2021

Parental Education as a Potential Predictor of Adolescent Substance Use Status

Haruna Bida Aliyu
Walden University

Walden University

College of Health Professions

This is to certify that the doctoral dissertation by

Haruna Aliyu

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Michael Dunn, Committee Chairperson, Public Health Faculty
Dr. Simone Salandy, Committee Member, Public Health Faculty
Dr. Pelagia Melea, University Reviewer, Public Health Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2021

Abstract

Parental Education as a Potential Predictor of Adolescent Substance Use Status

by

Haruna Aliyu

MPH, Walden University, 2015

MPA, Nigeria Defense Academy, 2014

Pharm D, University of Benin, 2011

BSc, Ahmadu Bello University, 1982

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

August 2021

Abstract

Adolescents in the United States commence substance use as early as 12 to 14 years old and as late as 15 to 17 years old. Several factors influence adolescent substance use/abuse status, including environment, boredom, friends, teachers, and parental influence. The influence of parental communication with adolescents about the danger of substance use/abuse (SUA) required further study. The purpose of this quantitative cross-sectional study was to understand the influence of parental knowledge and communication with adolescents as potential predictors of substance use/abuse status. The social cognitive theory and social determinants of adolescent risky behavior provided the theoretical framework of this study. Data from the 2018 National Survey on Drug Use and Health 2018 were analyzed. The target population was adolescents 12 to 17 years old in the United States. Binary logistic regression was used to analyze the data. The results of the study revealed statistically significant associations between parental communication with adolescents about the danger of SUA, adolescent age, and substance use status (p = 0.049, Odds 1.025, 95% CI = 1.00, 1.05) and (p = 0.002, Odds – 1.93, and 95% CI = 1.26, 2.95), respectively, revealing that parental communication with adolescents about the danger of SUA and adolescent age were predictors of substance use status. The study findings may be used by government, community, and other stakeholders to design intervention programs that potentially reduce SUA and improve adolescents' health, productivity, and life expectancy.

Parental Education as a Potential Predictor of Adolescent Substance Use Status

by

Haruna Aliyu

MPH, Walden University, 2015

MPA, Nigeria Defense Academy, 2014

Pharm D, University of Benin, 2011

BSc, Ahmadu Bello University, 1982

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

August 2021

Dedication

I dedicated this dissertation to my late parents, my wife, and my children for their understanding, support, and continuous prayers.

.

Acknowledgments

My gratitude to Almighty Allah for seeing me through my studies and the successful completion of this dissertation. My appreciation to Dr. Michael Dunn, who served as my chair, and whose guidance and support throughout the entire process was of great help to see me through. I appreciate Dr. Simone W. Salandy, my second member, for her prompt review of my submissions. I am equally grateful to my URR member, Dr. Pelagia Melea.

I am grateful to the staff and students I came across during my studies at Walden University; you are all wonderful.

Table of Contents

List of Tables

Chapter 1: Introduction to the Study

The increasing rate of substance use/abuse (SUA) diseases, globally and in the United States, is alarming. SUA is a challenging problem that affects all nations and ethnic groups (Kelly, 2019). It has caused more cases of disease, disability, and death than those caused by other preventable health conditions (National Institute on Drug Abuse [NIDA], 2017). According to the World Drug Report (2018), deaths caused by substance abuse increased by 60% from 2000 to 2015 globally.

In the United States, there has been an increase in the use of prescription pain relievers, marijuana, and heroin and a reduction in the consumption of alcohol, cocaine, and tobacco in recent years (Centers for Disease Control and Prevention [CDC], 2016). In 2018, about 57.8 million Americans had a mental and or substance use disorder (SUD); among the 19.3 million with SUD, 74% struggled with alcohol use, 38.4% struggled with illicit drugs, and 12.9% struggled with both alcohol and illegal drugs. Prescription psychotherapeutic drugs that include prescription pain relievers, sedatives, stimulants, and tranquilizers are historically the second most misused or used illicit drugs (second to marijuana) in the United States. In 2015 to 2017, approximately 18.1 million to 18.9 million people aged 12 years and older abused prescription psychotherapeutic drugs among people in the past 12 months, while 47.7 million to 51.8 million people aged 12 or older used illicit drugs including marijuana in the past 12 months (Center for Behavioral Health Statistics and Quality [CBHSQ], 2019a).

These statistics illustrate how widespread the problem of SUA disease is in the general U.S. population and how it extends to some of the youngest members of the

population. According to Johnston et al. (2016), about half of U.S. adolescents have abused or used illicit drugs at least once by 12th grade. Youth abuse many substances, such as glues, aerosols, and prescription drugs in the home. Adolescents commence the use of substance abuse as early as 12 to 14 years and as late as 15 to 17 years (World Drug Report, 2018). The National Survey on Drug Use and Health (NSDUH, SAMHSA, 2019) indicated that in 2018, about 2.4 million U.S. adolescents aged 12 to 17 years initiated the use of alcohol, with an average of 6,521 person per day; the number (2.4 million) was similar for young adults (individuals 18 to 25 years old), with a daily average of 6,673 young adults, while the number of older adults (those 26 years and older) who initiated alcohol use was about 65,000 (with daily average of 171). Moreover, major depression episodes with severe impairment among adolescent substance abusers in the United States increased from 8.8% to 10% between 2015 to 2018; there also was an increase in suicidal thoughts, plans, and attempt within the same period and group (SAMHSA, 2019).

To address SUA and related mental health issues among adolescents, experts have increasingly focused research and intervention efforts on parents. Parents of adolescents who engage in SUA have often been viewed as careless or to blame for their children's behavior (Rathore et al., 2017). However, talking with parents about the dangers of substance/abuse and considering socioeconomic status (SES) and ethnicity can further understanding of adolescents' SUA status (Small et al., 2014). In this study, I investigated the impact of parental education on children's SUA status. Education and economic opportunity are closely related and intertwined, and the potential return on

education may motivate young people as well as their parents to achieve educationally (Lawrence & Nkoane, 2020).

Knowledge of the impact of parental education on adolescent SUA status may be useful to governments, international organizations, health institutions, and other stakeholders in creating appropriate advocacy and policies for parents and their children. These changes may improve the health, education, and SES of parents and their children, thereby creating positive social change in communities. In Chapter 1, I provide background information on the study topic; present the problem statement, purpose of the study, and research questions (RQs) and hypotheses, provide overviews of the conceptual framework and nature of the study; define key terms; and discuss the assumptions, social and delimitations, limitations, and significance of the study.

Background

Adolescents engage in the use of substances of abuse, and the percentage increase with age among adolescents. In the United States, about half of the adolescents' abuse or use illicit drugs at least once by the age of 17; the substances adolescents abuse includes glues, aerosols, and prescription drugs in the home (Johnston et al., 2016). According to SAMHSA (2019) 1 in 6 adolescents (16.7 percent) aged 12 to 17, numbering about 4.2 million used illicit drugs, while, 2 in 5 young adults aged 18 to 25, approximately 13.2 million (38.7 percent) were involved in the use of illicit drugs. Within the same period (2018) adults aged 26 and older, approximately 35.9 million (16.7 percent) were illicit drug users in the United States (SAMHSA, 2019). The prevalence of using illicit drugs in 2016 in the United States increased by age, the prevalence for 13 to 14 years was 5

percent, 15 to 16 years was 10 percent, and 14 percent for 17 to 18 years (Schulenberg et al., 2017). Provision of intervention on the use of substances of abuse at or before the adolescent age will create a more positive social change in the United States.

It is important to pay attention to the adolescent as early as possible concerning substance abuse. Adolescents commence the use of substance abuse as early as 12 to 14 years and as late as15 to 17 years (World Drug Report, 2018). The adolescent period within the human life cycle is between puberty and the young adult stage, which is from about 12 to 17 years of age (Wood et al., 2017). It is a transition of change and growth between childhood and adulthood (Wood et al., 2017). The period has biological, social, and psychological characteristics and coincides with the development of moral and social norms of behavior and identity formation (McCabe et al., 2017). The adolescent period is a period of risky behavior for initiation of substance misuse/abuse with its attendant short- and long-term consequences in the quality of life and health of adolescents. The absence of protective factors and the presence of risk factors can influence substance abuse initiation in adolescents and children at different stages of life and ages (NIDA, 2020). Parents need to show more concern about the activities of their children at the adolescents stage.

Several factors influence adolescents' substance abuse. Economic strains, especially poverty, during childhood are associated with an increased likelihood of substance abuse, especially regular smoking in adulthood, which is partially mediated by poorer self-control during adolescence. According to Beenackers et al. (2017), self-

control is negatively affected by economic strains and serves as a mediator between poverty and the risk of regular smoking. Family structure (Bi et al., 2018), parenting style (Bi et al., 2018), parental knowledge (Crouter & Heed, 2002), mother's educational level (Wong et al., 2017), living place (Jalilian et al., 2015), living without parents (Jalilian et al., 2015), and negotiated the unsupervised time of guardian (Odukoya et al., 2018) predict adolescents' SUA.

Researchers have found that adolescents whose parents have high levels of knowledge about youth activities are less likely to engage in a host of unwanted behaviors, such as SUA and delinquency (Crouter & Head, 2002; Lippold et al., 2014; Mott et al., 1999) and/or to select antisocial peers and be influenced by them (Veronneau & Dision. 2010). Although the literature has confirmed a strong relationship between parental knowledge and youth outcomes, it is not clear if parental knowledge or other characteristics of the parent-child relationship causes lower levels of risky behavior such as SUA Lippold et al. (2014) recommended further exploration of the relationship between parental education and other behaviors, while Odukoya et al. (2018) recommended further studies on the influence of parental education on the child's substance abuse and on their unsupervised time. Accordingly, clarifying the association between parents' education and children's substance abuse is of high interest to researchers and policymakers as such research may highlight potential targets for interventions. The goal of this study was to understand the impact parental education has on children's SUA status.

Problem Statement

In the United States, roughly half of adolescents have abused or used illicit drugs at least once by 12th grade (Johnston et al., 2016). Adolescents use many substances, including glues, aerosols, and prescription drugs in the home (Johnston et al., 2016). Adolescents commence SUA as early as 12 to 14 years and as late as 15 to 17 years (World Drug Report, 2018). Chronic use of substance abuse has numerous consequences that include deficits in domains such as cognitive functioning, physical health, educational achievement, psychology, social incompetence, and relationships (World Drug Report, 2018).

A number of other factors influence adolescent substance abuse. Bomba-Edgerton (2017) stated that boredom, environment, friends, teachers, staff members, and parents influence school students to engage in substance abuse. According to Wanders et al. (2020b), teachers have more influence on adolescents than social and political issues while Bi et al. (2018) noted that family structure and parenting style predict an adolescent's SUA status more than SES. Adolescents who are more attached to their parents are less likely to be influenced by drugs (Grana et al., 2010). Indeed, the most influential risk factor of adolescent smoking is parents who smoke (Levy, 2019). Furthermore, investigators revealed that an adolescent whose friend's parents are warm and communicative but who also exert appropriate control are 43% less likely to smoke marijuana and 40% less likely to take alcohol to the point of drunkenness, compared to an adolescent whose friend's parents are neither warm nor in control (Shakya et al., 2012).

Parental monitoring of adolescent activities in relation to substance abuse activities is vital to early intervention on abuse of substances. In studies conducted by Odukoya et al. (2018) the relationship between parental monitoring practices and prevalence of SUA among adolescents in part of Lagos, Nigeria, showed that negotiated unsupervised time of parent was consistently associated with SUA among high school adolescents. The researchers recommended further investigation of the influence of parental education on children's unsupervised time and, consequently, on their SUA. Sutherland (2012) found, in Peterborough, England, that the collective impact of parental education, occupational class, household income, family structure, demographic characteristics, and the development and social process that accompanies aging predicts that adolescents will initiate substance abuse rather than SES. Although these studies of parental influence on SUA in adolescent networks highlight pertinent findings, they do not provide insight on the effect of the level of education of parents/guardians on SUA by adolescents of 12 to 17 years old specifically in the United States. Therefore, there is a need for further investigation on this gap, to find whether parental knowledge is a predictor of adolescent indulgences in SUA.

Purpose of the Study

I conducted this study to clarify the relationship between the level of education of parents and children’s SUA and to understand the importance of parental education on the prevention of SUA by adolescents. A quantitative research approach using a cross-sectional design was employed. The statistical analysis for this study was binary logistic regression, and confounders and effect modifiers were identified and controlled during

the examination (see Laureate Education, 2010a). This study focused on the associations between parental education, communication on the danger of SUA between parents and adolescents, and the SUA status of the adolescent. Adolescents' substance abuse/use status was the dependent variable, while the primary independent variable was parental education. Other independent variables included adolescents' communication with a parent on the dangers of SUA, age, sex, race, SES, and other demographics. The study findings may inform the development of more targeted intervention programs, which may promote the health, social, and quality of life of adolescents and positively contribute to the U.S. economy. The findings may be relevant to parents, governments, leaders, and health organizations.

Research Questions and Hypotheses

RQ1: To what extent does parental education predict adolescent substance use after controlling for age, sex, race, marital status, and SES?

*Ho*1: There will be no evidence that parental education predicts the occurrence of substance use in an adolescent after controlling for age, sex, marital status, and SES.

$H_1$1: There will be evidence that parental education predicts the occurrence of substance use in an adolescent after controlling for age, sex, and SES.

RQ2: To what extent do adolescent talks with their parents on the danger of use/abuse of substances predict adolescent's substance use after controlling for age, sex, race, and SES?

$H_0$2: There will be no evidence that adolescent talks with the parents on the danger of the use of substances predict adolescent's substance use after controlling for age, sex, race, and SES.

$H_1$2: There will be evidence that adolescents talk with the parent on the danger of the use of substances predict the adolescent's substance use after controlling for age, sex, race, and SES.

Theoretical Foundation

A theoretical framework is fundamental to all researchers in providing directions and validating or disapproving a phenomenon. A theoretical framework helps a researcher to situate and contextualize theories into research (Ravitch & Carl, 2016). That fosters credibility and increases the robustness of the study (Adom et al., 2019). For the theoretical framework for this study, I used the social determinants of adolescent risk behaviors (SDOARB; Laveist, 2005b) and the social cognitive theory (SCT; Bandura, 1986). Adolescence is a crucial period when significant changes in health-related behavior such as SUA, smoking, and sexual practice occur (United Nations, 2015).

To better understand adolescents' SUA and identify strategies for prevention, scientists have proposed the use of SDOARB (Laveist, 2005b), which integrates social and racial determinants in health processes around adolescents' lives. The SDOARB model suggests that the social environment, including education, race, and family, can significantly influence adolescents' SUA and well-being (Laveist, 2005a). The SCT proposes that part of a person's knowledge acquisition can be directly associated with observing others within the context of experience, social interaction, and media influence

(Bandura, 1986); the SCT is an extension of the social learning theory (SLT, Bandura, 1971). Parent-child interaction and adolescent adjustment have a strong association (Spera, 2005). The SCT expresses the link between human thinking, learning and feelings, and a person's environment, and therefore, was fundamental to this study.

SCT is an extension of SLT. Bandura developed the SLT in 1960 (Bandura & Walter, 1963) and later improved the theory and renamed it SCT in 1986 (Bandura, 1986, 1997a). SCT emphasizes that human beings can think, learn from their environments, and have feelings (Bandura, 1986; VanGeest et al., 2017). The SCT is a useful theoretical framework that could be used to describe the cognitive, psychological, and health behavior of adolescents and behavioral changes concerning SUA. SCT shows that the dynamic and reciprocal interaction of person, behavior, and environment leads to learning (Wayne, 2019). SCT emphasizes social influence as well as external and internal social reinforcement. The theory considers the unique way a person acquires and maintains behavior. The acquired experiences influence the reinforcement, expectancies, and expectation of a person to accept or reject engaging in specific behavior and its justification (Wayne, 2019). The SCT consist of six constructs: behavioral capability, expectations, reciprocal determinism, observational learning, reinforcements, and self-efficacy. The last, self-efficacy, was developed when the SLT evolved to SCT.

The SDOARB relates to this study as parental education is an integral part of an adolescent's social environment. By application of the theory, parental education can influence the behavior of the adolescent to indulge in SUA. The SCT can be applied to the way an adolescent acquires and maintains substance abuse behavior. The adolescent's

substance abuse behavior occurs due to the interaction between the adolescent, parental education, and substance abuse. The reinforcement, expectancies, and expectations of parents influence adolescents acquired experiences to reject or accept the behavior. They can be used for intervention and understanding of the adolescent's substance abuse. In this study, I evaluated the association between parental education and adolescent's substance use status, among other independent variables such as age, race, and SES.

Nature of the Study

I used a quantitative method. The design used was a cross-sectional survey; I investigated the association between parental education, the independent variable, and the adolescent's substance use status, the dependent variable. The factors controlled were the demographics and socioeconomic. A cross-sectional design allows researchers to carry out studies in natural, real-life settings using probability samples to build up the external validity of the research (Carter, & Lubinsky, 2016; Lobo et al., 2016). The analysis investigated the associations between the independent variables and the dependent. I obtained the data on adolescents aged 12 to 17 years from the NSDUH 2018 data set, which had a target sample size of 67,791 individuals from all 50 U.S. states and the District of Columbia (NSDUH, 2018).

I conducted binary logistic regression statistical analysis to determine the relationships between adolescents' demographics (age, gender, parental education, and SES) and the occurrence of SUA in youth. The assumptions in regression analyses, which include normality and random residuals (Vatchova et al., 2016), were tested between predictor variables and the dependent variable. A multicollinearity test was conducted

before the regression analysis to test if the relationship of the independent variables was highly associated. Having two or more independent variables highly related to each other will result in an unstable regression coefficient (Vatchova et al., 2016). It is therefore vital to identify and address multicollinearity to avoid misleading interpretation of results. Researchers are encouraged to consider diagnosis for multicollinearity as a step in regression analysis (Vatchova et al., 2016).

Definitions

Adolescence: A transition period within the human life cycle, between puberty and young adult stage, from about 12 to 17 years of age (Wood et al., 2017). The period has biological, psychological, and social characteristics that influence the development of moral and social norms of behavior and identity formation (McCabe et al., 2017). An *adolescent* is an individual in this stage of life. Other terms used interchangeably in the study include *wards*, *youth*, and *teenagers*.

Household income: All forms of income such as retirement income and wages and salaries of persons 15 years and more living together in a household or home irrespective of their relationship (Kagan, 2019).

Parental communication: The communication between the parent and the child on the dangers of SUA (NSDUH, 2018).

Parental education: The highest level of educational attainment among parents or guardians living in a child's home at the time of the interview (Child Trends Databank, 2015).

Substance use: The hazardous or harmful use of psychoactive substances, including tobacco, alcohol, and illicit drugs (World Health Organization, 2020).

Assumptions

In this study, I assumed that the participants honestly responded to the survey questions. I assumed that not all parents of adolescents were the biological parents of the children. I also assumed that the methodology selected for this study, a cross-sectional retrospective survey design, was appropriate for the research. The SDOARB and SCT chosen for this study were assumed to be the most suitable models for studying adolescent substance abuse. These theories are fundamental to the study's purpose; to identify the association between an adolescent's substance use status and parental education/communication and other demographics of adolescents. The findings will not be valid if the participants did not answer the survey questions honestly, the survey design was not appropriate to the study, or the models were not suitable for the research. In Chapter 2, I provide more information on the conceptual framework for the study. In Chapter 3, I provide a rationale for the method and design used in the study.

Scope and Delimitations

The study involved analysis of secondary data of the 2018 NSDUH administered in all 50 U.S. states and the District of Columbia. The CBHSQ coordinated the NSDUH through RTI International in Research Triangle Park, North Carolina (NSDUH, 2018). The objective of NSDUH is to measure the prevalence and associations of substance use and mental health issues in the United States. It provides data on the use of alcohol, illicit drugs, and tobacco in the United States among civilian, noninstitutionalized residences

aged 12 years old and above (NSDUH, 2018). The NSDUH encourages honesty and recall. NSDUH is administered using audio computer-assisted self-interviewing, which guarantees confidentiality and privacy in responding to inquiries on illicit drugs and other sensitive behaviors (CBHSQ, 2019b).

The 2018 NSDUH data were randomly collected from a target sample size of 67,791 individuals from all the 50 states and the District of Columbia in the United States. This broad scope may allow the generalization of the study to the broader population. The SDOARB developed by Laveist (2005) and SCT developed by Bandura (1986) provided the theoretical foundation for this study because they could address the predicting, controlling, and outcome variables. The social-ecological model (SEM) and the transtheoretical model of behavioral change were not employed in this study. This was because SEM needs the motivation to transform the environment (Kilanowski, 2017). and because the transtheoretical model is used to assess willingness to change at the individual level (Prochaska, & DiClemente, 1984).

Limitations

The NSDUH data were based on self-reports of drug use, and their values depend on the respondent's truthfulness and memory. There may be some overreporting or underreporting even though the design procedure encouraged honesty and recall strategies (SAMHSA, 2019), so there may be an internal threat to the validity of the study due to recall factors. Another limitation was that the subjects were not followed. Because the survey was a cross-sectional one and not longitudinal: Respondents were interviewed once. Therefore, the data is an overview of the prevalence of substance use at a specific

time per individual (SAMHSA, 2019). Even though the sample population was substantial, an essential segment of the U.S. population that constitutes approximately 3% of the population was excluded, including people residing in the institutional and active-duty military quarters (Lofquist et al., 2012).

The CBHSQ who conducted the NSDUH survey took measures to overcome the limitations of the study. NSDUH uses audio computer-assisted self-interviewing to assure confidentiality of response, which increases the accuracy of the self-reporting and reduces self-bias of NSDUH (Gfroever et al., 2002). To address the lack of longitudinal data of a causal effect because a cross-sectional design was used, large sample size was used. The collection of demographic data also provides a means to check the representativeness of the respondents.

Significance

Approximately half of the adolescents in the United States have abused illicit drugs at least once by the 12th grade (Johnston et al., 2016). Adolescents in the United States abuse many substances, such as prescription medications, glues, and aerosols, in the home (Johnston et al., 2016); however, the most abused substance is marijuana. African American adolescents are disproportionately affected by alcohol and drug problems and face a more significant burden of adverse health outcomes associated with substance abuse (Small et al., 2014). In addition, although they are less likely than Whites to have engaged in drug use or drug selling, African American adolescents are more likely to be arrested for participating in the illegal behavior (Kakade et al., 2012).

Parental education, SES, and ethnicity can provide a comprehensive perspective on adolescents' substance use (Small et al., 2014). SES is a macro-level factor that affects youth health and development, and there is a definite relationship between SES indicators and SUA (Small et al., 2014). Education and economic opportunity are also closely related and intertwined, and the return on education is a vital factor in motivating young people and their parents for educational achievement (Blum et al., 2014). Some parents (e.g., those who immigrate for employment) may face time constraints in fully attending to their children's education (Blum et al., 2014). Also, African American and Hispanic parents have much lower education than the average population (Garcia & Weiss, 2017). They may be less able to help their children academically. The Council of the Great City Schools (Small et al., 2014) indicated, for instance, that only 12% of African American fourth-grade boys were proficient in reading, compared with 38% of White boys, and 12% of African American eighth-grade boys were proficient in math, compared to 44% of Whites, in 2014. Lower academic achievement may put African American youth at greater risk of SUA.

In this cross-sectional study, I examined the association between parental education and adolescents' substance use status. This study is unique as parental education was the leading independent variable and other socioeconomic factors and demographics were evaluated and controlled. Parental education was examined as a potential predictor of adolescent SUA status to fill the gap that parental knowledge is a predictor of adolescent SUA status. The study may offer insight into the influence of parental education/communication on adolescents' substance use. Understanding

adolescent substance abuse may offer an opportunity to government, international organizations, health institutions, and other stakeholders to design strategies to improve the health, education, and SES of both parents and adolescents. Leading to a positive social change in the community. Collaboration with governments at all levels and other stakeholders may ensure the creation of appropriate advocacy and policies, including a public health campaign strategy for parents and adolescents, that may yield positive social change. These social change efforts may eventually empower adolescents and the community at large (Laureate Education, 2015b).

Summary

Parents, teachers, teachers, friends, the environment, and boredom influence school students to engage in substance use (Bomba-Edgerton, 2017). The most influential risk factor of adolescent smoking is parents who smoke (Levy, 2019). Adolescent SUA is a significant concern for the individual, family, and society, with consequences for physical and mental health (Milovanovic et al., 2016), workability (Jovanovic & Jakovljevic, 2015), family relationships (Jovanovic & Jakovljevic, 2015), and social activities (Jovanovic & Jakovljevic, 2015).

In this study, I examined whether parental education predicts the occurrence of substance use in an adolescent after controlling for SES, age, and sex. The SCT developed by Bandura (1986) and SBOARB developed by Laveist (2005) provided the theoretical foundation for the study. In Chapter 2, I will review the literature on adolescent substance abuse, consequences of substance abuse, the relationship between

parents and family, and theoretical models used in this study as well as the literature search strategy.

Chapter 2: Literature Review

Introduction

About half of the adolescents in the United States abuse or use illicit drugs at least once by 12th grade (Johnson et al., 2016), and between 2000 and 2015, death caused by SUA worldwide increased by 60% (World Drug Report, 2018). According to NIDA (2021) adolescents numbering 4,777 died as a result of drug overdose in 2019. Family structure, parenting style, mothers' educational level, living without parents, living place, and lack of parents' adequate supervision time predict child's substance use status (Bi et al., 2018; Jalilian et al., 2015; Odukoya et al., 2018). Further studies have been recommended on the influence of parental education on the child's substance use and their unsupervised time (Odukoya et al., 2018). In this study, I sought to understand the impact parental education has on adolescent's substance use status.

This chapter begins with overviews of the literature search strategy and conceptual framework. In the literature review that follows, I provide an overview of the current state of SUA and parental education as a potential predictor of adolescent substance use status. Existing literature on adolescent substance abuse concepts, predictors for substance abuse use, consequences of substance abuse, parental education, parental and family relationships, child behavior, and children indulgence in substance abuse are reviewed to address the gaps in the literature that I addressed.

Literature Search Strategy

I searched Walden University's online library and the Google Scholar search engine for relevant articles for this literature review. The databases I used to retrieve

information for this chapter included EBSCOhost in full text, Academic Search Premier, Psychology Database, PsycINFO, Behavioral Sciences Collection, ERIC, and Walden's Thoreau Multi-Database Search. The following terms and their synonyms were used to search for relevant articles: *substance use or drug addiction or drug abuse, adolescent or teenagers or young adults, parents or caregivers or mother or father or guardian, education level,* or *educational attainment or education*. Other terms used included *parental and family relationships, adolescent substance use, parental education, child's substance use/abuse, social cognitive learning theory, the social determinants of adolescent risk behaviors,* and *consequences of substance use/abuse in adolescents*. The articles collected for this study are related to these terms and relevant to the subject and variables in this study. Articles not applicable or related to this study were eliminated. About 80 of the articles selected for this study were current and published between 2015 and 2021. However, others articles included were older than 5 years due to their relevance to the variables.

Conceptual Framework

SCT originated from SLT, which was initiated in 1960 (Bandura & Walter, 1963) and later improved and renamed SCT in 1986 (Bandura, 1986, 1997a). SCT emphasizes that human beings think, learn from their environments, and have feelings (Bandura, 1986; VanGeest et al., 2017). The SCT is a theoretical framework that describes the cognitive, psychological, and health behavior of adolescents and behavioral changes concerning SUA. SCT posits that learning occurs in a social context with the dynamic and reciprocal interaction of a person, environment, and behavior. SCT stresses a social

connection with external and internal social reinforcement (Wayne, 2019). The theory considers the unique way a person acquires and maintains behavior. The acquired experiences influence the reinforcement, expectancies, and expectation of a person to accept or reject engaging in specific behavior and its justification (Wayne, 2019). There are six constructs in SCT; these are behavioral capability, observational learning, expectations, reinforcements, reciprocal determinism, and self-efficacy. The last, self-efficacy, was developed when the SLT evolved to SCT.

Reciprocal determinism is the central concept of SCT. It connotes the dynamic and reciprocal interaction of a person, his behavior and the environment that can influence human behavioral outcome (Bandura, 1977, 1986, 1989, 2001, 2012; Steca et al., 2015; Zikic & Saks, 2009). The reciprocal determinism in relation to this study refers to the interaction between the substance user/abuser, SUA, and the environment in which the behavior is performed; the environmental factors can influence SUA. Likewise, the user/abuser can affect the environment (McAlister et al., 2008). A person's learned experiences, comprising self-perceptions, feelings, beliefs, thoughts, intentions, and goals, constitute one of the triadic reciprocal causes of SCT (Bandura, 2001). The perceptions and beliefs of adolescents toward substance use can lead them to abuse substances, because, according to Bandura (1989), feelings, thoughts, beliefs, and goals mold behavior. Individual behavior may vary in different situations. Person and environment affect one another, people influence and modify the environment, and likewise, the modified environment affects people (Galvani et al., 2016). An educated parent may influence their child to keep away from SUA. An environment can affect an

individual and vice versa (Bandura, 2000). The construct indicates that a parent or a child can be an agent for change or a respondent to change (Bresee et al., 2016).

The environment concerns any factor that is physically external to the individual, which can affect their behavior. Social and environmental factors include parents, guardians, family, friends, culture, and institutions (Barnett & Casper, 2001), while physical factors are the availability of substances of use/abuse, weather, neighborhood, and so forth (Davison & Lawson, 2006; Motl et al., 2007). The social and physical environmental factors can be a source of knowledge and experience to an individual, who can use them to develop and modify expectations, sets of beliefs, and cognitive competencies (Bandura, 1999). An adolescent who indulges in substance abuse can be influenced by their parents, who may be their role model. The three factors in reciprocal determinism may be stronger than other influences (Bandura,1989).

SCT emphasizes the importance of cognitive influence over the environment; humans learn through several ways that include observation, interaction, and direct experience (VanGeest et al., 2017). It rejects behaviorism on the basis that behaviorism limits human action to cause and effect (Weistem, 2010). Humans make rational decisions when adapting to new behavior due to cognitive influence (Bandura, 1986, 2012; Harman, 2013). Therefore, the human decision is likely to be due to available information, consequences of different options, and experience (Bandura, 1986). The ability of individuals to modify their behavior is attributed to cognitive factors (Bandura, 1999b). A person’s behavior is influenced by the interplay between personal factors,

environment, thinking patterns, beliefs, and emotional reactions, and that is likely to determine a person's future belief (Bandura, 1986).

Adolescents are in various stages of behavior change due to social factors and developmental characteristics related to life stages (Christie & Vinear, 2003; Neinstein, 2002). Environment and personal factors can influence behavior (Bandura, 1986, 1989, 1999). Behavior can influence the potential environment that will be chosen and, in return, may determine personal action. An adolescent engaged in substance abuse may influence the restrictive action of the parent that may curtail such behavior (environment-influencing behavior) and in turn, make the child dislike the home environment (behavior-influencing environment) and move towards peer group (person-influencing behavior), and that may lead the adolescent to worsen the behavior or adjust to avoid SUA (Rosenholtz, & Rosenholtz, 1981). A person can perform an act through acquiring the essential knowledge and skill necessary for that act, which is referred to as the behavior capability construct of SCT.

The adolescent abusing substances must learn to become a substance user/abuser and perform the act; they learned from the consequences of their behavior and, in return, affect the environment (Wayne, 2019). However, the assumption of human rationality was challenged by Wason (1968) and Tversky and Kahneman (1974) that human judgments systematically violate the law of logic and probability theory, referred to as cognitive biases. Furthermore, Lieder et al. (2018) indicated that cognitive bias may be a window on resource-rational computation rather than human irrationality.

Observational Learning

SCT explains why people behave in a certain way (Schult, 2008). A tenet of SLT and SGT, by extension, is that people can learn behavior by observation. They can equally unlearn behavior by the same process (Schult, 2008; VanGeest et al., 2017) that responsive behavior is learned via observational learning (Domenech et al., 2009; VanGeest et al., 2017). Observations create opportunities to model certain behaviors. Adolescents who engage in deviant behavior, such as drug misuse, could influence their peers to indulge in substance abuse (Yang & Xia, 2019). A peer modeling marijuana abuse attracts other adolescents to be involved in marijuana abuse, as they will see it as an acceptable and appropriate social learning behavior (Walker et al., 2011). Exposure and imitation of behaviors can occur due to social reinforcement (Bandura, 2002; Bandura & Kupers, 1964), and the more positive outcomes that result from the behavior, the more likely it that the behavior will not stop (Bandura, 1977). If a parent does not engage in drug use and has strong beliefs against drug use, these beliefs can also influence the child (Brewer, 2017). Parents play a vital role in the lives of their children because they can be the most influential models in their lives (Bandura & Kupers, 1964; Wanders et al., 2020a).

Brewer (2017) suggested that parental involvement with adolescents and monitoring of children, as well as inconsistent discipline, influence adolescent SUA. Experimental substance use is a critical construct in understanding specific attitudes and behaviors that individuals have about substance use. SLT asserts that others' beliefs about drugs influence children who observe others engaging in substance use. Under

SCT, adolescents attain beliefs surrounding substance use from their role models. Role models can help shape a child's views on substance use, both negative and positive. Whether a role model is for or against substance use, these beliefs can influence adolescents socially, personally, and physiologically.

Expectations

Expectations are the consequences of individual behavior. Individuals predicate the results of their action from the onset, before engaging in a behavior, and that influences the successful completion of the behavior (Wayne, 2019). Expectations are derived from previous experiences and focus on the value attached to the outcome, which may be subjective (Wayne, 2019). Expectations in this regard refer to the substance abusers' beliefs about the likelihood and value of the consequences of their choice regarding substance use and abuse (Glanz et al., 2002). A child who commences the use of substances at a young age is expected to continue the act at a later age (Jordan, & Andersen, 2017). A child with aggressive behavior at a young age is more likely to be at a high risk of substance abuse (Henriksen et al., 2020). In line with efficacy, expectation influence the initiation and maintenance of behavior; even though the two are different, they contribute to behavior regulation. (Springer link, 2017). A child who imitates a model may not necessarily expect the same reward or punishment as the model but expects a similar outcome, modeling impact cognition and behavior.

Reinforcement

Reinforcement is the external or internal response to an individual's behavior that affects the likelihood of continuing or discontinuing a behavior (Wayne, 2019). It is a

construct of the theoretical framework closely related to reciprocal determinism (Wayne, 2019). Acquired experience influences reinforcement and expectation of adolescents to accept or reject engaging in substance abuse and justify their action (Wayne, 2019). Imitation and exposure of behavior like engaging in substance abuse can occur due to social reinforcement (Badura, 2002). Reinforcement can be viewed from an internal and external perspective. Internal reinforcement concerns the value a person attaches to an event and is more powerful than external reinforcement (Wayne, 2019). The occurrence of an event that predicts or leads to a child's behavior like SUA is referred to as an external reinforcement (Wayne, 2019). The parent could be an external reinforcement and the parental -education could influence the parent's behavior.

Self-Efficacy

Self-efficacy is a person's confidence in their capacity to successfully perform a behavior (Bandura, 1977, 1986, 1997, 2000, 2012; McCormick et al., 2015). It is the belief in one's ability to harness and mobilize the cognitive, motivation, resources, and courses of action required to meet given situational demands (Wood & Bandura, 1989). Self-efficacy is one's beliefs regarding the degree to which one perform a given task in a circumstance (McPherson & McCormick, 2006). It could be positive or negative, and it is affected by a person's specific abilities and self-factors as well as their environment (Wayne, 2019).

The concept of self-efficacy proposes that individuals regulate and control their behavior in line with their self-efficacy (Bandura, 1977, 1986, 1997, 2012; Ginis et al., 2015; Sakakibara et al., 2015; Steca et al., 2015; Wright et al., 2014 Self-efficacy is the

most effective mechanism amongst others that have an impact on the human agency (Bandura, 2006). The level of individual self-efficacy influences the kind of action they desire to take, their goal, how much effort they need to exert, how persistent in achieving their goal they need to be, and how they will visualize their accomplishment ((Bandura, 1997, 2000, 2012; E. Skaalvik & S. Skaalvik, 2014). Self-efficacy plays a vital role in human functioning due to its influence on behavior, motivation, goals, outcome expectations, and individuals' perceptions about their selves in their environment (Bandura, 1999b, 2000; Addison et al., 2014).

Self-efficacy is considered a predictor of success in most endeavors due to its influence on behavior (McPherson & McComick, 2006). Self-efficacy influences the choice of activities, persistence, and effort (Bandura, 2012; McPherson & McCormick, 2000; Wright et al., 2014). It also influences behavior through an individual's cognitive and motivational processes (Bandura, 2012). An individual with low self-efficacy for accomplishing specific work is more likely to avoid such action compared to the one with high self-efficacy for completing that work (McPherson & McCormick, 2000). Adolescents who abuse substances are more likely to have a low level of self-efficacy and high-level of psychological stress and would find it difficult to resist peer pressure (Champion et al., 2016). Similarly, parents with low self-efficacy are less likely to be involved in their children's substance abuse (Wood & Bandura, 1989). However, parents with high levels of self-efficacy, who are more likely to be involved in their adolescent's substance abuse, must equally be (a) confident in performing the relevant task, (b) have an understanding of related childcare activities, (c) believe that the child will benefit from

the effort (d) and believe that others will notice the efforts (Coleman & Karraker, 2000). Self-efficacy influences people's thinking optimistically or pessimistically; likewise, how they may overcome an obstacle, the kind of options they may canvass while taking specific actions (Bandura, 2012).

Literature Review Related to Key Variables and/or Constructs

Social Determinants of Adolescents Risky Behavior

Social determinants of health have shown to have a powerful influence on observed inequities in education and SES and related to the disparate health outcomes among racial and ethnic minorities in the United States (LaVeist, 2005b). The SDOARB model suggests that the social environment, which includes education, race, and family, can significantly influence adolescents' SUA and wellbeing (LaVeist, 2005b). Thus, the SDOARB model proposes that racial differences in adolescent risk behaviors are a result of broader societal mechanisms of discrimination, racism, prejudice, and oppression, risks external to the individual, which directly affects health and illness behaviors (LaVeist, 2005b) of adolescents (Respress, 2010). SDOARB is a theoretical framework that integrates social and racial determinants in health processes around adolescents' lives (LaVeist, 2005b) and places race at a central position of a system judgment (Respress, 2012). In the United States, racial phenotype influences judgment (LaVeist, 1994; Cambridge, 2017).

SUA is a significant concern among American adolescents. Generally, Black American adolescents are less likely than non-Hispanic White adolescents to report substance use (Eaton et al., 2012). Black adolescents are less likely to report binge

drinking (12.4%) compared to non-Hispanic White (24%), however, on some illicit substance like marijuana, Black Americans reported higher prevalence than non-Hispanic White (29.1% against 24.4%) (Eaton et al., 2012). Similarly, Black adolescents are more likely to report educational and social consequences from substance abuse such as poor academic performance and not getting along with friends, parents, and teachers than non-Hispanic Whites (Cox et al., 2007; Timmermanns et al., 2008). SDOARB also postulates that racial disparities in adolescent's SUA may be a result of, among other things, social mechanism of parental education and SES, which may affect risk health behavior in SUA among adolescents (LaVeist, 2005a, 2005b; LaVeist & Wallace, 2000).

The SDOARB model differs from other socioecological models in the sense that it included education, race, culture, and ethnicity as core constructs and not in the periphery (Atzasba-Poria et al., 2004; Marmot, 2005). Adolescent health scholars examined social determinants of health approach is essential to fully understand risky adolescent behavior like substance abuse (Respress, 2012). Educational disparities and sexual health disparities considerably affect adolescents of color at higher rates, thus reducing their quality of life and leaving them more vulnerable to experience consequences of social determinants in adolescents, such as SUA and sexually transmitted infection (Ahmadi-Montecalvo, 2016). Empirical evidence has demonstrated a variety of protective factors that may increase the risk of an adolescent engaging in SUA, such as parental education and higher incomes (Humensky, 2019).

Socio-environmental factors related to family structure, educational attainment, and neighborhood environment can influence an environment of risky behaviors and

maladaptive coping among adolescents, thereby promoting the cycle of poverty and associated behavioral and health risk among racially vulnerable adolescents (Walsemann et al., 2009). The SDOARB would provide a platform to study the influence of parental education, SES, and other sociopolitical factors on risky adolescent behavior, especially substance use status. These factors are of great importance among adolescents because they hampered the ability of parents, teachers, and policymakers to intervene efficaciously and reduce the deleterious effects of SUA in adolescents (Coll et al., 1996).

Adolescent Substance Abuse

The adolescent period within the human life cycle is between puberty and the young adult stage, which is from about 12 years of age to 17 years of age. According to Wood et al. (2017), it is a transition of change and growth between childhood and adulthood. The period has its characteristics in biological, social, and psychological terms with a process of development of moral and social norms of behavior and identity formation (McCabe et al., 2017). The adolescent period is a period of risky behavior for initiation of SUA with its attendant short- and long-term consequences in the quality of life and health of adolescents (Gray, & Squeglia, 2018). The Adolescence period is a challenging time in a person's life and can be made worse with SUA (Radel et al., 2018).

The absence of protective factors and the presence of risk factors can influence the initiation of SUA in adolescents and children at different stages of life and ages (NIDA, 2020). Adolescent experimental years appear to be the commencement of SUA, and there are triggers to SUA. A good understanding of these triggers helps in determining effective intervention (Stone et al., 2012). Factors affecting SUA could be

protective or risky. The risk factors positively influence drug use, while the protective factors are associated with reducing the chances for the risk of drug abuse. Weak family relationships, family members using SUA, easy access to drugs, peer use, mental health challenge, and neighborhood characteristics (Stone et al., 2012). Kpozehouen et al. (2015) and Pisarska et al. (2016) identified poor parental involvement in children, drug abuse by parents, neighbors, and friends as well as conflictual family relationship as significant risk factors for SUA in adolescents. Parental SUA, parental death before the age of 18 years, and parental divorce before 18 years increase the odd of SUA (Vaughan et al., 2017). The protective factor, on the other hand, includes low childhood stress, the neighborhood with economic viability, and healthy family relationship (Stone et al., 2012). Parents that are aware of the risk factors and protective factors that will influence or prevent adolescent's SUA may be able to discourage or avoid the influences of SUA. Treatment of adolescent's SUA at family, community, and individual levels focusing on the salient risk and preventive factors are the most efficient (Masten, 2018)

Predictors for Substance Abuse

Parents, teachers, staff members, friends, environment, and boredom influence school students to engage in SUA (Bomba-Edgerton, 2017; Öztaş et al., 2018). Parental education, parental behavior, drug availability, peer groups, unemployment, and SES predict SUA disorder (Sedaghat et al, 2018). Smoking and the ways adolescents spent leisure time are predictors of SUA in adolescents in Iran (Shahrak et al., 2019). The negotiated unsupervised time of parent was consistently associated with SUAamong high school adolescents in Nigeria (Odukoya et al., 2018). The most influential risk factor of

adolescent smoking is parents that smoke (Levy, 2019). Adolescent SUA has significant concern on the individual, the family, and the society, with consequences on the physical and mental health (Milovanovic et al, 2016). Curiosity and enjoyment are the main predictors for adolescents SUA (Isering et al., 2010). However, according to Massad et al. (2016) experimentation, gang affiliation, absenteeism, peer and family influences, poor parental monitoring, lack of awareness, below-average grades, and psychological challenges are risk factors that influence adolescents to SUA.

Consequences of Substance Abuse in Adolescents

The adolescent stage is characterized by risky behavior and impulsive decision-making that promote SUA. Additionally, the neural circuits, part of the brain refines and mature during the adolescent period, thus confers susceptibility to lifelong drug addiction and allows environmental insult impact on brain maturity, adolescent SUA is highly associated with the risk for developing substance use disorders (Hall et al., 2016). SUA has significant challenges to society, the family, and individuals with consequences on the physical and mental health (Milovanovic et al., 2016), workability, family relationship, and social activities (Jovanovic & Jakovljevic, 2015). The financial implication associated with the consequences of SUA is high (Jakovljevic, et al., 2014). Other consequences of SUA may include reduced work productivity, unemployment, poor health, educational challenges, higher rates of human immunodeficiency-HIV and hepatitis B and C infections (Jakovlievic et al., 2013a) poor treatment outcome, social dysfunction, poverty, higher violence, homelessness, and poor quality of life (Jakovlievic et al., 2013b).

Adolescents involved in excessive SUA have numerous consequences, including health-related problems, educational difficulties, socioeconomic consequences, poor peer relationships, the juvenile justice system, family members, community, and entire societal consequences. Adolescents involve with SUA experience cognitive and behavioral problems and are at risk for reduced educational attainment and poor psychosocial outcomes (Engberg & Morral, 2006). Other educational challenges faced include absenteeism from school, increase potential for dropping out of school, decline grades (Henry & Thornberry, 2010), disciplinary difficulties, relationship violence, social alienation, and stigmatization. Stigmatization surrounding adolescent SUA creates a barrier to the provision of adequate support and treatment (Olex, 2019). Adolescents abusing substances are often stigmatized and alienated by peers, thereby leading to disengagement from school and community activities, depriving the community and peers of the positive contribution they might have provided.

The behaviors of an adolescent who use and abuse substances can have a negative social impact on their families. SUA's family environment has been characterized as being primitive, less organized, less cohesive, and more conflicted and angrier than families without substance abusers (Stanton & Shadish, 1997). Dysfunctional family dynamics of substance users often lead to an increase of challenges for family members and the users themselves, such as parental rejection or over-involvement, personal adversities, family crises, drain family finances and emotional resources, decrease quality of life, well-being and relationship between guardian and patient (Cicek et al., 2015; Dussaillant, & Fernandez, 2015). These challenges are exacerbated by families who are

overstretched financially, poor parenting skills, and have low levels of adolescent SUA monitoring. Families with low levels of parental monitoring, poor parenting skills, and economic hardships facilitate the development of SUA among adolescents (Wagner et al., 2010). These challenges are augmented for culturally and linguistically diverse adolescents who struggle with acculturation processes related to U.S. culture (Wagner et al., 2010). Ultimately, adolescents who continue chronic SUA may experience family estrangement and isolation, furthering substance-related problems.

SUA has health consequences that include physical disabilities, diseases, and mental health. The main adolescent health threats are due to behavioral choices such as SUA, poor diet, risky sexual behavior (Ahmadi-Montecalvo, 2016; Resnick et al., 1997) and put them at the risk for being causes of morbidity and mortality (Ahmadi-Montecalvo, 2016). SUA is involved with injuries as a result of accidents, withdrawal syndrome, and the effect of a possible overdose, which could lead to illness, organ damage, suicide, homicide, and death. Certain drugs elevate heart rate and disrupt heartbeat leading to arrhythmia (Juergens, 2019). Others could cause nausea and abdominal pain leading to changes in appetite and weight loss (Gateway Foundation Rehabilitation Center, 2019). While some like the stimulants cause nervousness, restlessness, aggressiveness, and anxiety that may be beyond the control of the abuser (Castelvecchi, 2019) Many substance-abusing adolescents engage in risky behaviors that place them at the risks of contracting HIV/AIDS, hepatitis, other sexually transmitted diseases, and or becoming pregnant. Depending on the substance of abuse, the liver, lung, and kidney could be damage, cancer developed, the digestive system could be affected,

and the immune system may be weakened, and the whole body becoming susceptible to all sorts of diseases (NIDA, 2017). If a mother uses drugs of abuse regularly, she may deliver a baby dependent on the substance of abuse, and a condition referred to as neonatal abstinence syndrome, (NIDA, 2017). A substance-abusing adolescent is at higher risk than nonusers for mental health problems, including personality disorder, depression, conduct problems, seizures, stroke, mental confusion, suicidal thoughts, attempted suicide, and suicide. Marijuana use has been shown to interfere with short-term memory, learning, and psychomotor skills. Motivation and psychosexual/emotional development also may be influenced as well as exhaustion and quality of sleep were related to risky SUA (Gateway Foundation Rehabilitation Center, 2019; Hasler et al., 2017). Substance abuse can cloud the sense of judgment of the abuser (Guerri, & Pascual, 2016), as well as distort their consciousness (Smalheiser, 2019). Some of the substances can impair coordination and loss of self-control (WACD, 2014). The excess dosage of opioids like codeine can lead to schizophrenia and organ failure, among other health consequences (Owoseyi, 2018). These substances are not only associated with harmful health outcomes but also adverse social and economic consequences, including family dysfunction, delinquency, school dropout, and unemployment (Owoseyi, 2018).

The social and economic costs related to adolescent substance abuse are high resulting from the financial losses and distress suffered by substance-related crime victims, increased burdens for the support of adolescents who are not able to support themself, and higher demands for medical and other treatment services for these adolescents (Gropper, 1985). There is an association between substance use and

delinquent behavior of juveniles. It may not be right to claim that delinquency causes substance abuse or SUA causes delinquency, but the two behaviors are strongly correlated and often result in physical or sexual abuse, negative peer groups, and family and school problems (Hawkins et al., 1987; Wilson & Howell, 1993). Homicide, gangs, drug trafficking, and prostitution are among the social and criminal justice problems often associated with adolescent substance abuse (Klantschnig, 2013).

A study conducted in 1988 in Washington, D.C., found youth who sold and used drugs more likely to commit crimes than those who only sold drugs or only used drugs. Heavy drug users were more likely to commit property crimes than nonusers, and youth who trafficked in drugs reported higher rates of crimes against persons. Youth who traffic in drugs were most likely to commit burglary or sell drugs while using or trying to obtain drugs. About one-fourth of the youth also reported attacking another youth to obtain drugs. Interestingly, the majority who committed crimes did not do so in connection with drugs (Altschuler & Brounstein, 1991).

Parental and Family Relationship

Parenting children is pleasing and joyous but not without challenges, and it appears different for everybody. The children need their parents the most in the early years. Parental care is an important responsibility that has an emotional, social, and physical impact on the child (Lauren & Collins, 2009). The adolescent stage is viewed as often tricky, moody, oppositional, and rebellious. Parents are usually told to expect defiance and problematic behavior from their adolescents, and if it were not so, then the teenagers are not healthy. According to Rogers et al. (2020), parents adjust psychological

control over adolescent behavior when parents perceive losing control. The adolescent period is characteristic of developmental changes, including cognitive change, puberty, friendship, unstable relationship with the parent, and autonomy struggle (Kuntsche & Kunstsche, 2016). The changes in adolescents incite changes within families, the lack of closeness with family, and conflict accompanies maturation and continues until roles are confirmed (Laurse & Collins, 2009). At the adolescent age, they seek autonomy, and their unique identity may have issues with their parents' values or perceptions. Parent-adolescent psychological control and behavioral control decline throughout the high school years, and parent-adolescent quality of relationship showed a U-shape trajectory (Shek, & Dou, 2020). Parental gender predicts the level of measurement and changes in parent-adolescent relational quality as well as changes in behavioral control, with mothers showing higher levels of control (Shek, & Dou, 2020) and rejection ((Guo, & Feng, 2017). According to Shek and Dou (2020), Parents should concentrate on developing mutual trust and relationships between themselves and their adolescents rather than emphasizing behavioral control.

Parental and family influence on adolescent SUA has been reported. Ajayi (2020) believes that influencing parental behavior can serve as an effective strategy to influence adolescent SUA and delinquency. Adolescents' SUA can be positively influenced by the parent, guardian, and family supervision and monitoring. Family should be the most important unit to sensitize adolescents on the dangers of SUA (Ajayi, 2020).

Adolescent substance abuse could be influenced by peers and/ or parents. Guardians and peers have a strong influence on adolescents' decision to play a part in a

substance abuse society. Parental knowledge, family conflict, and family support affect adolescent SUA through deviant peer groups (Curtin et al., 2017). Parent and peer influences impact adolescent substance involvement, with the parental influence being slightly stronger than peers (Curtin et al., 2017). Contrary to the view of some studies, that the effects of parental knowledge on different types of problematic behaviors were mediated by the adolescent's relationship with deviant peers, they did not find significant effects of parental support, parental solicitation, and parental control (Cutrín et al., 2019).

Parental and family monitoring and supervision of wards reduce the likelihood of their indulgence in SUA. Donalson et al. (2015) studied elementary students and found that poorly monitored children were at higher risk of SUA compared to children with more parental monitoring. It was observed that for every unit of increase in parental monitoring score between a range of 0-30 level, there was a 4% decline in the occurrence of substance use, which is a relative risk of 0.96 ($p = 0.05$).

SUA has a devastating impact on families, but due to emphasis on individual research and the fact that there is an assumption that the family creates the problem or contributes to SUA, little attention is paid to it (Barnard, 2015). The parents and the family are significant when it comes to the issue of children’s substance abuse. Excessive use of substance of abuse has numerous negative consequences that affect the family, the siblings, and the adolescent (Schwinn & Schike, 2014). Parents that indulge in risky use of the substance of abuse are blamed for their children’s behavior (Rathore et al., 2017). Siblings can be similar academically as well as be involved in substance abuse (Samek & Rueter, 2011), the closer they are, the more similar they may be (Gamble, Yu & Cards,

2011). However, in a study conducted by Samek and Rueter (2011) on whether older siblings influence the behavior of younger ones, it was found that closeness to elder siblings did not predict younger one's indulgence in substance abuse. Siblings do not receive the desired attention from their parents due to attentiveness in the substance abuse child (Choate, 2015).

Similarly, families with a heavy drinker or serious substance user or abuser experience a negative quality of life (Dussaillant, & Fernandez, 2015). Parents living with children experiencing substance abuse problems have 5 common themes which are: (1) receiving threats, abuses, and violence; (2) loss of trust and betrayal; (3) sibling anger and resentment; (4) isolation, humiliation, and disgrace and; (5) feeling blamed (O'Brien, 2007). Another essential feeling of the parent of such a substance user/ abuser is a sense of loss and grief associated with losing their ward to substances (Dussaillant, & Fernandez, 2015). The family of adolescent substance users/abusers, the interaction within the family, as well as the relationship of the family with an organization like the school, and the religious bodies, are of significant value in the intervention of adolescent substance abuse (Sherman, 2010). Multi-Dimensional Family Therapy (MDFT) operates on family principles. Parents, siblings, and families of wards who misuse substances often experience stress, financial constraint, a decrease in quality of life, as well as a decrease in social life, well-being, and health (Cicek et al., 2015).

Parental Education and Child's Substance Abuse

Substance abuse is of great concern to public health issues worldwide, especially to a socially vulnerable group of adolescence (Jakovlievic et al., 2015b). Low parental

knowledge, skill, and SES facilitate the development of substance use and abuse in adolescents (Wagner et al., 2010; Winters et al., 2008).The Socioeconomic environment, which includes parental education, influences the a child's behavior in the adolescent stage, and understanding this relationship is fundamental in identifying the child at risk (Tobler et al., 2000). Parental education is associated with a child's substance abuse, but the relationship does not appear linear. The lower the educational level of the parent, the higher the risk of substance abuse by the child (Johnson et al., 2012). The lower the parental education and parental SES, the higher the risk of child's depression (Ursache et al., 2017). While low parental education, with moderate SES, result in higher child substance abuse (Poulain et al., 2019). The effect of large family size and low SES of the parent results in an increased probability of substance abuse in the child (Reinherz et al., 2000). However, a study conducted by Humensky (2019) revealed that higher parental education is associated with higher binge drinking, cocaine, and marijuana use, likewise high parental income is associated with high marijuana use in an adolescent.

According to Child Trends Databank (2019), the proportion of children of 6 to 18 years old whose parents possess bachelor's degree or higher has significantly increased over the past decade from 30% to 38% from 2005 to 2017 among fathers and from 26% to 36% among mothers within the same period. Parental education differs in the United States based on race and ethnic grouping. About 45% and 46% of non-Hispanic white fathers and mothers respectively have obtained bachelor's degree or higher: While 28% and 27% of non-Hispanic black fathers and mothers respectively and only 16% of

Hispanic fathers and mothers have obtained the same qualification (Child Trends Databank, 2019).

Interestingly, children with college-educated parents were associated with less substance abuse (Hamilton et al., 2009). The child that lives with his family and the parent who has parental control over the child is more likely to be associated with a lower risk of substance abuse (Malta et al., 2014). The child that lives in an incomplete family has a higher frequency of heavy drinking (Ferrara, 2019). Parental substance abuse, either maternal or and paternal, was found to have a significant impact on harmful substance use in children of 13 to 17 years, even after controlling for parental education. Maternal substance abuse had a more substantial impact on the child's substance abuse than paternal (Jääskeläinen et al, 2016). Significant risk factors for substance use among adolescents include poor substance abuse by the parents, parental involvement in the child's education, and conflictual family relationships (Pisarska et al., 2016). Parental alcoholism, parental divorce, and parental death at a young age increased the odds of abuse of substances among the child (Vaughan et al., 2017). Similarly, low self-esteem, anxiety, low self-control, and a low level of parental control poses a risk for the child's substance abuse (Roy et al., 2015).

Adolescents with high SES are at risk for developing SUA. Some studies indicated that substance use in adult particularly alcohol use might be associated with price, as some studies have shown, consumption decrease with price increase (Bellis et al., 2007; Gryczynski etal., 2016). In line with the demand model of goods and services, a child with higher SES, with more considerable resources, may indicate that the relative

cost of substance use may be lower than for a child with lower SES and could indicate a higher demand among wealthier children. A study of British adolescents found that children with more spending resources were more likely to be engaged with binge drinking, frequent drinking, and drinking in public places (Bellis et al., 2007). While Rhodes (2009) found that college students in the United States with lower spending power had lower levels of drinking and getting drunk.

Child's Behavior and Substance Use/Abuse

Circumstances and events surrounding the early life of individuals influence their future decision and life events, referred to as life-course trajectory; Childhood behavior could prepare grounds for future SUA (NIDA, 2016). Therefore, intervening early in childhood behavior could alter the life course trajectory of children in a more meaningful way (NIDA, 2016). Childhood substance abuse is a significant risk factor for becoming a substance abuser in the future ((Jordan, & Andersen, 2017). Behavior disorder in childhood is continuous through the child's developmental stages, which may initially present as mild behavior challenges and proceed to severe symptoms such as substance abuse, stealing, and aggression (SD et al., 2020). Child troublesome may be exacerbated by temperament difficulties, which could lead to insecure attachment with the child's parents, difficult temperament exhibited by negativity provocativeness, moodiness, and poor compliance may result in child ostracized and criticized by parents. This could lead to a coercive model of parenting often present in families with substance abuse and delinquent children. However, according to SD et al. (2020), the influences of coercive parenting are dynamic and change with adolescent's behaviors across developmental

stages. Hyperactivity in children impacts a high risk or later development of adult substance abuse (Kramer & Lonely, 1981). High activity level in infancy was related to substance abuse in both sexes. Physical aggression in children and adolescence represents a major public health concern (Kann et al., 2018). Childhood aggression has placed a child at risk for early substance abuse (Henriksen et al., 2020). Similarly, various substance abuse was associated with violent behavior (Håkansson, & Jesionowska, 2018). Peer influence, family influence, easy accessibility of substance, social norms, and perceived benefits of SUA are risk factors in adolescent substance abuse (EL Kazdouh et al., 2018), as well as drug abstinence (Berelson, & Steiner, 1964). Studies have shown that children predisposed to the use of substances may seek out others with similar inclination (Kandel & Logan, 1984; Kandel, & Ravies, 1989), and those influenced by peer pressure may stop substance abuse in the absences of psychological dysfunction.

Children's behaviors and development are shaped by a combination of genetic and environmental factors. The biological capacities, genetic makeup, and innate temperament that children are born to inform the way they interact with people and the environment (NIDA, 2016). Adapted children of alcohol-dependent parents have a 2 to 5-fold risk of developing alcoholism (CBHSQ, 2019a). Several studies of siblings and twins of substance-dependent parents confirmed genetic predisposition not only for alcohol but other substances too (Masten, 2018).

Substance use is generally higher in male adolescents than females, and the male is 3 times a heavy alcohol user than a female counterpart (O'Malley et al., 1995). The prevalence rate of illicit substance use by men is twice that of the female (NIDA, 2020).

According to Richert et al. (2020), women who abuse substances have a higher incidence of internalizing problems like anxiety, depression, and withdrawal behavior during childhood and with more severe psychological symptoms in adulthood.

Summary and Conclusions

The essence of this review is to synthesize the available literature on parental's education, child's SUA, and their relationship. This chapter details the literature search strategy, key terms used, theoretical framework, and constructs concerning the study's variables. The review shows that parenting style, family structure (Bi et al., 2018), mothers' educational level, leaving without parents, living place (Jalilian et al., 2015), and negotiated the unsupervised time of parents (Odukoya et al., 2018) predict child's substance abuse. However, it indicated the need for further studies on the influence of parental education on the child's substance abuse and negotiated the unsupervised time of parents (Odukoya et al., 2018).

The purpose of this study is to understand the influence of parental education as a potential predictor of adolescent substance use status. The results of this will provide insight into the importance of parental knowledge on the child's SUA status. The role of parental education, SES, and ethnicity can provide a comprehensive perspective to understanding a child's SUA status (Small et al., 2014). Understanding adolescent SUA status will allow the government, international organizations, health institutions, and the likes to design strategies to improve the health, education, and SES of both the parents and their children and thereby create a positive social change in the community. The next chapter, the research method, explains how the study will be conducted, including the

research design and rationale, methodology; data collection and data analyses; RQ; limitations to the study; and threats to validity.

Chapter 3: Research Method

Introduction

The purpose of this quantitative cross-sectional study was to understand the influence of parental knowledge and communication with adolescents on SUA status. More specifically, I sought to determine the extent to which the predicting factors impact the health outcome. The dependent variable in this study was adolescent substance use status, while the primary independent variable was parental education. Other independent variables that were analyzed and controlled included parental communication, age, SES, and other demographics. This chapter begins with the research design and rationale for selecting a cross-sectional retrospective survey design for this study. Other major sections of this chapter include Methodology and Threats to Validity. The Methodology section includes discussion of the study population; sampling procedures; procedures for recruitment, participation, and data collection; operationalization of variables; and data analysis plan. The Threats to Validity section includes a discussion of the study's internal validity and the ethical procedures that were followed.

Research Design and Rationale

In this quantitative, cross-sectional, and retrospective study, I examined parental education and its impact on adolescents' SUA status. Quantitative design permits researchers to explore the association between the independent variable and the dependent variable (Rudestam & Newton, 2015). A cross-sectional design allows researchers to carry out studies in natural, real-life settings using probability samples to build up the external validity of the research (Frankfort-Nachmias et al., 2015). The study

consisted of an analysis of secondary data from the 2018 NSDUH. The 2018 NSDUH survey was designed to be anonymous and encourage honesty and recall; it offers a high level of confidentiality (SAMHA, 2018). The purpose of a survey study is to generalize the findings from a sample population so that the attitudes, behaviors, or characteristics of respondents can be inferred to the population (Allen, 2017).

The main RQ for this study can be aligned to the method, research design, and statistical analysis. The use of the quantitative design on secondary data has the advantage of efficient use of time and resources. Additionally, the data are collected by experts and professionals. A quantitative cross-sectional design can provide useful data that are amenable to public health program development and evaluation of outcomes (Brener et al., 2013).

Methodology

Population

The sample size for the 2018 NDUSH was 16,877 aged 12 to 17 years from all the 50 U.S. states and the District of Columbia (SAMHA, 2018). The random sampling technique allows for the generalization of the study to the broader population.

The CBHSQ sponsors the NSDUH, and RTI International in Research Triangle Park, North Carolina, survey under the SAMHSA. The NSDUH provides information on mental health, use of tobacco, illicit drugs, and alcohol among the Americans civilian-noninstitutionalized population of 12 years and more (SAMHA, 2018) Surveys have been conducted periodically since 1971, and each year from 1990 through 2018, with public use files available for studies from 1979 onward (SAMHA, 2018). To provide a

highly private and confidential interview method, with the view of increasing the degree of honest reporting of illicit drug use and other sensitive behaviors, a field interviewer conducted a combination of computer-assisted personal interviewing. The survey incorporated audio computer-assisted self-interviewing (CBHSQ, 2019).

Sampling and Sample Procedures

The NSDUH selected its sample using a multistage, well-stratified sample design. The computer was programmed to choose individuals for the interview, using parameters specified for that area segment and a random number determined for the address (CBHSQ, 2019). In this study, a simple random design was used to select samples. An effect size of .5, probability level of .05 %, and statistical power of 0.95 (95%) were calculated, and G*Power 3.1.9.4 software was used for the minimum sample size (Faul et al., 2017).

Procedures for Recruitment, Participation, and Data Collection

I used the 2018 NSDUH secondary data set (ASCII) available on the SAMHSA website for this study. No permission was required to access the data set. The data set was publicly and freely accessible.

Instrumentation and Operationalization of Constructs

The dependent variable was the adolescent's substance use status, while the independent variables were parental education on substance use status, parental communication, age, gender, race, marital status, and SES. Parental education was operationalized as the highest level of education attained by the parent in any field reported by him. Parental communication was the communication between the parent and

the child on SUA, and it was a nominal variable. Age was measured in scale level, and it was the respondent's years on earth from birth. Sex was operationalized as male and female and was a nominal variable. The race was also a nominal variable relying on classifications of persons based on social and physical characteristics distinct by society (NSDUH, 2018). Marital status is the personal status of an individual about the marriage laws or customs of the nation. SES was an ordinal variable, grouping persons based on the total combined family income in the previous calendar year. Table 1 includes operational definitions for the dependent and independent variables.

Table 1

Operational Definitions of Dependent and Independent Variables

Variable name	Variable type	Survey question	Answer to the question
SUA status	Nominal	Any use and misuse of psychotherapeutic drugs?	Yes = 1 No = 2
Parental education	Ordinal	What is the highest educational grade/level attained?	Less than high school = 1 High school graduate = 2 Some college or associate degree = 3 college graduate = 4
Communication with parent about danger of drug use/abuse	Nominal	Have you talked with parent about danger of tobacco/alcohol/drugs?	Yes = 1 No = 2
Sex of respondent	Nominal	What is your gender?	Male = 1 Female = 2
Age of respondent	Ordinal	What is your date of birth (age at the time of interview)?	12 and 13 years =1 14 and 15 years = 2 16 and 17 years = 3
Race of the respondent	Ordinal	Which of these groups describes you?	White = 1 Black or African American = 2 American Indian or Alaska Native = 3 Native Hawaiian = 4 Guamanian or Chamorro = 5 Samoan = 6 Other Pacific Islander = 7 Asian = 8 Other = 9

(*table continues*)

Variable name	Variable type	Survey question	Answer to the question
Geographic region	Ordinal	Which of these geographic regions do belong to?	Northeast = 1 Midwest = 2 South = 3 West = 4
Marital status	Ordinal	Are you now married, widowed, divorced, or separated, or have you never married?	Married = 1 Single = 2 Divorced = 3 Widowed = 4 Separated = 5
Family Income/SES	Ordinal	Of these income groups, which category best represents total combined family income during the previous calendar year?	Highest (≥ $100,000) = 1 High ($51,000 - $ 99,999) = 2 Medium ($26,000 - $50,000) = 3 Low (< $25,999) = 4

Data Analysis Plan

The instrument that was used for data analysis was the Statistical Package for Social Sciences (SPSS) version 27. I analyzed secondary data, for which data cleaning and screening procedures were carried out by trained primary researchers. However, I engaged in further screening and cleaning of the data set to ensure it is correct, consistent, and usable. Only the relevant variables in this study were analyzed. The dependent variable was the adolescent's SUA status, which is a dichotomous variable. This study had the following RQs and hypotheses:

RQ1: To what extent does parental education predict adolescent's substance use after controlling for age, sex, race, and SES?

$H_0$1: There will be no evidence that parental education predicts the occurrence of substance use in an adolescent after controlling for age, sex, and SES.

$H_1$1: There will be evidence that parental education predicts the occurrence of substance use in an adolescent after controlling for age, sex, and SES.

RQ2: To what extent do adolescent's talks with their parents on the danger of use/abuse of substances predict adolescent's substance use after controlling for age, sex, race, and SES?

*Ho*2: There will be no evidence that adolescent talks with the parents on the danger of the use of substances predict adolescent's substance use after controlling for age, sex, race, and SES.

$H_1$2: There will be evidence that adolescent's talks with the parent on the danger of the use of substances predict the adolescent's substance use after controlling for age, sex, race, and SES.

By applying binary logistic regression, I examined the associations between the independent variable parental education and the dependent variable adolescent's substance status for each RQ and its specific hypotheses. This test was appropriate because it tested the relationship between a dependent dichotomous variable and one or more nominal-, ordinal-, or interval-/ratio-level independent variables (Vatchova et al., 2016). When the association between the dichotomous dependent variable and the independent variable was at an alpha level of $p \leq 0.05$, the association was deemed statistically significant. Beta values give a guide to the direction of the association between the dependent and the independent variables.

The confounders were addressed in the analyses to avoid their influence on the outcome of the study and to increase the accuracy of the study results. Their likelihood ratio tests and the measurement of Wald statistics will contribute to the detection of their effects on the model (Field, 2013). A confidence interval (CI) of 95% indicates a 95% chance that the range contains the actual population mean (Hirpara et al., 2015).

Threats to Validity

The validity of a study reflects whether the results of a survey are meaningful and trustworthy. Evaluation of research findings depends on internal and external validity (Frankfort-Nachimas & Nachimas, 2015). Internal validity relates to how well a study is conducted and how organized the structure's layout is. Internal validity expresses the causal association between the dependent and the independent variables. Randomized studies with less confounding variables have higher internal validity, while external validity relates to the application of the findings to the real world (Frankfort-Nachimas & Nachimas, 2015). There are four threats to internal validity identity in this study: selection maturation, regression, interaction, and history. The selection was by a coordinated sample design. It is an independent, multistage area probability sampling; randomization ensures high internal validity (NSDUH, 2018). Threat from regression was addressed by binary logistic regression test by examining the association between the independent (predictor) variables and the dependent (dichotomous) variable for each RQ and its hypotheses. The interaction was addressed by controlling for the potential confounding variables (race, age, and SES) as well as hypothesis testing. History, referring to recall after a month or a year during self-reporting, was addressed using

computer-assisted personal interviewing, ACASI, and assured confidentiality (CBHSQ, 2019). Self-reporting is the major source of data collection of use of substances in NSDUH.

The NSDUH utilizes ACASI and assures confidentiality of response, which increases the accuracy of self-reporting and reduces self-bias of the NSDUH data (Gfroever et al., 2002). The use/misuse of psychotherapeutic drugs in the 2018 NSDUH was reported for all psychotherapeutic drug categories/subtypes in the past year. This is generally not indicated for a specific individual drug from the NSDUH questionnaire (CBHSQ, 2019). The reporting was thorough self-reporting of substances used, and recall for 1 year is required (2017). The length of time between an event and the reporting day affects the accuracy or respondent's recall, independent of the potential sensitivity of the topic involved. Additionally, when dealing with substances of abuse, respondents may think substance abuse questions are intrusive (none of your concern) and pose a risk of harmful and legal consequences and require them to provide socially undesirable answers (Tourangeau & Yan, 2007). Therefore, the potential for data collection for substance use is biased, underreported, or overreported. The bias could differ by different factors, such as mode of administration, the population under investigation, the selling, and the type of substance used (Lindberg & Scott, 2018).

SAMHSA and NIDA cosponsored the validity study of NSDUH self-reported data on substance use among adolescents aged 12 to 25 by using biological specimens to validate self-reporting. The study carried out by Harrsen et al. (2007) indicated that self-reports on drug use by most adolescents were accurate. However, there were challenges,

such as some tested positive without reporting and some reported drug use with negative tests (CBHSQ, 2019).

Ethical Procedures

In this study, I used secondary data, 2018 NSDUH from the SAMSHA website. I obtained approval from the Walden University Institutional Review Board (IRB) before conducting the study, the IRB approval number is 01-28-21-0365900. I am the only person who has access to the data. I will store the data on a password-protected laptop, and I will keep the data encrypted for 5 years, at which time it will be destroyed.

Summary

In this cross-sectional quantitative study, I performed a secondary analysis of data collected from 2018 NSDUH and made inferences. I surveyed and determined the extent to which parental education and parental communication about the danger of SUA predicted the adolescent's substance use status after controlling for potential confounders (race, age, and SES). Binary logistic regression was the leading statistical analysis for this quantitative cross-sectional study. In Chapter 4, I will review the data analysis and present the results of the study.

Chapter 4: Results

Introduction

The purpose of this cross-sectional quantitative study was to examine the extent to which parental education predicts substance use status in the United States. The study had the following two RQs and corresponding hypotheses:

RQ1: To what extent does parental education predict substance use status in an adolescent after controlling for age, sex, race, and SES?

*H*1*:* There will be no evidence that parental education predicts the occurrence of SUA in an adolescent after controlling for age, sex, marital status, race, and SES.

$H_1$1*:* There will be evidence that parental education predicts the occurrence of SUA in an adolescent after controlling for age, sex, race, and SES.

RQ2: To what extent does an adolescent talking with their parents about the danger of SUA predict adolescent's substance use status after controlling for age, sex, marital status, race, and SES?

$H_0$2*:* There will be no evidence that an adolescent talking with the parent about the danger of the use of substances predicts the adolescent's SUA after controlling for age, sex, marital status, race, and SES.

$H_1$2*:* There will be evidence that an adolescent talking with the parent about the danger of the use of substances predicts the adolescent's SUA after controlling for age, sex, marital status, race, and SES.

I conducted secondary data analysis of the NSDUH 2018 data set using SPSS version 27. The sample size consisted of 630 youth aged 12 to 17 years from all 50 U.S.

states and the District of Columbia (SAMHSA, 2018). The minimum sample size calculated using G* Power was 104; however, to ensure better results and generalizability of the results, the sample size was increased to 630. In Chapter 4, I will review the data collection, analysis used, and the statistical results based on the RQs and hypotheses.

Data Collection

I used the 2018 NSDUH data set for this study; it was the most current NSDUH data set at the commencement of this study. I obtained the data from the SAMHSA website. The population consists of 16,877 youth aged 12 to 17 years from all 50 U.S. states and the District of Columbia (SAMHSA, 2018). No permission was required to access the data set (SAMHSA, 2019). NSDUH is a source of current information on alcohol, tobacco, and drug use, and health-related issues including mental health in the United States. It monitors substance use trends, prevention, and treatment activities and informs public health policy (SAMHSA, 2019). The survey has been carried out each year since 1971 in all 50 U.S. states and the District of Columbia.

RTI researchers stressed the importance of confidentiality to potential respondents in both written and oral forms (SAMHSA, 2019). A handheld computer tablet was used to screen respondents, and a preprogrammed algorithm was used to select zero, one, or two persons from a household for the interview. A mixture of CAI and ACSI was employed for the data collection (SAMHSA, 2019).

Results

I randomly sampled the 630 participants from the main data set. Descriptive statistics of the demographic variables used in this quantitative study are provided in this section. Respondent sex was a nominal variable (see Table 2).

Table 2

Respondent Sex

Respondent sex	Frequencies	Percent
Male	307	48.7
Female	323	51.3
Total	630	100.0

Age was measured on an ordinal level (see Table 3).

Table 3

Age Category

Respondent age (years)	Frequencies	Percent
12-13	209	33.2
14-15	195	31.0
16-17	226	35.9
Total	630	100.0

Race/ethnicity was an independent, categorical, and confounding variable, measured at an ordinal level (See Table 4).

Table 4

Race/Ethnicity

Respondent race/ethnicity	Frequencies	Percent
White	322	51.1
Black or African	87	13.8
Native American	14	2.2
Alaska Native	2	3
Asian	28	4.4
More than one race	34	5.4
Hispanic	143	22.7
Total	630	100.0

Marital status was an independent, confounding, and nominal variable. It was measured on an ordinal level.

Table 5

Marital Status

Respondent marital status	Frequency	Percent
Never been married	336	53.3
Skip: Respondent less than 14 years old	294	46.7
Total	630	100.0

Family income was the total family income and was measured in an ordinal level (see Table 6).

Table 6

Family Income

Respondent yearly income	Frequency	Percent
Less than $20,000	109	17.3
$20,000-49,999	171	27.1
$50,000-74,999	88	14.0
$75,000 or More	262	41.6
Total	630	100.0

Education level was an independent and categorical variable (see Table 7)

Table 7

Educational Level

Respondent's educational level	Frequencies	Precent
Fifth grade or less grade completed	30	4.8
Sixth grade completed	96	15.2
Seventh grade completed	107	17.0
Eighth grade completed	92	14.6

Ninth grade completed	105	16.7

(table continues)

Respondent's educational level	Frequencies	Precent
10th grade completed	115	18.3
11th or 12th grade completed, no diploma	79	12.5
High school diploma/GED	6	1.0
Total	630	100.0

Substance use/ abuse status was the dependent dichotomous variable with two groups (no SUA and yes SUA) (see Table 8).

Table 8

Substance Use Status

Substance Use Status	Frequency	Percent
No Substance Use/Abuse	615	97.6
Substance Use/Abuse	15	2.4
Total		100.0

The independent variable, have you talked with parent(s) about the danger of SUA was a categorical variable (see Table 9).

Table 9

Have You Talked with Parent(s) About Danger of SUA

Response	Frequency	Percent
Yes	351	55.7
No	265	42.1
Don't Know	9	1.4
Refused	5	.8
Total	630	100.0

The statistical test used to analyze data was binary logistic regression. Binary logistic regression was appropriate for this study because the dependent variable SUA status is a dichotomous variable and the independent variables are numerous and can be tested simultaneously, and the assumptions for the statistical analysis were followed. I measured the outcome variable SUA as a dichotomous variable (yes SUA and no SUA). It was discrete, and it met the first assumption. The independent variables included parental education (ordinal), respondent sex (nominal), and marital status (nominal), while age, race, and SES were measured ordinally; this satisfied the second assumption, observations to be independent of each other. A large sample size of 630 participants was utilized for the study, and that satisfied the third assumption of large sample size. The discrete nature of the dependent variable SUA (yes SUA, no SUA) provided the

independence of observations and the mutual exclusiveness required to meet up with the assumptions of binary logistic regression.

I used binary logistics regression to answer the RQs. RQ1and its hypotheses were

RQ1: To what extent does parental education predict substance use status in an adolescent after controlling for age, sex, race, and SES?

$H_0$1: There will be no evidence that parental education predicts the occurrence of SUA in an adolescent after controlling for age, sex, race, and SES.

$H_1$1: There will be evidence that parental education predicts the occurrence of SUA in an adolescent after controlling for age, sex, race, and SES.

I performed the binary logistic regression analysis using the SPSS version 27 to determine the association between the independent variables and the dependent variable. The independent variables for the analysis were parental education, and the confounding variables were age, sex, race, marital status, and SES.

Table 10 shows the binary logistic regression model was not statistically significant (p = .010, greater than 0.005). The dependent variable ranged from 2.4% to 11.7%. The Negelkerke R^2 was preferred over the Cox & Snell R^2 because the Cox & Snell R^2 was not up to 1 (see Table 11). The Hosmer and Lemeshow's test, another chi-square test, was not statistically significant which is a good support to the fitness of the model (see Table 12). The classification table has a probability cut-off value of 0.05, Table 13 shows that the predictive capacity of the model will be correct 97.6% of times. Table 14 shows the variables in the equation and the contribution of each independent variable to the model and its statistical significance (none is statistically significant). This

indicates that there is no statistically significant relationship between parental education and adolescent SUA status and the null hypothesis cannot be rejected. The answer to RQ1 is that there is no evidence that parental education predicts the occurrence of SUA in an adolescent after controlling for age, sex, race, marital status, and SES.

Table 10

Omnibus Test of Model Coefficients

Step		Chi square	Df	Sig
Step 1	Step	15.032	5	.010
	Block	15.032	5	.010
	Model	15.032	5	.010

Table 11

Model Summary

Step	-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
1	126.739a	.024	.117

Note. Estimation terminated at Iteration Number 8 because parameter estimates changed by less than .001.

Table 12

Hosmer Lemeshow Test

Step	Chi-square	df	Sig
1	13.226	8	.104

Note.

Table 13

Classification Table

			Predicted		
			SUA		
	Observation		Abuse-Past Year	Percentage Correct	Observation
Step 1	SUA		No/Unknown	Yes	SUA
		No/Unknow	615	0	100.0
		Yes	15	0	.0
Overall	Percentage			97.6	Percentage

a. The cut value is .500

Table 14
Variables in the Equation

						95%C.I.for EXP(B)
Step						95%C.I.for EXP(B)
Step	EDUCATION - RECODED IMPUTATION REVISED	.513	.438	1.372	1	.241
	RECODE - FINAL EDITED AGE	.114	.468	.059	1	.809
	RC-COMBINED GENDER BY AGE CATEGORY INDICATOR	-.583	.544	1.148	1	.284
	RC-TOTAL FAMILY INCOME RECODE	.056	.239	.055	1	.815

RC-RACE/HISPANICITY RECODE (7 LEVELS)	-.132	.123	1.158	1	.282
Constant	-5.815	1.572	13.685	1	.000
RECODE - FINAL EDITED AGE	.114	.468	.059	1	.809

Variable(s) entered on step 1: EDUCATION - RECODED IMPUTATION REVISED, IMPUTATION REVISED MARITAL STATUS, RC-TOTAL FAMILY INCOME RECODE, RC-RACE/HISPANICITY RECODE (7 LEVELS).

RQ2: To what extent do adolescent's talks with their parents on the danger of SUA predict adolescent's substance use status after controlling for age, sex, race, and SES?

$H_0$2*:* There will be no evidence that adolescent stalks with the parent on the danger of the use of substances predict the adolescent's SUA after controlling for age, sex. Race, and SES.

$H_1$2*:* There will be evidence that adolescents talk with the parent on the danger of the use of substances predict the adolescent's SUA after controlling for age, sex, race, and SES.

Binary logistic regression analysis was conducted to determine the association between the independent variables and the dependent variable. The independent variables for the binary logistic regression were extended to adolescent talks with their parents on the danger of SUA and the dependent variable was adolescent's substance use status and confounding variables were age, sex, race, and SES?

The p-value of the model was $p = 0.003$, which is greater than $p > 0.001$, it was not statistically significant. Table 15 shows the variation in the dependent variable that

ranges from 2.5% and 12.4%. The Cox and Snell R^2 cannot achieve a value of 1 as such the Negelkerke R^2 (12.4%) is preferably reported (see Table 16). Hosmer and Lemeshow's test, a Chi-square test was not statistically significant (p = .832) it is greater than 0.05 and therefore supports the model as a good model (See Table 17). The classification table (see Table 18) indicated the probability cut-off value of 0.5 showing that the estimated probability of SUA is greater than or equal to 0.5. Table 19 further shows the predictive capacity of the model will be 97.6% correct. Table 19 shows the contribution made by each independent variable to the model and its statistical significance. The variables Have you talked with parent(s) about the danger of SUA and confounding variable age are statistically significant, p = .048 and p - .002 respectively. This indicates that there was a statistically significant relationship between the dependent variable SUA status and the independent variable have talked with your parent(s) about the danger of SUA and the confounding variable age.

Table 15

Omnibus Test of Model Coefficients

Step		Chi square	df	Sig
Step 1	Step	15.954	4	.003
	Block			
	Model	15.954	4	.003

Table 16

Model Summary

Step	-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
1	125.186[a]	.025	.125

Note. Note: Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Table 17

Hosmer Lemeshow Test

Step	Chi-square	df	Sig
1	4.268	8	.832

Table 18

Classification Table

			Predicted SUA				
	Observation		Abuse-Past Year		Percentage Correct		Observation
Step 1	SUA		No/Unknow	Yes		Step 1	SUA
		No/Unknown	615	0	100.0		
		Yes	15	0	.0		

Overll Percentage	97.6	Overall Percenage	

. The cut value is .500

Table 19

Variables in The Equation

Step		B	S.E	Wald	df	sig	Exp(B)	95%C.I.for EXP(B) Lower
Step	HAVE YOU TALKED W/PARENT(S) ABT DANGER OF TOB/ALC	.024	.012	3.875	1	.049	1.025	1.000
	RECODE - FINAL EDITED AGE	.656	.216	9.228	1	.002	1.928	1.262
	RC-COMBINED GENDER BY AGE CATEGORY INDICATOR	-.534	.542	.970	1	.325	.586	.203
	RC-RACE/HISPANICITY RECODE (7 LEVELS)	-.1.59	.126	1.592	1	.207	.853	.667
	Constant	-5.521	1.349	16.752	1	.000	.004	

Note: Variable(s) entered on step 1: HAVE YOU TALKED W/PARENT(S) ABT DANGER OF TOB/ALC, RECODE - FINAL EDITED AGE, RC-COMBINED GENDER BY AGE CATEGORY INDICATOR, RC-RACE/HISPANICITY RECODE (7 LEVELS).

Summary

Binary logistic regression was conducted to answer research question 1, to determine the predicting effects of education on substance status of adolescents after controlling for age, sex, race, and SES. The model was not statistically significant as the

p = .010 greater than p < 0.005. However, it explained 11.7% (Negelkerke R^2) of variance in SUA. It indicated the predictive capacity of the model to be 97.6%. None of the independent variables was statistically significant, hence the null hypothesis could not be rejected.

To address research question number 2, binary logistic regression was conducted to determine the predicting effects of adolescent talks with their parents on the danger of SUA on adolescent's substance use status after controlling for age, sex, race, and SES.

The binary logistic regression was statistically significant (p = 0.003). The model explained 12.5% (Negelkerke R^2) of variance in SUA and correctly classified 97.6% of SUA. The independent variable "have you talked with parent (s) about danger of SUA and confounding variable age were statistically significant (p = 0.049, Odds = 1.025, 95% CI = 1.00, 1.05) and (p = 0.002 Odds = 1.93 and 95% CI = 1.26, 2.95) with positive coefficients respectively. Therefore, the alternative hypothesis was accepted and the null hypothesis rejected.

Chapter 5 will summarize and discuss the key findings from the study and interpret the findings as well as limitations of the study, recommendations for future research, and the potential implications for positive social change and conclusion.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to examine the extent to which parental education and communication with adolescents about the dangers of SUA predict adolescents' SUA status after controlling for potential confounders (age, sex, race/ethnicity, and SES). I analyzed secondary data from the 2018 NSDUH. The data set used for the study had 630 participants aged 12 to 17 years old who were randomly sampled. The key findings of the statistical analyses showed that the independent variable (have you talked with your parent(s) on the danger of SUA?) and confounding variable age predicted the dependent variable, SUA status, after controlling for age, sex, race/ethnicity, and SES.

Interpretation of the Findings

Analysis of the 2018 NSDUH data set showed that the prevalence of SUA among adolescents 12 to 17 years old in the United States was 2.4% (2018). This percentage is lower than those of other studies. Moss et al. (2018), for example, documented a range of 4.5% to 21.7% from 2011 to 2015. Findings from Das et al. (2016) indicated that about 20% and 10% of boys and girls 13 to 15 years, respectively, use or abuse substances.

There was a statistically significant positive relationship in this study between talking with parent(s) on the danger of SUA and adolescent's SUA status. This is contrary to some findings on parent influence on adolescent to engage in SUA (Bomba-Edgerton, 2017) and is consistent with findings of Pisarska et al. (2016) and Vaughan et al. (2017) that lack of parent involvement in child activities and concern are risk factors for children's and adolescents' engagement in SUA. Age of the adolescent was found to

be statistically significant (p = 0.002, Odds = 1.93 and 95% CI = 1.26, 2.95) with positive coefficients in predicting substance use in adolescence; this is consonant with McCabe et al.'s (2017) finding that adolescents aged 12 to 17 engaged with SUA and Radel et al.'s (2018) observation that adolescence is a period of risky behavior.

There was no statistically significant relationship found in my study between the dependent variable SUA and the independent variable educational level and confounders (sex, race/ethnicity, and SES). Low parental education, with moderate SES, results in higher child substance abuse (Poulain et al., 2019). This is supported by Wagner et al. (2010), who found that low knowledge, skill, and SES facilitate the development of substance use and abuse in an adolescent. However, a study conducted by Humensky (2010) revealed that higher parental education is associated with higher binge drinking, cocaine, and marijuana use. Likewise, high parental income is associated with high marijuana use in an adolescent. The lack of statistical significance in the relationship between educational level and adolescence in my study could be due to the nonlinear relationship between the two (Johnson et al., 2018).

A study of British adolescents found that children with more spending resources were more likely to be engaged with binge drinking, frequent drinking, and drinking in public places (Bellis et al., 2007). Similarly, Rhodes (2009) found that college students in the United States with lower spending power had lower levels of drinking and getting drunk. This study did not find any statistically significant relationship between SES and SUA status of adolescents 12 to 17 years old.

Substance use is generally higher in male adolescents than female adolescents (CBHSQ, 2017). Similarly, in most age categories men have a higher prevalence of SUA than women (SAMSHA, 2016). However, this study showed no statistically significant difference in the relationship of SUA status and gender of the adolescent.

The SCT is a useful theoretical framework used to describe the cognitive, psychological, and health behavior of adolescent intervention and behavioral changes concerning SUA. The acquired experiences influence the reinforcement, expectancies, and expectations of a person to accept or reject engaging in specific behavior and its justification (Wayne, 2019). The framework was chosen because its reciprocal determinism which is its central concept, connotes the dynamic and reciprocal interaction of a person, the adolescent, his behavior, substance use /abuse, and the environment his parent and communication with the parents which can influence the human behavioral outcome, in this case accepting or rejecting SUA (Bandura, 1977, 1986, 1989, 2001, 2012). Hilton et al. (2018) noted that the family history of an adolescent or people around him might influence him into SUA. SCT explains why people behave in a certain way and people can learn or unlearn behavior by observation (Domenech et al., 2009; Schult, 2008). VanGeest et al. (2017) noted that adolescents watch people they know and interact with every day, such as addicted relatives, and learn from them.

I also used the SDOARB model in this study as a guide and intervention framework. SDOARB suggests that the social environment, which includes education, race, and family, can significantly influence adolescents' SUA and well-being (LaVeist, 2005b). SDOARB integrates social and racial determinants in health processes around

adolescents' lives (LaVeist, 2005b) and places race at a central position of a system judgment (Respress, 2012). In the United States, racial phenotype has been to influence one's judgment (Cambridge, 2017). However, in this study, there was no statistically significant relationship between race and SUA or between education and SUA, but there was between social environment (communication with a parent on the danger of SUA). So, the SCT and SDOARB are helpful in SUA study and SUA intervention programs.

I identified a statistically significant relationship between the variable have you talked with your parents about the danger of SUA and the dependent variable SUA status. Data analysis also revealed the relationship between the age of the adolescent and the dependent variable SUA status. Those designing intervention programs using SCT and SDOARB for adolescent substance use /abuse should consider parental communication to children on the danger of SUA and the early adolescent age of 12 to 17 years old as predictors of SUA using the key constructs of SCT and SDOARB.

Limitations of Study

The study consisted of an analysis of secondary data, the 2018 NSDUH, which was administered in all 50 U.S. states and the District of Columbia. The objective of NSDUH is to measure the prevalence and associations of substance use and mental health issues in the United States (NSDUH, 2018). It offers information on the utilization of illicit drugs, alcohol, and tobacco in the United States among those in civilian, noninstitutionalized residences aged 12 years old and above. The NSDUH data are based on self-reports of drug use, and their values depend on the respondent's truthfulness and memory. There may be some overreporting or underreporting even though the design

procedure encourages honesty and recall strategies (SAMHSA, 2019), so there may be an issue of an internal threat to the validity of the study due to recall factors. Another limitation was the lack of longitudinal data on individual SUA. The respondents were not followed because the survey was a cross-sectional one; they were interviewed once. Therefore, the data are an overview of the prevalence of substance use at a specific time per individual (SAMHSA, 2019). Another limitation is that an essential segment of the U.S. population that constitutes approximately 3% of the population, people residing in the institutional and active-duty military quarters, was excluded (Lofquist et al., 2012). However, the sample population was substantial and would address this limitation.

The threats to internal validity identified in this study were interaction, selection-maturity, and regression. The interaction was addressed by controlling the potential confounding variables (age, race, sex, and SES) at the hypotheses testing stage. I used a simple random sampling technique to ensure high internal validity and address the selection threat to internal validity. A binary logistic regression test was conducted to examine the relationship between the independent variables and dependent dichotomous variables for the two RQs and their hypotheses.

Recommendations

A secondary data set of the 2018 NSDUH administered in all 50 U.S. states and the District of Columbia was the source of the sample data for this study. I randomly selected 630 adolescents age 12 to 17 years old in the United States from the NSDUH data set. I would recommend further similar research on young adolescents in other parts of the world, particularly developing nations. I would also recommend similar research

with more independent variables that will include workshops/seminars on SUA and its consequences attended by caregivers, and SUA rehabilitation programs attended by the respondents.

Implications

In this study, I sought to determine the extent to which communication between parents and adolescents on the dangers of SUA as well as adolescent age impacts adolescent SUA status. These findings may inform efforts by government, international organizations, health institutions, and other stakeholders to design strategies to address SUA involving parental communication with adolescents. Specifically, the study findings may inform the development of public health campaigns, seminars, and other interventions. Workshops and seminars offer opportunities for the dissemination of research findings (Brownson et al., 2018), and public campaign creates awareness on positive social behavior.

Organizing seminars and workshops for parents on SUA and its consequences may create more positive social change programs in communities. Collaboration with governments at all levels and other stakeholders may ensure the creation of appropriate advocacy and policies that may create positive social change. Understanding the relationship between parental communication and adolescent's SUA may help prevent SUA through instituting an appropriate public health campaign strategy for parents and adolescents. Social change efforts such as these may eventually empower adolescents and the community at large (Laureate Education, 2015b).

Conclusion

The findings of this study revealed that parental communication with the adolescent on the danger of SUA predicts adolescent SUA status and likewise the adolescent's age predicts his SUA status in the United States. Seminars and workshops on the dangers of SUA to empower parents to communicate with their children on SUA intervention would go a long way to reduce adolescent SUA and improve the SES of communities.

References

Adom, D., Hussein, E. K, & Agyen, J. A. (2019). Theoretical and conceptual framework: Mandatory ingredients of a quality research. *International Journal of Scientific Research, 7*(1), 6-9. https://www.worldwidejournals.com/international-journal-of-scientific-research-(IJSR)/fileview.php?val=January_2018_1514812002__202.pdf

Ahmadi-Montecalvo, H. (2016). Adolescent Health Risk Behaviors: An Examination of the Co-occurrence of Risk Behaviors in a National Sample of U.S. High School Adolescents. https://doi:10.33915/etd.5036

Ajayi, I. A. (2020). Recreational drug use among Nigerian university students: Prevalence, correlates and frequency of use. *PLoS ONE, 15*(5), Article 0232964. https://doi.org/10.1371/journal.pone.0232964

Allen, M. (2017). *The sage encyclopedia of communication research methods* (Vols. 1-4). Thousand Oaks, CA: SAGE Publications, https://doi: 10.4135/9781483381411

Altschuler, D., & Brounstein, P. (1991). Patterns of drug use, drug trafficking, and other delinquency among inner-city adolescent males in Washington, D.C. *Criminology, 29*(4), 589–622.

Bandura, A. (1977a). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi:10.1037/0033-295x.84.2.191

Bandura, A. (1977a). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. Bandura, A. (1977b). *Social learning*

theory. Englewood Cliffs, NJ: Prentice-Hall. Prentice-Hall, 1977. 247 pp., paperbound. Group & Organization Studies, 2(3), 384–385. https://doi:10.1177/105960117700200317

Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory.* Englewood Cliffs, NJ: Prentice Hall. https://doi:10.5465/amr.1987.4306538

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*(9), 1175-1184. https://doi.org/10.1037/0003-066x.44.9.1175

Bandura, A. (1999). A sociocognitive analysis of substance abuse: An agentic perspective. *Psychological Science*, *10*(3), 214-217. https://doi.org/10.1111/1467-9280.00138

Bandura, A. (2000). Exercise of human agency through collective efficacy. *Current Directions in Psychological Science, 9*(3), 75-78. https://doi.org/10.1111/1467-8721.00064

Bandura, A. (2001). Social cognitive theory of mass communications. In J. Bryant & D. Zillman (Eds.), *Media effects: Advances in theory and research* (2nd ed., pp. 121-153). Lawrence Erlbaum.

Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management, 38*(1), 9-44. htpps://doi:10.1177/0149206311410606

Barnett, E., & Casper, M. (2001). A definition of "social environment". *American Journal of Public Health, 91*, 465.

Bellis, M., Hughes, K., Morleo, M., Tocque, K., Hughes, S., Allen, T., Harrison, D., Fe-Rodriguez, E.: (2007). Predictors of Risky Alcohol Consumption in School children and Their Implications for Preventing Alcohol-Related Harm. *Substance Abuse Treatment, Prevention, and Policy, 2*:15.

Berelson, B. R., & Steiner, G. A. (1964). *Human Behavior*. An Inventory of Scientific findings New York NY: Harcourt Brace & World.

Blum, R. W., Astone, N. M.. Decker, M. R., & Mouli, C. (2014). A conceptual framework for early adolescence: a platform for research. *International Journal of Adolescence Medical 26*(3): 321-331.

Bomba-Edgerton, K. (2017). Perception of Adolescent Suspended for School Drug Abuse.

Brener, N. D., Kann, L., Shanklin, S., Kinchen, S., Eaton, D. K., Hawkins, J., & Flint, K. H. (2013). Methodology of the youth risk behavior surveillance system 2013. *Morbidity and Mortality Weekly Report: Recommendations and Reports, 62*(1), 1-20.

Brewer, B. R. (2017). How parenting style relates to adolescent substance in an at-risk male population (honors thesis). The University of Southern Mississippi

Brownson, R. C., Eyler, A. A., Harris, J. K., Moore, J. B., & Tabak, R. G. (2018). Research full report: getting the word out: New approaches for disseminating public health science. *Journal of Public Health Management and Practice, 24*(2), 102-111.

Cambridge, K.J. (2017). *In the United States, racial phenotype influences judgment*.

Southern Illinois University Carbondale.

Carter, R., & Lubinsky, J., (2016*). Rehabilitation research: Principles and applications* 5th edition St Loius, MO: Elsevier, Inc;

Center for Behavioral Health Statistics and Quality. (2016). Key substance use and mental health indicators in the United States: Results from the 2015 National Survey on Drug Use and Health (HHS Publication No. SMA 16-4984, NSDUH Series H-51). http://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality. (2019a). *2018 National Survey on Drug Use and Health: Detailed tables*. https://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality. (2019b). 2018 National Survey on Drug Use and Health Public Use File Codebook, Substance Abuse and Mental Health Services Administration, Rockville, MD

Center for Behavioral Health Statistics and Quality (2016). *Results from the 2016 National Survey on Drug Use and Health: Detailed Tables.* Rockville, MD: Substance Abuse and Mental Health Services Administration; 2017. https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2016/NSDUH-DetTabs-2016.pdf.

Centers for Disease Control and Prevention. (2016). Drug overdose deaths. https://www.cdc.gov/drugoverdose/data/statedeaths.html

Champion, K. E., Teesson,M., & Newton,N. C. (2016). Patterns and correlates of new psychoactive substance use in a sample of Australian high school students. *Drug Alcohol Rev. 35*, 338–344. https:// doi: 10.1111/dar.12312

Chan, T. W., & Koo, A. (2011). Parenting style and youth outcomes in the UK. *European Sociological Review*, *27*(3), 385-399.

Child Trends Databank. (2015). Parental education. at: https://www.childtrends.org/?indicators=parental-education

Child Trends Databank. (2019). Parental education.: :https://www.childtrends.org/?indicators=parental-education

Choate, P. (2015). Adolescent alcoholism and drug addiction: The experience of parents. *Behavioral Sciences*, *5*(4), 461-476. doi:10.3390/bs5040461

Christie, D., & Viner, R. (2005). Adolescent development. *British Medical Journal*,*330*(7486) 301-304. doi:10.1136/bmj.330.7486.301

Cicek, E., Demirel, B., Ozturk, H., Kayhan, F., Cicek, I., & Eren, I. (2015). The burden of care and quality of life in relatives of opioid-dependent male subjects. *Psychiatria Danubina, 27*(3), 273-277. https://www.ncbi.nlm.nih.gov/pubmed/26400135

Coleman, P. & Karraker, K.H. (2000). Parenting self-efficacy among mothers of school age children: conceptualization, measurement, and correlates. *Family Relations, 49*(1), 13-22. doi:10.1111/j.1741-3729.20000.00013.x

Cook P, Moore M. (2000). *Alcohol. Handbook of Health Economics Amsterdam*: NewYork: ElsevierCulyer AJ, Newhouse JP.

Corsini, R. J., Wedding, D., & Dumont, F. (2008). *Current psychotherapies. Belmont*, CA: Thomson Higher Education.

Cox RG, Zhang L, Johnson WD, Bender DR. (2007). Academic performance and substance use: Findings from a state survey of public high school students. *The Journal of School Health. 77:*109–115.

Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods.* (4th ed.). Thousand Oaks, CA: Sage

Das, J. K., Salam, R. A., Arshad, A., Finkelstein, Y., & Bhutta, Z. A. (2016). Interventions for adolescent substance abuse: An overview of systematic 52 reviews. *Journal of Adolescent Health, 59(4),* 61-75. https://doi:10.1016/j.jadohealth.2016.06.021d

Davison, K. K., & Lawson, C. T. (2006). Do attributes in the physical environment influence children's physical activity? A review of the literature. *International Journal of Behavioral Nutrition & Physical Activity*, *319*-17. https://doi:10.1186/1479-5868-3-19.

DiClemente, R. J., Hansen, W. B., & Ponton, L. E. (1996). Adolescents at risk. In *Handbook of Adolescent Health Risk Behavior* (pp. 1-4).

Domenech Rodríguez, M., Donovick, M., & Crowley, S. (2009). Parenting styles in a cultural context: Observations of 'protective parenting' in first-generation Latinos. *Family Process, 48*(2), 195-210. doi:10.1111/j.1545-5300.2009.01277.x.

Donaldson, C. D., Nakawaki, B., & Crano, W. D. (2015). Variations in parental monitoring and predictions of adolescent prescription opioid and stimulant misuse. *Addictive behaviors*, *45*, 14–21. https://doi.org/10.1016/j.addbeh.2015.01.022

Dussaillant, F., & Fernandez, M. (2015). Alcohol's harm to others' well-being and health: a comparison between Chile and Australia. *Alcohol and Alcoholism, 50*(3), 346-351.doi:10.1093/alcalc/agv002

Eaton DK, Kann L, Kinchen S, Shanklin S, Flint KH, Hawkins J, Harris WA, Lowry R, McManus T, Chyen D, Whittle L, Lim C, & Wechsler H. (2012). Centers for Disease Control and Prevention (CDC). *MMWR Surveill Summ. 8;* 61(4):1-162. [PubMed] [Ref list]

El Kazdouh, H., El-Ammari, A., Bouftini, El Fakir, S., & EL Achbab, Y. (2018). Adolescents, parents and teachers' perceptions of risk and protective factors of substance use in Moroccan adolescents: a qualitative study. *Subst Abuse Treat Prev Policy* **13,** 31. https://doi.org/10.1186/s13011-018-0169-y

Engberg, J. & Morral, A. R. (2006). Reducing substance use improves adolescents' school attendance. *Addiction, 101*(12), 1741-1751. DOI: 10.1111/j.1360-0443. 2006.01544.x

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2017). *Statistical power analysis using G* Power 3.1: Tests for correlation and regression analyses.* : http://www.gpower.hhu.de/

Frankfort-Nachmias, C., Nachmias, D., & DeWaard, J. (2015). *Research methods in the social sciences.* (8th, Ed.) New York: Worth.

Gamble, W.C., Yu, J. J., & Cards, N. A. (2010). Self-representations in early adolescence: Variations in sibling similarity by sex composition and sibling relationship qualities. *Social Development, 19,* 148-169. doi: 10.1111/j.1467-

9507.2008.00532.

Garcia Coll, C., Lamberty, G., Jenkins, R., McAdoo, H. P., Crnic, K., Wasik, B. H., & Vazquez Garcia, H. (1996). An integrative model for the study of developmental competencies in minority children. *Child Development, 67*(5), 1891–1914.

Gateway Foundation Rehab Centers. (2019). *Substance Abuse Treatment Centers in Illinois Drug and Alcohol Rehab Center Privacy Policy*. https://www.gatewayfoundation.org/faqs/effects-of-drug-abuse/

Geronimus AT, Hicken M, Keene D., & Bound J. (2006) "Weathering" and age patterns of allostatic load scores among blacks and whites in the United States. *American Journal of Public Health. 96:826–833.*

Ginis, K., Papathomas, A., Perrier, M., & Smith, B. (2015). Psychosocial factors associated with physical activity in ambulatory and manual wheelchair users with spinal cord injury: A mixed-methods study. *Disability and Rehabilitation, 1-*24.doi:10.3109/09638288.2015.1045991

Grana, R. A., Black, D., Sun, P., Rohrbach, L. A., Gunning, M., & Sussman, S. (2010). School disrepair and substance use among regular and alternative high school adolescents. *Journal of School Health, 80*(8), 387-393.

Gray, K. M., & Squeglia, L. M. (2018). Research review: what have we learned about adolescent substance use? J Child Psychol Psychiatry. 2018;59:618–27.

Gropper, B. (1985). *Probing the Links Between Drugs and Crime*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, National Institute of Justice.

2019.

Gryczynski, J., Schwartz, R. P., O'Grady, K. E., Restivo, L., Mitchell, S. G., & Jaffe, J. H. (2016). Understanding Patterns of High-Cost Health Care Use Across Different Substance User Groups. *Health affairs (Project Hope)*, *35*(1), 12–19. https://doi.org/10.1377/hlthaff.2015.0618

Guan, Y., Deng, H., Sun, J., Wang, Y., Cai, Z., Ye, L., Fu, R., Wang, Y., Zhang, S., Li, Y. (2013). Career adaptability, job search self-efficacy and outcomes: A 3 wave investigation among Chinese university 276 graduates. *Journal of Vocational Behavior*, 561-570. http://dx.doi.org/10.1016/j.jvb.2013.09.003

Guo, Q., Feng, L. (2017). The associations between perceived parenting styles, empathy, and altruistic choices in economic games: A study of Chinese children. *Front. Psychol.* **8**:1843. https:// doi: 10.3389/fpsyg.01843. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Håkansson, A., & Jesionowska, V. (2018). Associations between substance use and type of crime in prisoners with substance use problems - a focus on violence and fatal violence. *Substance abuse and rehabilitation*, *9*, 1–9. https://doi.org/10.2147/SAR.S143251

Hen, M., & Goroshit, M. (2012). Academic procrastination, emotional intelligence, academic self-efficacy, and GPA: A comparison between students with and without learning disabilities. *Journal of Learning Disabilities, 47*, 116-124. https://doi:10.1177/0022219412439325

Jääskeläinen, M. Holmila M, Notkola I-L, & Raitasalo K. (2016). Mental disorder and

harmful substance use in children of substance abusing parent: A longitudinal register-based study on a complete birth cohort born in 1991. *Drug and Alcohol Review, 35*(6), 728-740. https: doi-org.epz.waldenulibrary.org/10.111/dar.12417.

Jackson, D., Usher, K., & O'Brien, L. (2007). Fractured families: Parental perspectives of the effects of adolescent drug abuse on family life. *Contemporary Nurse, 23*(2), 321-330. https://doi:10.5172/conu.2006.23.2.321

Jakovljevic, M. M., Lazarevic, M., Jurisevic, M., & Jovanovic, M. R. (2015b). When cure becomes an illness-abuse of addictive prescription medicines. Front. *Pharmacol. 15*:193. https://doi: 10.3389/fphar.2015.00193

Jakovljevic, M., Jovanovic, M., Rancic, N., Vyssoki, B., Djordjevic, N. (2014). LAT software induced savings on medical costs of alcohol addicts'care–results from a matched-pairs case-control study. PLoS ONE 9: e111931 https://.doi: 10.1371/journal.pone.0111931

Jakovljevic, M., Mijailovic, Z., Jovicic, B. P., Canovic, P., Gajovic, O., Jovanovic,M., Petrovic, D., Milovanovic, O., & Djordjevic, N. (2013a). Assessment of viral genotype impact to the cost-effectiveness and overall costs of care for PEG-interferon-2a + ribavirine treated chronichepatitis C patients. Hepat. Mon. 13: e6750. doi: 10.5812/hepatmon.6750

Jakovljevic,M., Riegler, A., Jovanovic,M., Djordjevic, N., Patek, K., Lesch, O., & Walter, H.(2013b). Serbian and Austrian alcohol-dependent patients: a comparison of twosamples regarding therapeutically relevant clinical features. Alcohol Alcohol 48,505–508.https://doi: 10.1093/alcalc/agt011

Jalilian F, Karami Matin B, Ahmadpanah M, Ataee M, Ahmadi Jouybari T, Eslami AA, & Mirzaei Alavijeh M. (2015). Socio-Demographic Characteristics Associated with Cigarettes Smoking, Drug Abuse and Alcohol Drinking among Male Medical University Students in Iran *J Res Health Sci.; 15(1)*: 42-46.

Johnston L.D., O'Malley P.M., Bachman, J.G., & Schulenberg, J. E. (2012). Monitoring the future national results on adolescent drug use: Overview of key findings, 2011. Ann Arbor, MI: Institute for Social Research, The University of Michigan; 2012. [Google Scholar] [Ref list]

Johnston, L. D., O'Malley, P. M., Miech, R. A., Bachman, J. G., & Schulenberg, J. E. (2016). *Monitoring the Future national survey results on drug use: 1975-2015: Overview of key findings on adolescent drug use*. Ann Arbor: Institute for Social Research, the University of Michigan.: http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2015.pdf

Jones, S. E., Oeltmann, J., Wilson, T. W., Brener, N. D., & Hill, C. V. (2001). Binge drinking among undergraduate college students in the United States: implications for other substance use. *J Am Coll Health. 50*(1):33-8.[PubMed] [Ref list]

Jones, C. P. (2000). Levels of racism: A theoretic framework and a gardener's tale. *American Journal of Public Health, 90*(8), 1212–1215. Jones, C. P. (2002). Confronting institutionalized racism. Phylon (1960–), 50(1/2), 7–22.

Jovanovic, M., & Jakovljevic, M. (2015). Regulatory issues surrounding audit of electronic cigarette charge composition. *Front. Psychiatry 23*:133. doi: 10.3389/fpsyt.2015.00133

Juergens, J. (2019). Health Effects of Teen Substance Abuse. https://www.addictioncenter.com/teenage-drug-abuse/health-effects-teen-substance-abuse/

Kagan, J. (2019). *Household Income*: nvespedia.com/term/h/household income-asp

Kakade, M., Duarte, C. S., Liu, X., Fuller, C. J., Drucker, E., Hoven, C. W.& Fan, B., Wu, P. (2012). Adolescent substance use and other illegal behaviors and racial disparities in criminal justice system involvement: Findings from a US national survey. *American Journal of Public Health*, *102*(7), 1307–1310.

Kann L, McManus T, Harris WA, Shanklin SL, Flint KH, Queen B., Lowry, R., Chyen D., Whittle, L., Thornton, J., Connie Lim,C. J., Bradford, D., Yoshimi Yamakawa, Y., Michelle Leon, M., Nancy Brener, N., & Kathleen A. Ethier, K. A. (2018).Youth risk behavior surveillance—United States, 2017. *MMWR Surveill Summ 67*(8):1. https://doi.org/10.15585/mmwr.ss6708a

Kann, L., Kinchen, S., Shanklin, S. L., Flint, K. H., Kawkins, J., Harris, W. A., & Zaza, S. (2015). Youth risk behavior surveillance—the United States, 2014. *Morbidity and Mortality Weekly Report*, 64, 1–168. [PubMed], [Google Scholar]

Kelly, H. C. (2019). A proposed model of a recovery capital for adolescents. Addiction Research Theory 27(5): 429 436. https://:101080/16066359:20181540694

Kpozehouen, A., Ahanhanzo, Y. G., Paraïso, M. N., Munezero, F., Saizonou, J. Z., &

Makoutodé, M., & Oueraogo, L. T., (2015). Factors associated with psychoactive substanceuse among Beninese adolescents. *Sante Publique 27*, 871–880.

Kuntsche, S., & Kuntsche, E. (2016). Parent-based interventions for preventing or reducing adolescent substance use—A systematic literature review. *Clinical Psychology Review, 45*, 89-101. doi: 10.1016/j.cpr.2016.02.004.

Lahey, B. (2004). *Psychology: An introduction*. Boston, MA:McGraw-Hill.

Larson, A. (2018). What is a guardianship? https://www.expertlaw.com/library/estate_planning/guardianship.html

Laureate Education (Producer). (2015). *Social impact of a dissertation* [Video file]. Baltimore, MD: Author.

Laureate Education. (Producer). (2010). Research design and methods. Baltimore MD: Author.

Laursen, B., & Collins, W. A. (2009). *Parent-child relationships during adolescence. Handbook of Adolescent Psychology*. https://doi:10.1002/9780470479193.adlpsy002002

LaVeist TA. (2005a). Disentangling race and socioeconomic status: a key to understanding health inequalities. *J Urban Health. 82*(2 Suppl 3):iii26-34. [PubMed] [Ref list]

LaVeist, T. A. (2005b). *Minority populations and health: An introduction to health disparities in the United States.* San Francisco, CA: Jossey-Bass.

LaVeist, T. A., & Wallace JM Jr (2000). Health risk and inequitable distribution of liquor stores in the African American neighborhood. *Soc Sci Med. 51*(4):613-7.

[PubMed] [Ref list]

Levy, S. (2019). Substances use and Abuse in Adolescents. : https://www.merckmanuals.com/home/children-s-health-issues/problems-in-adolescents/substance-use-and-abuse-in-adolescents

Li SD, Xia Y, Xiong R, Li J, Chen Y. (2020). Coercive Parenting and Adolescent Developmental Outcomes: The Moderating Effects of Empathic Concern and Perception of Social Rejection. *International Journal of Environmental Research and Public Health*.; 17(10):3538. https://doi.org/10.3390/ijerph17103538

Lieder, F., Griffiths, T. L, M., Huys, Q. J., & Godman, M,. D. (2018). The anchoring bias reflects rational use of cognitive resources. *Psychon Bull Rev* **25,** 322–349. https://doi.org/10.3758/s13423-017-1286-8

Lindberg, L., & Scott, R. H. (2018). Effect of ACASI on reporting of abortion and other pregnancy outcomes in the U.S. National Survey of Family Growth. *Studies in Family Planning, 49,* 259-278. https://doi.org/10.1111/sifp.12068

Lippold, M. A., Coffman, D. L., & Greenberg, M. T. (2014). Investigating the potential causal relationship between parental knowledge and youth risky behavior: a propensity score analysis. Prevention Science: *The Official Journal of the Society for Prevention Research, 15*(6), 869-878. DOI: 10.1007/s11121-013-0443-1

Lobo, M. A., Kagan, S. H., & Corrigan, J. D. (2016). Research design option for intervention studies. Pediatr Phys Ther 3(4). S57-S63. doi: 10.1097/PEP.0000000000000380

Lofquist, D., Lugaila, T., O'Connell, M., & Feliz, S. (2012, April). Households and

families: 2010 (C2010BR-14, 2010 Census Briefs). https://www.census.gov/prod/cen2010/briefs/c2010br-14.pdf

MacKay, A. P., & Duran, C. (2007). *Adolescent health in the United States, 2007*. Hyattsville, MD: National Center for Health Statistics. Centers for Disease Control and Prevention. (2016). *Drug overdose deaths.* https://www.cdc.gov/drugoverdose/data/statedeaths.html

Maddison, R., Pfaeffli, L., Stewart, R., Kerr, A., Jiang, Y., Rawstorn, J., Leung W., Dalleck L.,Carter K., & Whittaker, R. (2014). The heart mobile phone trial: The partial mediating effects of self-efficacy on physicalactivity among cardiac patients. Frontiers in Public Health Front. *Public Health, 2*(56).

Masten, A. S. (2018). Resilience Theory and Research on Children and Families: Past, Present, and Promise. Journal of Family Theory & Review, 10(1), 12–31. doi:10.1111/jftr.12255

Middleton, J. W., Tate, R. L., & Geraghty, T. J. (2009). Self-efficacy and spinal cord injury: psychometric properties of a new scale. *Rehabilitation Psychology, 48,* 281-288.

National Center for Education Statistics. (2010). Status and trends in the education of racial and ethnic minorities. http://nces.ed.gov/pubs2010/2010015/indicator1_5.asp

National Institute on Drug Abuse. (1995). Drug Use among racial/Ethnic Minorities. Rockville, Md: National Institute of Drug Abuse NIH publication. No. 95.3888.

National Institute on Drug Abuse. (2003). *Preventing Drug Use among Children and*

Adolescents (In Brief). https://www.drugabuse.gov/publications/preventing-drug-abuse-amongchildren-adolescents-in-brief/prevention-principle

O'Malley, P. M., Johnston, L. D., & Bachman, J. G. (1995). Adolescent Substance Use. Epidemiology and implication for public policy. *Peadatric Clinical North America: 42*241-280.

Oreo, A., & Ozgul, S. (2007). Grief experiences of parents coping with an adult child with problem substance use. *Addiction Research & Theory, 15*(1), 71-83. htpps://doi:10.1080/16066350601036169

Orford, J., Velleman, R., Natera, G., Templeton, L., & Copello, A. (2013). Addiction in the family is a major but neglected contributor to the global burden of adult ill-health. *Social Science & Medicine, 78*, 70-77. doi: 10.1016/j.socscimed.2012.11.036.

Park, J., & John, D. (2014). I think I can, I think I can: Brand use, self-efficacy, and performance. *Journal of Marketing Research, 51*, 233-247.

Pisarska, A., Eisman, A., Ostaszewski, K., & Zimmerman, M. A. (2016). Alcohol and Cigarette Use Among Warsaw Adolescents: Factors Associated With Risk and Resilience. *Substance Use & Misuse, 51*(10), 1283–1296. https://doi:10.3109/10826084.2016.1168442

Poulain, T., Vogel, M., Sobek, C., Hilbert, A., Körner, A., & Kiess, W. (2019). Associations Between Socio-Economic Status and Child Health: Findings of a Large German Cohort Study. *International journal of environmental research and public health, 16*(5), 677. https://doi.org/10.3390/ijerph16050677

Reinherz H, Giaconia R, Hauf A, Wasserman M, Paradis A. (2000). General and Specific Childhood Risk Factors for Depression and Drug Disorders by Early Adulthood. *Journal of the American Academy of Child and Adolescent Psychiatry, 39*(2):223-231.

Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., & Shew, M. (1997). Protecting adolescents from harm: findings from the National Longitudinal Study on Adolescent Health. *Journal of American Medical Association, 278*(10), 823-832.

Respress, B. N. (2010). *Social determinants of adolescent risk behaviors: An examination of depressive symptoms and sexual risk, substance use, and suicide risk behaviors*. Ph.D. thesis, Case Western Reserve University, Cleveland, OH. Retrieved October 16, 2011 http://proquest.umi.com.proxy.lib.umich.edu/pqdweb?did=2115467421&Fmt=7&clientId= 17822&RQT=309&VName=PQD

Respress, B. N. (2012). Social determinants of adolescent risk behaviors: A framework for research, practice, and policy. Manuscript submitted for publication. [Google Scholar] [Ref list]

Rhodes S. D. (2009). The Role of Monthly Spending Money in College Student Drinking Behaviors and their Consequences. *Journal of American College Health 2009, 57*(6):587-596.

Richardson J. L., Dwyer K, & McGuigan K, (1989). Substance abuse among eighth-grade students who take care of themselves after school. *Pediatrics; 84*:556-66.

Richert, T., Anderberg, M., & Dahlberg, M. (2020). Mental health problems among young people in substance abuse treatment in Sweden. *Substance abuse treatment, prevention, and policy*, *15*(1), 43. https://doi.org/10.1186/s13011-020-00282-6

Rogers A.A., Padilla-Walker L.M., McLean R.D., Hurst J.L. (2020). Trajectories of perceived parental psychological control across adolescence and implications for the development of depressive and anxiety symptoms. *J. Youth Adolesc.* ;49:136–149. https:// doi: 10.1007/s10964-019-01070-7. [PubMed] [CrossRef] [Google Scholar]

Rosario, C., Maria, J. G. & Pablo, F. (2017). Parental Education and Aggressive Behavior in Children: A Moderated-Mediation Model for Inhibitory Control and Gender. Frontiers in Psychology vol.8 p. 1181 https://www.frontiersin.org/article/10.3389/fpsyg.2017.01181 doi=10.3389/fpsyg.2017.01181

Rosenholtz, S. J., & Rosenholtz, S. H. (1981) Classroom organization and the perception of ability. *Sociology of Education, 54*:132-140.

Roy, É., Nolin, M. A., Traoré, I., Leclerc, P., & Vasiliadis, H. M. (2015). Nonmedical use of prescription medication among adolescents using drugs in Quebec. Can. *J. Psychiatry 60*, 556–563 doi: 10.1177/070674371506001206.Roy, É., Nolin, M.-A., Traoré, I., Leclerc, P., & Vasiliadis, H.-M. (2015). Nonmedical Use of Prescription Medication among Adolescents Using Drugs in Quebec. *The*

Canadian Journal of Psychiatry, *60*(12), 556–563. https://doi:10.1177/070674371506001206

Rudestam, K.E. & Newton, R.R. (2015). Surveying your dissertation: A comprehensive guide to content and process. SAGE Publication.

Sakakibara, B., Miller, W., Routhier, F., Backman, C., & Eng, J. (2014). Association between selfefficacy and participation in community-dwelling manual wheelchair users aged 50 years or older. *Physical Therapy, 94*, 664-674. doi:10.2522/ptj.20130308iSakakibara, B. M., Miller, W. C., Routhier, F., Backman, C. L., & Eng, J. J. (2015). Association Between Self-efficacy and Participation in Community-Dwelling Manual Wheelchair Users Aged 50 Years or Older. *Physical Therapy, 94*(5), 664–674. https://doi:10.2522/ptj.20130308

Samek, D. R., & Rueter, M. A. (2011). Considerations of elder sibling closeness in predicting younger sibling substance use: Social learning versus social bonding explanations. *Journal of Family Psychology*, *25*(6), 931-941. https://doi:10.1037/a0025857

Schulenberg, J. E., Johnston, L. D., O'Malley, P. M., Bachman,J. G., Miech, R. A., & Partrick, M. E., (2017). Monitoring the future. National Survey result on drug use, 1979-2016. The University of Michigan, Ann Arbor, Michican.

Schwinn, T. M., & Schinke, S. P. (2014). Alcohol use and related behaviors among late adolescent urban youths: Peer and parent influences. *Journal of Child & Adolescent Substance Abuse, 23*(1), 58-64. DOI:10.1080/1067828x.2012.735561.

Sedaghat, Z., Fararouei, M., Shahraki , G., & Shirazi, K. K. (2018). HAddiction and self-

reported associated sociodemographic factors in a small province of Iran. Heroin Addict Related Clin Problems.20(x):5–11

Shahraki, G., Sedaghat, Z. & Fararouei, M. (2019). Family and social predictors of substance use disorder in Iran: a case-control study. *Substance Abuse Treatment Prevention Policy 14***,** 17 (2019) (2019). https://doi.org/10.1186/s13011-019-0201-x

Shakya, H. B., Christakis, N. A., & Fowler, J. H. (2012). Parental influence on substance use in adolescent social networks. *Archive of Pediatric Adolescent Medicine. 166*(12), 1132-1139. https://doi:10.1001/archpediatrics.2012.1372

Shek, D., & Dou, D. (2020). Perceived Parenting and Parent-Child Relational Qualities in Fathers and Mothers: Longitudinal Findings Based on Hong Kong Adolescents. *International journal of environmental research and public health, 17*(11), 4083. https://doi.org/10.3390/ijerph17114083

Sherman, C. (2010). Multidimensional family therapy for adolescent drug abuse offers broad, lasting benefitsSherman, C. (2010). Multidimensional family therapy for adolescent drug abuse offers broad, lasting benefits. PsycEXTRA Dataset. . *Nida Notes, 23*(3), 13–15.

Smalheiser, N. R. (2019). A Neglected Link Between the Psychoactive Effects of Dietary Ingredients and Consciousness-Altering Drugs. *Frontiers in Psychiatry, 10*. https://doi:10.3389/fpsyt.2019.00591

Small, E. Suzuki, R. & Malek, A. (2014). The Impact of Family and Parental Education on Adolescents' Substance Use: A Study of U.S. High School Seniors. *Journal of*

*Social Work in Public Health, 29(*6) 594-605. https:// doi:10.1080/19371918.2014.893855.

Spera, C. (2005). A Review of the Relationship among Parenting Practices, Parenting Styles, and Adolescent School Achievement. *Educational Psychology Review, 17* (2), pp125-146. htpps://doi: 10.1007/s10648-005-3950-1.

Springe Link (2017). Encyclopedia of personality and individual difference.: https: //doi.org/10.1007/978-3-319-28099-8_1145-1.

Springer US.Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012).Adolescence and the social determinants of health. *The Lancet, 379*(9826), 1641-1652. https:doi:10.1016/s0140-6736(12)60149-4

Stanton, M. D., & Shadish, W. R. (1997). Outcome, attrition, and family-couples treatment for drug abuse: A meta-analysis and review of the controlled, comparative studies. *Psychological Bulletin, 122*(2), 170–191.

Steca, P., Greco, A., Cappelletti, E., D'Addario, M., Monzani, D., Pancani, L., & Parati, G. (2015). Cardiovascular management self-efficacy: Psychometric properties of a new scale and its usefulness in a rehabilitation context. *Annals of Behavioral Medicine, 49,* 660-674 15p. https://doi:10.1007/s12160-015-9698-z

Stone, A. L., Becker, L. G., Huber, M., & Catalano, R. F. (2012). Review of risk and protective factors of substance use and problem use in emerging adulthood. *Addictive Behaviors, 37*(7), 747–775. https://doi.org/10.1016/j.addbeh.2012.02.014

Substance Abuse and Mental Health Services Administration (2019). 2018 National

Survey on Drug Use and Health: Methodological summary and definitions. Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/.

Substance Abuse and Mental Health Services Administration (SAMHSA). (2018). Prevention of Substance Abuse and Mental Illness. Retrieved August 16, 2018, https://www.samhsa.gov/prevention Substance Abuse and Mental Health Services Administration and Center for Behavioral.

Substance Abuse and Mental Health Services Administration. (2012). Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings. Rockville, MD: Author; (NSDUH Series H-44, HHS Publication No. (SMA) 12-4713.) [Google Scholar] [Ref list]

Substance Abuse and Mental Health Services Administration. (2016). Center for Behavioral Health Statistics and Quality. Treatment Episode Data Set (TEDS): 2004-2014. *National Admissions to Substance Abuse Treatment Services.* Rockville, MD: Substance Abuse and Mental Health Services Administration; https://wwwdasis.samhsa.gov/dasis2/teds_pubs/2014_teds_rpt_natl.pdf

Substance Abuse and Mental Health Services Administration. (2019). Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health (HHS Publication No. PEP19-5068, NSDUH Series H-54). Rockville, MD: Center for Behavioral Health Statistics and Quality,

Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/

Substance Abuse and Mental Health Services AdministrationSAMHSA. (2018). Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2013 to 2022.

Sutherland, A. (2012). Is parental socio-economic status related to the initiation of substance abuse by young people in an English city? An event history analysis. *Social Science & Medicine, 74*(7), 1053-1061, 1053–1061. https://doi: 10.1016/j.socscimed.2011.12.026

Timmermans M., van Lier P. A., & Koot HM. (2008). Which forms of child/adolescent externalizing behaviors account for late adolescent risky sexual behavior and substance use? *Journal of Child Psychology and Psychiatry and Allied Disciplines.49:*386–394. [PubMed] [Google Scholar]

Tobler, N. S., Roona, M. R., Ochshorn, P., Marshall, D. G., Streke, A. V., and Stackpole, K. M. (2000). School-based adolescent drug prevention programs: 1998 meta-analysis. *J. Prim. Prev.* 20, 275–336. doi: 10.1023/A:1021314704811. CrossRef Full Text | Google Scholar

Tourangeau, R., & Yan, T. (2007). Sensitive questions in surveys. *Psychological Bulletin, 133*, 859-883. https://doi.org/10.1037/0033-2909.133.5.859

Tsering D, Pal R, Dasgupta A. Licit and illicit substance use by adolescent students in eastern India: prevalence and associated risk factors. *J Neurosci Rural Pract*. *;1:*76–81Tsering, D., Pal, R., & Dasgupta, A. (2010). Licit and illicit substance

use by adolescent students in eastern India: Prevalence and associated risk factors. *Journal of Neurosciences in Rural Practice, 01*(02), 076–081. https://doi:10.4103/0976-3147.71721

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*(4157), 1124–1131.

Ursache, A., Merz, E. C., Melvin, S., Meyer, J., & Noble, K. G. (2017). Socioeconomic status, hair cortisol and internalizing symptoms in parents and children. *Psychoneuroendocrinology, 78*(1), 142–150. https://doi.org/10.1016/j.psyneuen.2017.01.020

VanGeest, J. B., Johnson, T. P., & Alemagno, S. A. (2017). Research methods in the study of substance abuse. Cham: Springer.

Vatchova, K. P., Lee, M., McCormic, J. B., & Lahbor, M. H. (2016). Multicollinearity in Regression Analyses Conducted in Epidemiologic Studies. *Epidemiology 6* (2). 227 https://doi104172/2161-1165 1000227

Vaughan, E. L., Waldron, M., de Dios, M. A., Richter, J., & Cano, M. Á. (2017). Childhood family characteristics and prescription drug misuse in a nationalsample of latino adults. *Psychology. of Addictive. BehavBehaviors*, 31(5), 570-575. https://. doi: 10.1037/adb0000278. [Epubahead of print].

Veronneau, M. H, Dishion, T. J. (2010). Predicting change in early adolescent problem behavior in the middle school years: A mesosystemic perspective on parenting and peer experiences. *Journal of Abnormal Psychology; 38*:1125–1137. [PMC free article] [PubMed] [Google Scholar]

Vieira, É, Salvetti, M., Damiani, L., & Pimenta, C. (2014). Self-efficacy and fear avoidance beliefs in chronic low back pain patients: Coexistence and associated factors. *Pain Management Nursing, 15*, 593-602.

Wagner, K. D., Ritt-Olson, A., Chou, C., Pokhrel, P., Duan, L., Baezconde-Garbanati, L., …Unger, J. B. (2010). Associations between family structure, family functioning, and substance use among Hispanic/Latino adolescents. *Psychology of Addictive Behaviors, 24*(1), 98-108. DOI: 10.1037/a0018497

Walker, D., Neighbors, C., Rodriguez, L., Stephens, R., & Roffman, R. (2011). Social norms and self-efficacy among heavy using adolescent marijuana smokers. *Psychology of Addictive Behavior, 24*(4), 727-732. doi:10.1037

Walsemann K. M., Gee G. C.. & Geronimus A. T. . (2009). Ethnic differences in trajectories of depressive symptoms: Disadvantage in family background, high school experiences, and adult characteristics. *Journal of Health and Social Behavior*. *50*(1):*82–98*. Geronimus https://doi.org/10.1177/002214650905000106 [PMC free article] [PubMed] [Google Scholar]

Wanders, F. H. K., Van der Veen, I., Dijkstra, A. B., & Maslowski, R. (2020a). The influence of teacher-student and student-student relationships on societal involvement in Dutch primary and secondary schools. *Theory & Research in Social Education, 48,* 101–119. https://doi.org/10.1080/00933104.2019.1651682 [Taylor & Francis Online], [Web of Science ®], [Google Scholar]

Wanders,F. H. K., Dijkstra, A. B., Maslowski, R., vander Veen, I., Amna, E. (2020b).

The Role of Teachers, Parents, and Friends in Developing Adolescents' Societal Interest https://doi.org/10.1080/00313831.2020.1754901

Wayne, W. L. (2019). Social Cognitive Theory. Boston University, School of Public Health: http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories5.html

West African Commission on Drugs. (2014). *Not just in transit:Drugs, the state and society in West Africa*. Geneva,Switzerland: Kofi Annan Foundation. http://www.wacommissionondrugs.org/report

Wilson, J.J., & Howell, J.C. (1993). *Comprehensive Strategy for Serious, Violent, and Chronic Juvenile Offenders. Program Summary*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice, and Delinquency Prevention.

Wong, J. J., Cucciare, M. A., Booth, B. M., & Timko, C. (2019). Predicting Substance Use Patterns Among Rural Adults: The Roles of Mothers, Fathers, and Parenthood. *Family process*, *58*(2), 431–445. https://doi.org/10.1111/famp.12362

Wood, D., Crapnell, T., Lau, L., Bennett, A., Lotstein, D., Ferris, M., & Kuo, A. (2017). Emerging Adulthood as a Critical Stage in the Life Course. Handbook of Life Course Health Development, 123–143. https:doi:10.1007/978-3-319-47143-3_7

Wood, R. & Bandura, A. (1989). Impact of conceptions of ability on self-regulatory mechanisms and complex decision making. *Journal of Personality and Social Psychology*, 56(3), 407-415. http://www.uky.edu/eushe2/Bandura/Bandura1989JPSP.pdf

World Drug Report. (2018). United Nations publication, Sales No. E.18.XI.9). https://www.unodc.org/wdr2018/prelaunch/WDR18_Booklet_4_YOUTH.pdf

World Health Organization (WHO). (2020). Health topics" Substance abuse.: https://www.who.int/topics/substance_abuse/en/

Wright, S., Perrone-McGovern, K., Boo, J., & White, A. (2014). Influential factors in academic and career self-efficacy: Attachment, supports, and career barriers. *Journal of Counseling & Development*, *92*(1), 36-46. https:// doi:10.1002/j.1556-6676.2014. 00128.x

Yang, X., & Xia, G. (2019). Causes and Consequences of Drug Abuse: A Comparison Between Synthetic Drug and Heroin Users in Urban China. *AIDS education and prevention : official publication of the International Society for AIDS Education*, *31*(1), 1–16. https://doi.org/10.1521/aeap.2019.31.1.1

Zikic, J., & Saks, A. (2009). Job search and social cognitive theory: The role of career-relevant activities. *Journal of Vocational Behavior*, *74*(1), 117–127. https://doi.org/10.1016/j.jvb.2008.11.001