were stated at the beginning of this study which revolved around gender, mental health, subjective income status, and parental and peer support in regards to substance use in adolescence.

Hypothesis about those that have worse mental health are more likely to use substances was met, furthermore, mental health was the variable that had the strongest relationship with substance use in this study. Previous studies have reported that those that suffer from mental illnesses, e.g. anxiety or depression, are more likely to use substances compared to those who have good mental health (Bower et al., 2005; Wu et al., 2010). There is, however, difficult to say if those who use substances have worse mental health because of it, or that those who have worse mental health use substances because of their poor mental health (Miller & Plant, 2002).

Hypothesis about those who come from low subjective income households and have worse mental health are more likely to use substances was met. Results from previous studies regarding subjective income status have shown different results. Humensky (2010) found that those who had parents with higher education and therefore came from average or higher subjective income households had higher rates of marijuana use and binge drinking compared to those who came from lower subjective income households. Hamilton, Noh & Adlaf (2009) found that those who came from lower subjective income households were more likely to use illicit substances and drink alcohol compared to those who came from higher subjective income households.

Hypothesis that stated that those who receive little support from peers and have worse mental health are more likely to use substances was partly met. Peer support was found to be a risk factor in this study. Although the hypothesis was only partly met, these findings are consistent with previous studies in regards to peer support. The reason for peers being a risk factor could be socialization or peer pressure (Simons-Morton et al., 2016; Andrews & Hops,

2010; Li et al. 2017) but it has also been found that individuals that are surrounded by adolescents that normalize substance use increases the likelihood of substance use (Schuler, Tucker, Pedersen & D'Amico, 2019). Therefore, it is not surprising that peer support was a risk factor for substance use in this study.

It was hypothesized that those who grow up in higher subjective income households but receive little support from parents are more likely to use substances compared to those who receive adequate parental support. Correlation, Regression, and Process all showed that parental support had a significant negative relationship with substance use. These findings are consistent with previous studies. Reinherz, Giaconia, Hauf, Wasserman & Paradis (2000) found that those who grew up in low subjective income households were at risk for substance use, especially when they did not receive support from parental figures, showing the importance of parental support whether adolescents are growing up in poverty or coming from higher subjective income households. Process, however, showed that the interaction was not significant when parental support was analyzed as a moderator for substance use.

It was hypothesized that boys are more likely to have used alcohol and marijuana more often than girls. This hypothesis was not met as there was not a statistically significant difference between substance use among boys and girls. Previous studies, however, have stated that the prevalence of substance use is higher among males compared to females (Lundborg, 2006; Chassin et al., 2009). Chassin et.al. stated that males are more often heavy users while females are occasional users (2002). Though the results of this study showed that there was not a statistically significant difference in substance use based on genders, when comparing means for substance use it was slightly higher among boys.

Findings of this study highlight the importance of supporting adolescents coming from poverty, do not receive parental support, suffer from poor mental health. Parental

figures should also be aware of those that are present in their adolescents lives and might influence them to try and use substances.

The strengths of this study would be that the sample is large and the gender ratio is almost equal. Having a large sample and especially from a nationally representative study makes it easier to transfer the findings onto the general population. The questionnaire that was used is very thorough and should be able to examine many sides of participants' lives.

The limitations of this study are a few. As mentioned in strengths, the questionnaire is thorough but very long. Having a long questionnaire can be tiring for participants and might encourage them to answer questions with random answers and not carefully. All variables in this study were based on self-report measures, which is not as reliable as standardized measures (Bergomi, Tschacher & Kupper, 2013). Answering personal questions, i.e. about mental health and substance use, can be challenging for participants and it is difficult to be certain that they are telling the truth.

It is suggested that future studies examine these combinations of factors that are present in most adolescents' lives but using a sample with more diversity. Most of the participants in this study reported that they came from a home with average or higher income, had a good relationship with parental figures and peers, and that their mental health was good. It would be interesting to examine those who come from poverty, have a rough relationship with their parents, and poor mental health with participants that experience the opposite.

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