The Effects of Adolescent Depression on Future Adult Income Examined Through Adolescent Substance Use as a Mediator

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Junior Independent Work Paper

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This paper represents my own work in accordance with University Guidelines.

/s/ William Huang

I. Introduction

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Depression is a major worldwide problem. According to the World Health Organization (WHO), an estimated 280 million people in the world experience depression regularly. Suicide has now become the fourth leading cause of death among people between the ages of 15 and 29. (WHO, 2023) Further, this tragic illness has not shown signs of slowing down among young adults, with recent surveys citing that as many as one in five teens suffer from clinical depression. (Mental Health America, 2024) [1]

In the US alone, adolescent depression rates saw a major jump in the last 15 years, rising from 8.1% in 2009 to almost double that amount with 15.8% in 2019. (Wilson and Dumornay) Further, according to the Center for Disease Control and the National Institute of Mental Health, adolescents between the ages of 12 to 17 have seen an increase in major depressive episodes, going from 15.1% in 2019 to more than 20% in 2021. (CDC; NMH)

In addition to being a burden to the affected individuals, depression also has a massive economic cost. It is estimated that from 2009 to 2011, the annual cost for treatment of childhood depression accumulated to around $10.9 billion and only increasing as time goes on. (Davis) While this number is quite jarring already, this is the current cost of depression among young people. The real question is what kinds of economic consequences are there in the future when these depressed adolescents are adults in the labor force?

The effect between adolescent depression and future adult labor outcomes has been heavily studied. Many scholars have found a large negative correlation between the two variables, stating that early onset depression and depressive symptoms leads to significant decreases in employment

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and wages as an adult. (Alaie et al., 2022; Berndt et al., 2000; J. Fletcher, 2013; Johar & Truong, 2014; Yu, 2019) These scholars, however, fail to recognize some of the other potential channels in which adolescent depression can affect future adult outcomes.

This paper looks to explore that question, specifically, it looks to answer the question "how does adolescent depression affect future adult labor outcomes through adolescent substance use as a mechanism?" By studying this question, it would allow policy makers to not only focus their funds on decreasing the rate of adolescent depression, but also to direct their attention on the ways that depression can cause more harm further down the road, hopefully leading to the creation of policies that heavily mitigating the negative effects of adolescent depression on future adult labor outcomes.

From the empirical analysis of this paper, it is concluded that adolescent depression alone has little to no effect on either future adult income or future adult employment, while any form of regular substance use during adolescence, independent on adolescent depression, is shown to have a severe negative effect on future adult income but a negligible effect on future adult employment. However, even though the statistical analysis shows a strong negative correlation through both linear probability and probit models, this paper is unable to conclude the causal relationship between adolescent depression and adolescent substance use. These conclusions were mostly expected and consistent with the existing literature (Fletcher, 2013) and provide policy makers with strong evidence to further invest in programs that eliminate adolescent substance use.

II. Literature Review

While the literature on how adolescent substance use fits into the effects of adolescent depression on future adult labor outcomes is limited, there are many scholars that have studied the direct effect. (Alaie et al., 2022; Berndt et al., 2000; J. Fletcher, 2013; Johar & Truong, 2014; Yu, 2019) Diving into the literature a little deeper, Alaie et al.'s study titled *Adolescent depression and adult labor market marginalization: a longitudinal cohort study,* finds that adolescents who show strong depressive symptoms have a higher probability in having multiple consecutive years of unemployment. In fact, according to their summary statistics, depressed adolescents had an average consecutive unemployment time of 2.1 years compared to the 1.3 years of nondepressed adolescents. (Alaie et al., 2022) Further, Alaie et al.'s logistic regression analysis in a generalized estimating equations modeling framework shows the strength of this relationship to be extremely high with the longitudinal associations between adolescent depression and long-term unemployment to be 1.7 years more than the nondepressed as reference. This difference in consecutive unemployment of 1.7 years is significant at the 1% level as shown by its p-value even when fixing for the covariates of academic performance (measured in GPA) and family socioeconomic status (measured through parental income). (Alaie et al., 2022)

Looking further into the literature, other scholars not only found the same negative relationship between adolescent depression and future adult labor outcomes, but also focused heavily on observing the effects through educational attainment as a mediator variable. (J. Fletcher, 2013; Johar & Truong, 2014) This variable was not only chosen for its heavy economic impact on future adult labor outcomes, but also because there is a solid medical connection. Medical evidence suggests that depressive symptoms can cause significant mood swings and a large decrease in concentration, which would drastically reduce academic performance in school. (Berndt et al.,

2000; J. M. Fletcher, 2010; Sawchuk, 2023) Examining Truong and Johar's 2014 paper, *Direct and indirect effect of depression in adolescence on adult wages,* we begin to see the more detailed ways that educational attainment affects future adult labor outcomes.

In order to capture the effects properly, Truong and Johar's paper utilizes many interaction terms between depression and what they like to call their indirect effect variables. These indirect variables are the ways that they propose how adolescent depression can affect future adult labor outcomes and include occupation choice, experience, and educational attainment. Further, they find that the direct effect of someone showing depressive symptoms results in a 10 to 15% decrease in future adult wages. (Johar & Truong, 2014) This decrease in income is further seen in Fletcher's 2013 paper titled *Adolescent Depression and Adult Labor Outcomes.*

In this paper, we see a more comprehensive idea of exactly how much adolescent depression can affect future labor outcomes. This study separates itself from the rest of the literature by structuring the data and empirical analysis to control for the effects of environmental, familial, and individual unobserved heterogeneity. These aspects help increase the confidence level in the estimate of both the magnitude and direction of the relationship between adolescent depression and future adult labor outcomes. (J. Fletcher, 2013) In this study, Fletcher found that adolescents that show depressive symptoms have a 5% reduction in future earnings and states that this effect was mainly contributed by a decrease in educational attainment. (J. Fletcher, 2013) Similarly to all the other papers discussed so far, Fletcher mainly controls for educational attainment. While this is shown to be one of the major ways in which adolescent depression affects future adult labor outcomes (J. Fletcher, 2013; Johar & Truong, 2014), it fails to consider other factors such a higher risk for suicide, mental disorders such as anxiety, conduct disorders,

substance use, unsafe sex, and further risky health behaviors, all of which result from adolescent depression and can impact future adult income. (Saluja et al., 2004)

Focusing on adolescent substance use and its relationship between adolescent depression and adult labor outcomes, Saluja et al.'s paper, *Prevalence of and Risk Factors for Depressive Symptoms Among Young Adolescents,* describes a strong positive relationship between the two variables. Her and her colleagues found that over 50% of female and just under 25% of male substance users are depressed, and additionally, the harder the drug, the more likely that the user shows depressive symptoms. (Saluja et al., 2004) This idea that adolescent depression and substance use holds a positive relationship is iterated in further scholarly papers.

According to the 2015 National Survey on Drug Use and Health, adolescents that show depressive symptoms are more than twice as likely to use illicit drugs (34.4% vs 16.6%), marijuana (25.5% vs 12.7%), cocaine (4.6% vs 1.7%), heroin (1.1% vs 0.3%), meth (2.5% vs 0.5%), and psychotherapeutics (17.9% vs 6.4%) than nondepressed adolescents. (*2015 National Survey on Drug Use and Health: Detailed Tables*, 2015) Mason et al. also describes in their paper, *Adolescent Depression and Substance Use: The Protective Role of Prosocial Peer Behavior,* that depression has a comorbidity rate to substance use disorder of between 20 to 30%. (2016) This empirical evidence is further validated medically with doctors at the Child Mind Institute, stating that the main reason depressed adolescent turn to drugs is to manage and escape the painful and difficult emotions. (Mason et al., 2019)

Even though there is a positive relationship between adolescent depression and substance use that is established within the literature, it still does not answer the question of how it affects future adult labor outcomes. It is imperative to find a connection between adolescent substance use and future adult labor outcomes in order to fully implement adolescent substance use as a

mediator variable. Looking at Kandel et al.'s paper, *The Consequences in Young Adulthood of Adolescent Drug Involvement,* we find just that.

Him and his colleagues find a heavy negative relationship between adolescent substance use and future adult labor outcomes, stating that those who use substances had an increase in delinquency, unemployment, divorce, and abortions. Further, Kandel et al. find that the unemployment rates and other adult labor outcomes were dependent on the type of drug the user preferred, with the harder the drug, the larger the negative effect. Controlling for other variables, drug involvement among adolescents accounted for between 17 – 40% of the total explained variance of work-related outcomes. Additionally, they find that illicit drug use between adolescence and young adulthood was the strongest predictor of number of unemployment spells among women. (Kandel et al., 1986)

While this relationship might be very strong, it does not explain the causality between adolescent depression and adolescent substance use. It is not known whether or not it is the depression that is causing the substance use or if it is the substance use that is then in turn causing the depression. Even when diving into the existing literature to examine what other scholars have studied, the answer is still very inconsistent and inconclusive. Some scholars such as Henry et al. state that it is adolescent depression that is driving the adolescent substance use by making the argument that the substances allow as an escape for the depressive disorder and the negative emotions. (Henry et al., 1993) However, their paper only found significant results among depressed adolescent males to be more likely to use multiple substances. (Henry et al., 1993) They state that this relationship shows that it is possible for adolescent depression to cause early substance use, but also state that the lack of significant results among the rest of the sample undermines the strength of the causality. (Henry et al., 1993)

While Henry et al. had some significant results, other scholars such as Rao struggled to find a causal connection between adolescent depression and adolescent substance use. (Rao, 2006) Throughout Rao's paper, there were multiple connections that suggest adolescent depression and substance use coexist, but it was almost impossible to tell which was the causal effect. (Rao, 2006) This inconclusion arises from the fact that brain chemistry among adolescents is highly unpredictable and provide highly unique conditions from subject to subject. (Rao, 2006) This makes it extremely difficult to determine where the observed neurobiological changes come from either repeated drug use or multiple depressive episodes. (Rao, 2006)

While scholars find it hard to conclude the direction of the causal relationship between adolescent depression and adolescent substance use, what they all agree upon is that they both separately result in significant decreases in future adult labor outcomes. With this established concretely in the literature, my paper seeks to contribute to the current literature by connecting adolescent depression and adolescent substance use together and examining their combined effects on future adult labor outcomes. This will allow us to see the exact effects of adolescent depression on future adult labor outcomes through adolescent substance use as a mediator variable.

This paper seeks to contribute to the literature by combining these studies together in the empirical analysis to provide further insight on determining whether it is the adolescent depression or the adolescent substance use that is the driving factor of determining unsuccessful future adult labor outcomes. By understanding this relationship, it will allow policy makers to become more efficient and utilize their funding to actually treat the root problem and hopefully create a better environment for young adults and high schoolers to succeed in the real world.

III. Data

This paper will be utilizing is the National Longitudinal Study of Adolescent to Adult Health (ADD health) data set (National Longitudinal Study of Adolescent to Adult Health (Add Health) Series, 2024)[2]. Starting in 1994 to 1995, ADD health followed a group of 7th to 12th graders to track their health behaviors throughout the years, taking data in waves to gain a greater understanding of the effects of previous health behaviors on current health. During all of these waves of data, the data set included information from surveys in which the subject, school, and parents would self-report to the best of their knowledge. The ability to have the same exact person fill out these surveys in each wave going from the year 1994 to 2018 is instrumental in understanding the effects of adolescent depression on future adult income through the channel of adolescent depression.

There are a couple main variables that I will be extracting from the initial Wave I data (1994 – 1995) when the subjects are between the ages of 12 to 19. The first one is the adolescent depression variable which is constructed mainly using the Center of Epidemiologic Studies Depression Scale (20 questions) (CESD-20 scale) imbedded in the Wave I survey under the title "Feelings Scale." The CESD-20 scale is a series of 20 questions that allows scholars to evaluate whether or not an adolescent has depressive symptoms if the scale exceeds a certain threshold score. According to The Center for Epidemiologic Studies Depression Scale Revised document, anyone with a score 16 or above are at risk of clinical depression given that the scores for question 4, 8, 12, and 16 must be inverted in order to find accurate results. (*Center for Epidemiologic Studies Depression Scale Revised (CESD-R-20)*) Using this score of 16, it is determined that 26.91% of the adolescents in Wave I show depressive symptoms.

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While it is known that the CESD scale is accurate and reliable (Quiñones et. Al, 2016)[3] , I still cross referenced it with the new data obtained in Wave V that contained information about whether or not the subjects were diagnosed with depression. By running both linear probability model and probit model regressions and performing a t-test, I was able to establish a statistically significant relationship between someone with a CESD-20 score of 16 or above and them being later on diagnosed with depression, thus confirming that the CESD-20 score is a reliable metric to measure depression.

The second variable that needed to be defined from the Wave I data is regular adolescent substance use. This variable was defined using the "Tobacco, Alcohol, Drugs – Audio CASI" section of Wave I data (National Longitudinal Study of Adolescent to Adult Health (Add Health) Series, 2024). In this section, there was a binary variable created for each major drug category, tobacco, alcohol, marijuana, cocaine, inhalant, and illegal. These variables are binary variables that hold a value of 1 if the respondent uses the substance regularly and has a value of 0 if otherwise. However, each substance, because of the strength/hardness of the drug, has different definitions of regular use. I followed a very similar procedure when defining what regular use of each substance was according to Broman et. al's paper titled *Heavy Drug Use in Young Adulthood.* (Broman et al., 2020)[4] By using regular substance use, it eliminates the subjects that have either tried substances one time or use it socially. This helps to create a better distinction between teens that tried a drug versus having issues with drugs among the adolescent data.

[3] THIS IS THE CITATION THAT I NEED TO PUT INTO THE BOTTOM OF THE PAGE IN THE ACTUAL DRAFT
Quiñones AR, Thielke SM, Clark ME, Phillips KM, Elnitsky C, Andresen EM. Validity of Center for Epidemiologic Studies Depression (CES-D) scale in a sample of Iraq and Afghanistan Veterans. SAGE Open Medicine. 2016;4. doi:10.1177/2050312116643906
[4] ADD THIS TO BIBLIOGRAPHY!!! IN ZOTERO

Further, I created a generic substance use variable that is a binary variable that gives respondents a value of 1 if they use any of the substances mentioned above regularly and a value of 0 if otherwise. This will allow for more general exploration when trying to establish adolescent substance use as a major mechanism between adolescent depression and future adult labor outcomes.

Switching over to Wave V/adult data, the main variables that this paper is interested in are the labor outcome variables of employment status and income. Creating and defining the employment variable was relatively easy as it is just a binary variable that shows whether or not the subject was working a job. The income variable was a little trickier as it was a categorical variable and not a continuous variable. The income variable is defined to be the responses to the question "how much income did you receive from personal earnings before taxes? Include wages or salaries, tips, bonuses, overtime pay, and income from self-employment." in Section 4 of the Wave V Add Health data. (National Longitudinal Study of Adolescent to Adult Health (Add Health) Series, 2024) Since it is a categorical variable, to make it seem continuous, the average of the income ranges was taken. (e.g. respondents that responded with their income being between $20,000 and $24,999 will have an income of $22,499.5 in my study) This required a little bit more cleaning, but I was ultimately able to obtain each subject's personal income prior to taxes as an adult in Wave V.

The control variables that were chosen for this study are not only variables that control for individual fixed effects, but also fix for other channels that could also affect adolescent depressions impact on future adult labor outcomes. The main channel that I controlled for was each subject's educational attainment, as that has been shown by Fletcher and Berndt et al. to play a heavy role.

Other than controlling for this mechanism, most of the other variables were modeled after Fletcher's study, which is seen as a very comparable paper.

Table 1 below is a summary statistics table for all of the independent, dependent, and control variables that I will be using in this study.

Table 1. Means of Variables

VARIABLES	N	mean	sd	min	max
Sex/Male	1,180	0.456	0.498	0	1
Grade	1,180	9.933	1.564	7	12
Parent Employment	1,180	0.793	0.405	0	1
Socioeconomic Status (SES)	1,180	55.93	72.64	0	999
Hispanic	1,180	0.0907	0.287	0	1
White	1,180	0.750	0.433	0	1
Black	1,180	0.148	0.356	0	1
Native American	1,180	0.00763	0.0870	0	1
Asian	1,180	0.0347	0.183	0	1
Other Race	1,180	0.0559	0.230	0	1
Immigrant	1,180	0.0373	0.190	0	1
Age	1,180	15.78	1.615	12	19
Parents Married	1,180	0.717	0.451	0	1
Parents High School Grad	1,180	0.679	0.467	0	1
Parents Some College	1,180	0.639	0.480	0	1
Parents College Grad	1,180	0.310	0.463	0	1
Employment	1,180	0.847	0.361	0	1
Income	1,180	60,252	48,508	2,500	200,000
Work > 10 hours/week	1,180	0.997	0.0504	0	1
High School Grad	1,180	0.970	0.170	0	1
Some College	1,180	0.842	0.365	0	1
College Grad	1,180	0.427	0.495	0	1
Tobacco	1,180	0.303	0.460	0	1
Alcohol	1,180	0.0593	0.236	0	1
Marijuana	1,180	0.0653	0.247	0	1
Cocaine	1,180	0.000847	0.0291	0	1

Inhalant	1,180	0.00169	0.0412	0	1
Illegal	1,180	0.0466	0.211	0	1
Adolescent Substance Use	1,180	0.352	0.478	0	1
Adolescent Depression	1,180	0.278	0.448	0	1
Both Adolescent Depression and Substance Use	1,180	0.132	0.339	0	1
Neither Adolescent Depression nor Substance Use	1,180	0.503	0.500	0	1
Adolescent Depression but No Substance Use	1,180	0.146	0.353	0	1
Adolescent Substance Use but No Depression	1,180	0.219	0.414	0	1

As seen in the summary statistics table above, there has been a significant reduction, from 6504 to 1180, to the number of observations per each variable. This is due to large number of missing variables in the Adolescent Substance Use variable. Out of the original 6504 individuals that began the study, only about 3500 of them even chose to respond to the substance use portion of the survey in Wave I. Thus, when accounting for both sample attrition between Waves I and V, which is over the course of more than 20 years (from 1994 to 2018), and other missing values among the other variables, this resulted in a significant decrease in the number of observations. Nonetheless, having 1180 observations is more than enough to find significant and noteworthy results.

IV. Methodology

The motivation of this paper is to try and explain the negative correlation between adolescent depression and future adult labor outcomes such as employment status and income through adolescent substance use as a mediator variable. The following figure 1 below perfectly illustrates the connection between all three variables and how I plan on explaining it.

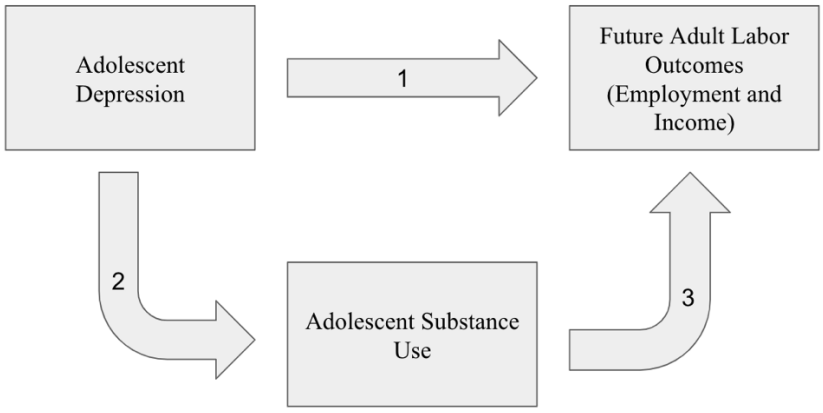


Figure 1

Here we can see that the first arrow labeled 1, shows the direct correlation of adolescent depression on future adult labor outcomes. This relationship has been found to be strongly negative by many scholars (J. Fletcher, 2013; Johar & Truong, 2014) but needs to be updated with the most recent data set of Wave V data. The regression that I will be running to analyze this relationship are the standard linear regressions seen below.

$$\log(Income_{i,t}) = \beta_0 + \beta_1 Depression_{i,t-1} + \beta_2 W_i + \varepsilon_i \quad (1)$$

$$Employment_{i,t} = \beta_0 + \beta_1 Depression_{i,t-1} + \beta_2 W_i + \varepsilon_i \quad (2)$$

Here the $Income_{i,t}$ variable represents the income of individual i as an adult and $Employment_{i,t}$ is a binary variable that has the value 1 when individual i is employed as an adult.

Both of these variables are measured from Wave V data which was gathered in 2018, 24 years after they completed the first survey for Wave I data where the subjects were between the ages of 12 – 19. The $Depression_{i,t-1}$ variable is a binary variable showing whether or not individual i was depressed in Wave I and W_i represents all the control variables such as sex, race, educational attainment, etc. that are not dependent on time. These set of regressions are exactly the same as what previous scholars performed. (J. Fletcher, 2013)

However, to further strengthen the interpretation of this relationship, I will be running additional OLS regressions with the specified independent variables of $Both_Depressed_Substance_{i,t-1}$, $Neither_Depressed_Substance_{i,t-1}$, $Depressed_No_Substance_{i,t-1}$, and $Substance_Not_Depressed_{i,t-1}$. All of these variables are binary variables with $Both_Depressed_Substance_{i,t-1}$ having a value of 1 if the subject is both depressed and uses substances as an adolescent, $Neither_Depressed_Substance_{i,t-1}$ having a value of 1 when the subject is neither depressed nor uses substances as an adolescent, $Depressed_No_Substance_{i,t-1}$ having a value of 1 when the subject is depressed but does not use substances as an adolescent, and finally $Substance_Not_Depressed_{i,t-1}$ having a value of 1 when the subject uses substances but is not depressed as an adolescent. These regressions are shown below by equations 3 and 4.

$$\log(Income_{i,t}) = \beta_0 + \beta_1 Both_Depressed_Substance_{i,t-1} + \beta_2\, Depressed_No_Substance_{i,t-1} + \beta_3 Substance_Not_Depressed_{i,t-1} + \beta_4 W_i + \varepsilon_i \quad (3)$$

$$Employment_{i,t} = \beta_0 + \beta_1 Both_Depressed_Substance_{i,t-1} + \beta_2\, Depressed_No_Substance_{i,t-1} + \beta_3 Substance_Not_Depressed_{i,t-1} + \beta_4 W_i + \varepsilon_i \quad (4)$$

Since these regressions omit the $Neither_Depressed_Substance_{i,t-1}$ variable, it means that the coefficient results will be comparing individuals to the subjects that are neither depressed nor substance users, thus becoming the baseline for this regression.

It is through these regressions that my paper is going to differ as they allow me to discuss the causality between adolescent depression and future adult labor outcomes. This is where arrows two and three come into play.

Looking at figure 1 again, we can see that the second arrow connects adolescent depression and adolescent substance use while the third arrow connects adolescent substance use and future adult labor outcomes. These arrows are what makes adolescent substance use a mediator variable and help explain the strength and direction of arrow one. Empirically, these arrows would be shown by the following regressions.

Arrow two will be illustrated by the regression,

$$\Pr(Substance_{i,t-1}) = \phi(\beta_0 + \beta_1 Depression_{i,t-1} + \beta_2 W_i + \varepsilon_i) \quad (5)$$

where $\Pr(Substance_{i,t-1})$ is the probability that the binary variable $Substance_{i,t-1}$ holds a value of 1 if individual i uses substances regularly in Wave I as an adolescent and $Depression_{i,t-1}$ is the same binary variable described previously. Since the outcome of this regression is a binary variable, it makes more sense to be use the probit model stated above instead of a regular linear probability model.

Arrow three, on the other hand, will be shown through the set of these two regressions,

$$Employment_{i,t} = \beta_0 + \beta_1 Substance_{i,t-1} + \beta_2 W_i + \varepsilon_i \quad (6)$$

$$\log(Income_{i,t}) = \beta_0 + \beta_1 Substance_{i,t-1} + \beta_2 W_i + \varepsilon_i \quad (7)$$

where the outcome variables $Income_{i,t}$ and $Employment_{i,t}$ refer to individual i's income and employment status as an adult in Wave V.

Another way to further strengthen the robustness of this regression is to add an interaction term which is similar to Johar and Truong's methodology. By multiplying the binary variables $Substance_{i,t-1}$ and $Depression_{i,t-1}$ together will allow us to observe the effects of adolescents with both depression and use substances. Thus, the regression would now be the following.

$$\log(Income_{i,t}) = \beta_0 + \beta_1 Depression_{i,t-1} + \beta_2 Substance_{i,t-1} + \beta_3 (Depression_{i,t-1} * Substance_{i,t-1}) + \beta_4 W_i + \varepsilon_i \quad (8)$$

$$Employment_{i,t} = \beta_0 + \beta_1 Depression_{i,t-1} + \beta_2 Substance_{i,t-1} + \beta_3 (Depression_{i,t-1} * Substance_{i,t-1}) + \beta_4 W_i + \varepsilon_i \quad (9)$$

By running these series of regressions, this paper hopes to establish a connection and find the strength and direction of the relationship between adolescent depression and future adult labor outcomes through the effects of adolescent substance use.

V. Results

5.1 Log(Income) as dependent variable

Table 2 is shown below to describe the results of the standard linear OLS regressions between income and adolescent depression and adolescent substance use and the adolescent depression and substance use interaction term, respectively. Equations 1, 5, and 6 are represented here as results in Table 2. The rest of the control variable coefficients are linked in the Appendix in Table 8.

Table 2.

VARIABLES	(1) Log(Income)	(2) Log(Income)	(3) Log(Income)
Adolescent Depression	-0.199*** (0.0709)		-0.102 (0.0913)
Adolescent Substance Use		-0.302*** (0.0694)	-0.241*** (0.0774)
Depression x Substance Use			-0.120 (0.144)
Observations	1,180	1,180	1,180
R-squared	0.178	0.187	0.191

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

These results show that both adolescent depression and adolescent substance use has a negative effect on future adult income at the 95% confidence level. Being depressed as an adolescent decreases future adult income by 19.9% while regularly using substances as an adolescent is shown to have a larger decrease in future adult income by around 30.2%. This indicates that regular substance use as an adolescent has a larger impact on future adult income than adolescent depression. This statement is further supported by the interaction term regression in column 3 of Table 2. When regressed together, it is clear that adolescent depression gets

crowded out by adolescent substance use as the coefficient is no longer significant at any confidence level while the coefficient for adolescent substance use remains at the 95% confidence level.

While not shown directly in the table above, there were a few more interesting and significant results that were yielded from these three regressions in Table 2. As seen in the Appendix in Table 8, the Hispanic coefficient is quite large in magnitude, positive, and significant at the 90% confidence level across all regressions, which is something that was not expected. This, however, could be a result of the multicollinearity within the other control variables such as Immigrant and Other Race. Further, in all three regressions, it is important to note that having gone or experienced any form of higher education (some college/college graduate) has a large positive impact on future adult income. This is consistent with the existing literature and my expectations when performing these regressions.

To study the effects of adolescent depression and substance use on future adult income further, the regression in equation 3 was run. This regression contains more niche adolescent depression and substance use variables that specify and separate subjects into categories of having or not having depression or substance use. The result from this regression is displayed below in Table 3. The rest of the control variable coefficients are linked in the Appendix in Table 9.

Table 3.

VARIABLES	(1) Log(Income)
Both Adolescent Depression and Substance Use	-0.464*** (0.105)
Adolescent Depression but No Substance Use	-0.102 (0.0913)
Adolescent Substance Use but No Depression	-0.241*** (0.0774)
Observations	1,180
R-squared	0.191

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3 shows that individuals that were both depressed and substance users as adolescents have a 46.4% decrease in future adult income when compared to individuals that were neither depressed nor substance users as adolescents. This result is significant at the 95% confidence level. Further, subjects that were only substance users but not depressed as adolescents experienced a 24.1% decrease in future adult income when compared to individuals that were neither depressed nor substance users as adolescents. This is again significant at the 95% confidence level. On the other hand, people that were only depressed but not substance users only had a 10.2% decrease in future adult income when compared to individuals that were neither depressed nor substance users. This was not significant at any confidence level, further supporting the claim that it is adolescent substance use that has a larger impact on future adult income than adolescent depression.

In addition to these significant results about adolescent depression and substance use, it is once again observed that individuals that made it to higher education after high school had a

significant increase in future adult income which is significant at the 95% confidence level. These results can be observed in the continuation of this regression table in Table 9 in the Appendix.

5.2 Employment as dependent variable

In addition to running regressions with future adult income as the dependent variable, regressions with future adult employment were performed. Since future adult employment is a binary variable, both linear probability models and probit models were run. Table 4 shows the results from the linear probability model regressions of employment and adolescent depression, employment and adolescent substance use, and employment and the interaction term in columns 1, 2, and 3, respectively. The rest of the control variable coefficients are linked in the Appendix in Table 10.

Table 4.

VARIABLES	(1) Employment	(2) Employment	(3) Employment
Adolescent Depression	-0.0126		-0.0222
	(0.0240)		(0.0313)
Adolescent Substance Use		-0.0244	-0.0327
		(0.0234)	(0.0270)
Depression x Substance Use			0.0311
			(0.0490)
Observations	1,180	1,180	1,180
R-squared	0.079	0.080	0.080

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

These results show that in the linear probability model, neither adolescent depression nor adolescent substance use has an impact on future adult employment as none of the coefficients are significant at an 95% confidence level. Being depressed as an adolescent only decreases the

chances of employment by 1.3% while adolescent substance users experience a slightly large decrease in the chances of employment at around 2.4%. Even when paired together in the interaction term, there is not a big difference. This is a rather surprising and unexpected result, especially when there were such significant results were found when the logarithm of income was the dependent variable.

Seeking for a better explanation of this insignificant and unexpected result, the linear probability model with the more niche adolescent depression and substance use variables in equation 4 was ran. Table 5 displays the results from that regression. The rest of the control variable coefficients are linked in the Appendix in Table 11.

Table 5.

VARIABLES	(1) Employment
Both Adolescent Depression and Substance Use	-0.0239 (0.0347)
Adolescent Depression but No Substance Use	-0.0222 (0.0313)
Adolescent Substance Use but No Depression	-0.0327 (0.0270)
Observations	1,180
R-squared	0.080

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Even when the more specific and niche variables are run, they still yield insignificant results at any confidence level. This further backs the statement that neither adolescent depression nor adolescent substance use has an effect on future adult employment. However, while this may

be surprising, these unexpected results might be a function of the linear probability model not being the best way to estimate the effects of either adolescent depression or substance use.

Thus, the probit model regressions were run. Table 6 below shows the marginal effects from the probit models between employment and adolescent depression, employment and adolescent substance use, and employment and the interaction term in columns 1, 2, and 3, respectively. The rest of the control variable coefficients are linked in the Appendix in Table 12.

Table 6.

VARIABLES	(1) Employment	(2) Employment	(3) Employment
Adolescent Depression	-0.0132		-0.0191
	(0.0213)		(0.0273)
Adolescent Substance Use		-0.0290	-0.0350
		(0.0212)	(0.0250)
Depression x Substance Use			0.0210
			(0.0423)
Observations	1,241	1,241	1,241

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6 displays that, again, neither adolescent depression nor substance use play any role in influencing future adult employment. Being depressed as an adolescent on has about a 1.3% decrease in the subject's likelihood of being employed as an adult in the future. This is not significant at any confidence level. Further, being a regular substance user as an adolescent decreases the subject's likelihood of being employed to around 2.9%, but it is again not significant at and confidence level. This result is reflected in the interaction term regression as well, with none

of the coefficients being significant at any confidence level. This emphasizes the validity of the surprising result that will be further unpacked in the discussion section of this paper.

However, while there was a large difference in terms of significant results of the studied independent variables of adolescent depression and substance use between the regressions with the logarithm of income versus employment as dependent variables, there were some similarities. The main similarity between the two sets of regressions is that subjects that have went on to higher education or any type of education after college experience a large increase in future adult labor outcomes. These results are significant at the 95% confidence level and are reflective of the existing literature.

5.3 Adolescent Substance Use as dependent variable

The final connection that this paper wants to study is the one between adolescent depression and substance use. Similar to the section above when employment was the dependent variable, both linear probability models and probit models were run as the outcome variable is now also a binary variable. Table 7 shows the results of both the linear probability model and the probit models between adolescent substance use and adolescent depression. The linear probability model is shown in column 1 and the marginal effects of the probit model are shown in column 2.

Table 7.

VARIABLES	(1) Adolescent Substance Use (Linear)	(2) Adolescent Substance Use (Probit)
Adolescent Depression	0.159*** (0.0310)	0.150*** (0.0281)
Observations	1,180	1,180
R-squared	0.134	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

These results show that in both the linear probability model and the probit model, adolescent depression has a significant effect on adolescent substance use at the 95% confidence level. The linear probability model shows that depressed adolescents are 15.9% more likely to use substances while the marginal effects of the probit model shows a very similar result with depressed adolescents being 12.0% more likely to be a regular substance user. In both cases, it is evident that there is a strong, positive correlation between being depressed as a teen as well as being a regular substance user as a teen.

V. Discussion

As explained in my methodology section, the main purpose of this paper is to discover the strength and direction of the channels between adolescent depression, adolescent substance use, and future adult labor outcomes as displayed in Figure 1. Starting with the first and second arrow in Figure 1, my regression analysis shows that both adolescent depression and regular substance use have a significant negative effect on future adult outcomes, particularly income more than employment. According to the linear regression OLS models, an adolescent that is depressed decreases future adult income by 19.5% while an adolescent who is a regular substance user will experience a 29.7% decrease in future adult income (from Table 2). Both of these results were significant at the 95% confidence level and consistent with the existing literature as well as extending the notion that adolescent depression and substance use have a large negative impact on future adult labor outcomes.

However, when examined a little closer, it is clear that from Tables 2 and 3 that it is the regular substance use that is the main driver of most of the negative effect on the future adult income. This is evident in Table 2 from the interaction regression in column 3, where only the terms that accounted for subjects with adolescent substance use had a significant negative effect on future adult income. This is again further supported by the more niche and specific independent variable regression model in Table 3, with subjects that were regular substance users and depressed as adolescent having a 46.4% decrease in future adult income and subjects that were only substance users with a 23.8% decrease in future adult income. This could mean that while adolescent depression has a negative impact on future adult income, it is easier to recover from than adolescent substance use, suggesting that it is really the substance use as an adolescent that is the most

damaging to future adult income. This shows that the second arrow in Figure 1 is stronger, but in the same direction as arrow number one when future adult income is the dependent variable.

This relationship and strength, however, was not supported by all of the regression models, particularly in the regression models where future adult employment was the dependent variable. All of these regression models, including the linear probability models, the probit models, and the interaction term model, all yielded insignificant results. This means that there was not enough evidence in the data to suggest that being depressed or a regular substance user as an adolescent had any sort of impact on future adult employment. One explanation for the insignificant results could be the way that the employment variable was defined. The variable was created using the responses to the question "Are you currently working for pay?" in the ADD health dataset. Since people were filling out this survey at random times throughout the year, it could be the case that they have been recently terminated from their jobs and filled out the survey when they are no longer employed. Unfortunately, there is not a better way to categorize this variable without invalidating the regression models.

Another further explanation for the insignificant results could be because of the fact that being employed does not wholly reflect one's socioeconomic status and one's ability to support themselves. While being employed does improve one's income by 166% (as reflected by my data sample), it does not differentiate the level of income that the subject makes. Someone who is employed at McDonald's that is making minimum wage and someone who works as a managing director at Goldman Sachs both have the same employment status, but their incomes are drastically different. Thus, the regression models that I performed with employment as the dependent variable might just indicate that depressed adolescent or adolescent substance users might not struggle to

find a job, but might struggle to find a higher paying job than if they were neither depressed nor substance users as a young adult.

In addition to this, it might also be the case that not every who is unemployed earns no income. Since the employment variable is defined as the answer to the question "Are you currently working for pay?" someone that trades stocks by themselves or makes money through an online business might not be categorize themselves as employed even though they make a good living. This is indeed the case of my data sample as people that are unemployed still have an average income of around $25,561. While this is significantly lower than the average income of the employed population in my data sample, which is $65,682, it is still reflective of people that earn a large income without being categorized as employed.

Finally, examining the relationship between adolescent substance use and adolescent depression, the empirical analysis observes that there is a strong positive correlation between the two. As seen in Table 7, being depressed as an adolescent increases the subject's likelihood of being a substance user by 14.0% in the linear probability model and 13.3% in the probit model, both of which are significant at the 95% confidence level. However, this does not suggest that being depressed as an adolescent causes regular substance use as an adolescent. This is because both the adolescent depression variable and the adolescent substance use variable were measured in Wave I at the same time, thus it is not clear whether or not it is the depression that is causing the substance use or vice versa.

This ambiguity is not only a limitation to this paper, but also the limitation of many others as seen in the literature review. There are a couple reasons for this. The first is due to the short time frame of when either adolescent depression or adolescent substance use develops. In many instances, those two characteristics develop hand in hand, making it hard to tell which one came

before the other and even harder to tell that causal relationship between the two. The second reason is due to the similar effects that adolescent depression and adolescent substance use has on neurobiological changes, further blurring the distinction from what the root problem is. (Rao, 2006) However, even with this inconclusion between the causation of adolescent depression and adolescent substance use, my paper still yields valuable insight when predicting future adult labor outcomes.

After review of all the empirical analysis, the direction and strength of the arrows drawn in Figure 1 are mostly what I expected them to be with the exception of arrow one. Through my regression models, both linear probability and probit models, it suggests that adolescent depression does not have as large of an effect on future adult labor outcomes as previously believed. It is in fact the adolescent substance use that has a far more dramatic and punishing effect on future adult labor outcomes than any other fact that was tested in this study. While it is still important to invest in mental health resources for adolescent, this paper suggests that policies and funding that keeps high schoolers and young adults away from regular alcohol, tobacco, marijuana, cocaine, or any other drug use can significantly increase adolescents' future adult labor outcomes and set them up for future financial success.

VI. Conclusion

In this paper it is hypothesized that there are significant negative effects across all relationships with adolescent depression on future adult labor outcomes and adolescent substance use on future adult labor outcomes to both be negative while adolescent depression on substance use to be positive. This paper finds that there is a statistically insignificant relationship between being depressed as an adolescent and future adult outcomes (both income and employment) at the 95% confidence level. Furthermore, when fixing for adolescent substance use, it is discovered that individuals that were adolescent substance users had a significant negative decrease in future adult income regardless of whether or not they were depressed as an adolescent or not. Another interesting thing to note is that this significant negative relationship was not found when future adult employment became the outcome variable. Both of these relationships were tested at the 95% confidence level. These results were only partially consistent with the hypothesis.

Additionally, these results were only partially reflected in the current literature with many studies showing that adolescent depression having a significant negative impact on future adult labor outcomes. (Fletcher, 2013; Alaie et al., 2022; Johar and Truong, 2014 ; Berndt et al., 2000; Yu, 2019) This study adds to the current literature by showing that it is actually the adolescent substance use that is the main driver for the significant decrease in future adult labor outcomes, specifically future adult income. It further contributes by showing that there is an insignificant impact on future adult employment, concluding that there is a larger decrease in earning potential rather than employability.

Even though the data is partially supportive of the hypothesis, there are several limitations to this study. The first limitation has to do with the nature of ADD health data itself. Since the survey is self-reported, there will be biases and a tendency to decrease the outcomes of more

"negative" variables towards the more neutral answer choice. (Liechty et al.) Furthermore, another limitation comes from the timing of when the independent variables, the adolescent depression and substance use variables, were recorded. While the two variables are heavily correlated, because both variables were recorded at the same time in Wave I, it is impossible to establish a causation between the two variables within my data sample. Thus, it is impossible to establish which direction arrow one is pointing when looking at Figure 1 in the methodology section.

However, despite these limitations, this paper was able to find significant results and provide insight to policy makers about where to allocate funding in order to maximize the future of young adults and adolescents. It is clear from the empirical analysis of this paper that policy makers should further emphasize the severity of adolescent substance use and create more programs to keep high schools drug free. This will not only benefit the younger generation, but ensures that the future of the United States is on an upward trajectory.

VII. Appendix

Table 8. (Extension/Control Variables of Table 2 Regressions)

VARIABLES	Log(Income)	Log(Income)	Log(Income)
Sex/Male	0.456***	0.462***	0.450***
	(0.0613)	(0.0610)	(0.0608)
Hispanic	0.233*	0.210*	0.215*
	(0.121)	(0.122)	(0.121)
Black	-0.243***	-0.336***	-0.326***
	(0.0897)	(0.0914)	(0.0918)
Native American	-0.447	-0.492	-0.441
	(0.345)	(0.360)	(0.356)
Asian	0.147	0.0864	0.125
	(0.151)	(0.149)	(0.147)
Other Race	-0.389**	-0.460***	-0.452***
	(0.171)	(0.171)	(0.170)
Immigrant	0.337**	0.336**	0.333**
	(0.148)	(0.147)	(0.146)
Grade	0.194***	0.205***	0.207***
	(0.0577)	(0.0574)	(0.0572)
Parents Married	-0.0623	-0.0708	-0.0722
	(0.0674)	(0.0672)	(0.0672)
Parents Employed	0.0665	0.0707	0.0725
	(0.0767)	(0.0766)	(0.0757)
SES	0.000614	0.000591	0.000593
	(0.000527)	(0.000534)	(0.000541)
Parents High School Grad	-0.125	-0.115	-0.129
	(0.141)	(0.140)	(0.140)
Parents Some College	0.0981	0.0975	0.104
	(0.142)	(0.140)	(0.140)
Parents College Grad	-0.0494	-0.0597	-0.0588
	(0.0806)	(0.0806)	(0.0804)
Age	-0.129**	-0.128**	-0.129**
	(0.0545)	(0.0544)	(0.0541)
High School Grad	0.232	0.268	0.260
	(0.233)	(0.224)	(0.227)
Some College	0.367***	0.347***	0.346***
	(0.103)	(0.103)	(0.103)
College Grad	0.537***	0.501***	0.497***
	(0.0673)	(0.0676)	(0.0670)
Constant	9.766***	9.716***	9.755***
	(0.459)	(0.445)	(0.448)
Observations	1,180	1,180	1,180
R-squared	0.178	0.187	0.191

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 9. (Extension/Control Variables of Table 3 Regressions)

VARIABLES	Log(Income)
Sex/Male	0.450***
	(0.0608)
Hispanic	0.215*
	(0.121)
Black	-0.326***
	(0.0918)
Native American	-0.441
	(0.356)
Asian	0.125
	(0.147)
Other Race	-0.452***
	(0.170)
Immigrant	0.333**
	(0.146)
Grade	0.207***
	(0.0572)
Parents Married	-0.0722
	(0.0672)
Parents Employed	0.0725
	(0.0757)
SES	0.000593
	(0.000541)
Parents High School Grad	-0.129
	(0.140)
Parents Some College	0.104
	(0.140)
Parents College Grad	-0.0588
	(0.0804)
Age	-0.129**
	(0.0541)
High School Grad	0.260
	(0.227)
Some College	0.346***
	(0.103)
College Grad	0.497***
	(0.0670)
Constant	9.755***
	(0.448)
Observations	1,180
R-squared	0.191

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10. (Extension/Control Variables of Table 4 Regressions)

VARIABLES	Employment	Employment	Employment
Sex/Male	0.102***	0.103***	0.102***
	(0.0209)	(0.0208)	(0.0209)
Hispanic	-0.0183	-0.0201	-0.0195
	(0.0520)	(0.0518)	(0.0520)
Black	-0.00626	-0.0136	-0.0117
	(0.0320)	(0.0325)	(0.0328)
Native American	0.0881	0.0855	0.0862
	(0.0863)	(0.0879)	(0.0871)
Asian	-0.0413	-0.0454	-0.0436
	(0.0583)	(0.0580)	(0.0586)
Other Race	0.000364	-0.00518	-0.00380
	(0.0643)	(0.0643)	(0.0645)
Immigrant	0.0202	0.0202	0.0219
	(0.0599)	(0.0595)	(0.0593)
Grade	0.0554***	0.0563***	0.0560***
	(0.0201)	(0.0201)	(0.0202)
Parents Married	0.00755	0.00675	0.00592
	(0.0253)	(0.0252)	(0.0254)
Parents Employed	-0.0190	-0.0187	-0.0191
	(0.0247)	(0.0247)	(0.0248)
SES	-0.000199	-0.000201	-0.000205
	(0.000191)	(0.000192)	(0.000193)
Parents High School Grad	0.0915**	0.0919**	0.0912*
	(0.0464)	(0.0465)	(0.0466)
Parents Some College	-0.113**	-0.113**	-0.112**
	(0.0458)	(0.0458)	(0.0459)
Parents College Grad	0.00519	0.00431	0.00366
	(0.0254)	(0.0254)	(0.0254)
Age	-0.0349*	-0.0348*	-0.0343*
	(0.0194)	(0.0194)	(0.0194)
High School Grad	0.178*	0.180*	0.176*
	(0.0924)	(0.0927)	(0.0925)
Some College	0.0942**	0.0924**	0.0920**
	(0.0388)	(0.0389)	(0.0389)
College Grad	0.0886***	0.0855***	0.0850***
	(0.0215)	(0.0217)	(0.0216)
Constant	0.546***	0.543***	0.548***
	(0.166)	(0.165)	(0.166)
Observations	1,180	1,180	1,180
R-squared	0.079	0.080	0.080

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 11. (Extension/Control Variables of Table 5 Regressions)

VARIABLES	Employment
Sex/Male	0.102***
	(0.0209)
Hispanic	-0.0195
	(0.0520)
Black	-0.0117
	(0.0328)
Native American	0.0862
	(0.0871)
Asian	-0.0436
	(0.0586)
Other Race	-0.00380
	(0.0645)
Immigrant	0.0219
	(0.0593)
Grade	0.0560***
	(0.0202)
Parents Married	0.00592
	(0.0254)
Parents Employed	-0.0191
	(0.0248)
SES	-0.000205
	(0.000193)
Parents High School Grad	0.0912*
	(0.0466)
Parents Some College	-0.112**
	(0.0459)
Parents College Grad	0.00366
	(0.0254)
Age	-0.0343*
	(0.0194)
High School Grad	0.176*
	(0.0925)
Some College	0.0920**
	(0.0389)
College Grad	0.0850***
	(0.0216)
Constant	0.548***
	(0.166)
Observations	1,180
R-squared	0.080

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12. (Extension/Control Variables of Table 6 Regressions)

VARIABLES	Employment	Employment	Employment
Sex/Male	0.103***	0.104***	0.102***
	(0.0211)	(0.0209)	(0.0211)
Hispanic	-0.0156	-0.0183	-0.0184
	(0.0496)	(0.0492)	(0.0493)
Black	-0.00778	-0.0160	-0.0148
	(0.0292)	(0.0298)	(0.0300)
Native American	0.102	0.0969	0.101
	(0.112)	(0.113)	(0.113)
Asian	-0.0389	-0.0431	-0.0421
	(0.0577)	(0.0573)	(0.0575)
Other Race	-0.00511	-0.0100	-0.00864
	(0.0623)	(0.0621)	(0.0624)
Immigrant	0.0193	0.0208	0.0229
	(0.0583)	(0.0579)	(0.0579)
Grade	0.0507***	0.0518***	0.0517***
	(0.0183)	(0.0183)	(0.0183)
Parents Married	0.00781	0.00647	0.00615
	(0.0228)	(0.0228)	(0.0228)
Parents Employed	-0.0194	-0.0192	-0.0195
	(0.0259)	(0.0258)	(0.0258)
SES	-0.000185	-0.000190	-0.000193
	(0.000143)	(0.000143)	(0.000143)
Parents High School Grad	0.109*	0.109*	0.109*
	(0.0586)	(0.0588)	(0.0590)
Parents Some College	-0.131**	-0.130**	-0.130**
	(0.0585)	(0.0587)	(0.0589)
Parents College Grad	-0.00126	-0.00261	-0.00306
	(0.0258)	(0.0259)	(0.0258)
Age	-0.0313*	-0.0314*	-0.0309*
	(0.0176)	(0.0177)	(0.0176)
High School Grad	0.106*	0.108*	0.106*
	(0.0551)	(0.0553)	(0.0552)
Some College	0.0802***	0.0786***	0.0782***
	(0.0289)	(0.0290)	(0.0290)
College Grad	0.0969***	0.0936***	0.0926***
	(0.0234)	(0.0235)	(0.0233)
Observations	1,180	1,180	1,180

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13. (Extension/Control Variables of Table 7 Regressions)

VARIABLES	Adolescent Substance Use (Linear)	Adolescent Substance Use (Probit)
Sex/Male	-0.0264	-0.0295
	(0.0268)	(0.0266)
Hispanic	-0.0611	-0.0608
	(0.0583)	(0.0569)
Black	-0.282***	-0.305***
	(0.0333)	(0.0416)
Native American	-0.00484	-0.0125
	(0.146)	(0.134)
Asian	-0.0865	-0.0843
	(0.0763)	(0.0753)
Other Race	-0.213***	-0.234***
	(0.0656)	(0.0754)
Immigrant	0.00569	0.0170
	(0.0710)	(0.0710)
Grade	0.0404*	0.0392*
	(0.0238)	(0.0235)
Parents Married	-0.0442	-0.0471
	(0.0302)	(0.0296)
Parents Employed	0.0157	0.0126
	(0.0329)	(0.0326)
SES	-0.000126	-0.000142
	(0.000154)	(0.000182)
Parents High School Grad	-0.0140	-0.0165
	(0.0707)	(0.0658)
Parents Some College	0.0309	0.0343
	(0.0712)	(0.0664)
Parents College Grad	-0.0415	-0.0436
	(0.0337)	(0.0340)
Age	0.00562	0.00771
	(0.0230)	(0.0228)
High School Grad	0.0620	0.0519
	(0.0960)	(0.0876)
Some College	-0.0825*	-0.0795**
	(0.0433)	(0.0394)
College Grad	-0.148***	-0.146***
	(0.0299)	(0.0290)
Constant	-0.00706	
	(0.197)	
Observations	1,180	1,180
R-squared	0.134	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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