Self-Determination Theory and Attachment Theory: An Integrative Model to Predict Drinking Motives and Protective Behavioral Strategies in Emerging Adults

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SELF-DETERMINATION THEORY AND ATTACHMENT THEORY:
AN INTEGRATIVE MODEL TO PREDICT DRINKING MOTIVES
AND PROTECTIVE BEHAVIORAL STRATEGIES IN
EMERGING ADULTS

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Dedication

To the woman who, along with her three children, left the comfort of her home country to provide better opportunities for her children. To the woman who worked endless hours to supply for the needs of her children. To the woman who sacrificed everything to provide a better life for her children. To the woman who deserves my utmost respect and admiration.

To my mother…
SELF-DETERMINATION THEORY AND ATTACHMENT THEORY: AN INTEGRATIVE MODEL TO PREDICT DRINKING MOTIVES AND PROTECTIVE BEHAVIORAL STRATEGIES IN EMERGING ADULTS

by

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DISSEETATION

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of the Requirements

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DOCTOR OF PHILOSOPHY

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Abstract

The integration of attachment theory and self-determination theory can be used to develop a statistical model to understand the association between attachment styles and basic psychological needs with drinking motives and protective behavioral strategies among emerging adults. Data collected from Prolific and UTEP ($N = 437$) was used in the present study to explore this possibility by examining the association between the variables of interest using linear regressions, SEM models, and moderated mediation models. Linear regressions demonstrated a statistically significant relationship between attachment styles, basic psychological needs, drinking motives and protective behavioral strategies. Although the complete and deconstructed SEM models used to assess the data resulted in a poor fit, the observed variables serving as indicators of the latent variable engagement in drinking were significant associated. The results also reflect that a moderated mediation does not occur between psychosocial maturity, attachment styles, basic psychological needs and drinking motives/protective behavioral strategies. The associations between insecure attachment styles and basic psychological needs presented in the current study indicates that the integration of self-determination theory and attachment theory should continue to be examined. This knowledge can be translated in the future to the development of interventions that can help emerging adults with insecure attachments styles and unsatisfied basic psychological needs reduce their alcohol consumption.
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SELF-DETERMINATION THEORY AND ATTACHMENT THEORY:  
AN INTEGRATIVE MODEL TO PREDICT DRINKING MOTIVES  
AND PROTECTIVE BEHAVIORAL STRATEGIES IN  
EMERGING ADULTS

Emerging adulthood is a developmental period where people undergo frequent changes due to the transitional events that are occurring in life (Arnett, 2000), such as attending college. This stage has been associated with an overall increase in alcohol consumption (Auerbach & Collins, 2006). Moreover, alcohol use among college students continues to be a public health concern in the United States. Statistics indicate that full-time college students report higher rates of alcohol use, binge alcohol use, and heavy alcohol use in the past month compared to young adults of the same age group who are not enrolled in college (Substance Abuse and Mental Health Services Administration [SAMHSA], 2017). The frequent consumption of alcohol places college students at a high risk for alcohol related problems (White & Hingson, 2013) that has a direct effect on professional and personal aspects of their life. For example, past studies have reported that college students see an effect on their academic career (Wechsler et al., 1998), in addition to other significant consequences such as legal problems because of drinking, being injured while under the influence, or killed in alcohol-related accidents (White & Hingson, 2013). Therefore, research must focus on expanding the literature on factors that contribute and protect against alcohol use and alcohol related problems as well as those that serve as a proximal determinant to alcohol use among emerging adults, both college students and non-college students.

The utilization of attachment theory along with self-determination theory can help examine how attachment styles and basic psychological needs associate with drinking motives.
and/or protective behavioral strategies that will subsequently result in alcohol use and alcohol-related consequences. Understanding the precursors of alcohol use can help reduce consumption among emerging adults by targeting specific contributors to risky alcohol use. In addition, the proposed study examined the association between attachment styles, basic psychological needs, childhood experiences, and psychosocial maturity in a sample of emerging adults across the nation. A predominately Hispanic college student population subsample was also examined, contributing to the research knowledge on this population.
Chapter 1: Introduction

The integration of attachment theory and self-determination theory can be used to develop a statistical model to understand the association between attachment styles and basic psychological needs with drinking motives and protective behavioral strategies among emerging adults in a sample of emerging adults across the nation in comparison to a predominately Hispanic college student sample. This association served as a precursor of alcohol use and alcohol-related consequences. Furthermore, the association between attachment styles, basic psychological needs, and risk and protective factors for harmful alcohol use, like childhood experiences and psychosocial maturity, will be examined in the described sample.

EMERGING ADULTHOOD

Emerging adulthood is a developmental stage that describes people between the ages of 18 to 25 (Arnett, 2000). Specifically, emerging adulthood involves a period where people undergo frequent changes due to the transitional events that are occurring in life. During this stage, most people obtain the education and training that will help them attain their source of income during their adult work lives (Arnett, 2000). Nonetheless, emerging adulthood offers many different options, and it is a stage in life when only a few plans have been set as definite. For instance, it has been reported that emerging adults do not consider themselves as adolescents but also many do not consider themselves entirely as adults. Emerging adulthood continues to be a period of identity exploration before embracing adulthood responsibilities. Having limited responsibilities during emerging adulthood allows people to experiment in different areas of their lives due to the reduced parental supervision, such as with alcohol use.
ALCOHOL USE AMONG EMERGING ADULTS

Prevalence of Alcohol Use among Emerging Adults

Emerging adulthood has been associated with an overall increase in alcohol consumption and the period with the highest prevalence of alcohol use (Auerbach & Collins, 2006). For instance, the 2019 National Survey on Drug Use and Health (NSDUH) reported that 54.30% of emerging adults, aged 18 to 25, consumed alcohol in the past month (SAMHSA, 2019c). The NSDUH survey also reported that 34.30% of emerging adults reported binge drinking in the past month, a higher rate than any other age group. Moreover, 8.40% of emerging adults reported heavy alcohol consumption in the past month, compared with 6.00% of persons aged 26 or older. The NSDUH also indicated that 9.30% of emerging adults meet the criteria for alcohol use disorder compared to 5.10% of people aged 26 or older. Therefore, alcohol use among emerging adults is a topic that needs to be extensively researched.

Furthermore, when followed between the ages of 18.50 and 22.50, emerging adults that met the description of lower-level alcohol-use latent class were more likely to remain in this class throughout this stage. On the other hand, those placed in the moderate- and high-level latent class were more likely to move to the frequent high use with heavy episodic drinking latent class over the years they were followed. Thus, interventions should aim to target emerging adults who report moderate- and high-level alcohol use to prevent the development of alcohol use disorder later in life.

Consequences of Alcohol Use among Emerging Adults

Alcohol-related problems experienced during emerging adulthood involve physical health, psychological health, risk-taking, and life-functioning (Lau-Barraco et al., 2017) consequences. Specifically, past studies have reported problems associated with alcohol use
involve fatal and nonfatal injuries and overdoses, as well as violence (Hingson et al., 2002). Alcohol use has also been related to unintended pregnancies and sexually transmitted diseases (Perkins 2002). Additionally, it can affect the fulfillment of traditional adult roles (White & Jackson, 2004), such as obtaining a degree and finding favorable employment. Concerning, emerging adults not attending college may be less likely to mature out of heavy drinking patterns established during adolescence compared to those attending college (White & Jackson, 2004). This places emerging adults that are not attending college at an elevated risk for alcohol-related problems in adulthood (Lau-Barraco et al., 2017).

In relation to treatment use, it has been reported that young adults are less likely to enter treatment for substance use as the result of an intrinsic motivator and more likely because of external factors (Goodman et al., 2001). When admitted to public treatment, emerging adults reported lower levels of abstinence and remission, and higher number of days of alcohol use when compared with adolescents (Smith et al., 2011). Comprehensively, previous findings suggest that young adults will benefit from a contextually different treatment model that supports developmental issues encountered during the emerging adulthood stage (Arnett, 2000; Kypri et al., 2004; Smith et al., 2011).

**ALCOHOL USE AMONG COLLEGE STUDENTS**

**Prevalence of Alcohol Use among College Students**

Over the lifespan of a person, a higher probability of heavy drinking is present during emerging adulthood with an increasing risk among college students (Substance Abuse and Mental Health Services Administration [SAMHSA], 2015). Consequently, alcohol use among college students is a public health concern in the U.S. It has been reported that full-time college students consume higher rates of alcohol use, binge alcohol use, and heavy alcohol use in the
past month compared to young adults of the same age group who are not enrolled in college
(SAMHSA, 2017). Specifically, the 2019 National Survey on Drug Use and Health (NSDUH) reported that 52.50% of full-time college students between the ages of 18 to 22 consumed alcohol in the past month, compared with 44.00% of their counterparts who are not full-time students (SAMHSA, 2019a). The percentages obtained from the collected survey data reflect a higher alcohol consumption among college students in general.

Moreover, the NSDUH survey also reported that 33.00% of full-time college students engaged in binge drinking in the past month, compared with 27.70% of other persons of the same age (SAMHSA, 2019b). Furthermore, 8.20% of full-time college students reported heavy alcohol consumption in the past month, compared with 6.40% of other persons of the same age. The survey extended its information to indicate that 8.70% of full-time college students meet the criteria for alcohol use disorder. Therefore, alcohol use among college students is a topic that needs to be continuously researched.

**Consequences of Alcohol Use among College Students**

Frequent heavy episodic drinkers are more likely to experience alcohol-related consequences than those who engage in occasional heavy drinking while both groups are more likely to experiences alcohol-related problems than people who do not engage in heavy episodic drinking (Wechsler et al., 2000). Therefore, the frequent consumption of alcohol places college students at a high risk for alcohol-related consequences (White & Hingson, 2013) that affects professional and personal aspects of their life. Moreover, past studies have reported that college students see a direct effect on their academic career because of their drinking that is reflected through absenteeism (Wechsler et al., 1998). Consequently, this leads to falling behind in class,
and receiving low grades on the assigned coursework and the overall course (Wechsler et al., 1998).

The consequences of alcohol use among college students are not limited to academic loss. College students can also suffer other significant consequences (White & Hingson, 2013), such as legal problems because of drinking. Driving under the influence (DUI) and driving while intoxicated (DWI) are two common legal consequences college students may encounter. In consequence, college students may also face a charge for underage drinking as many of them are not the legal age to drink. Fatal consequences can also be experienced due to alcohol consumption. Unfortunately, thousands of college students are injured while under the influence or killed in alcohol-related accidents (White & Hingson, 2013). National Institute on Alcohol Abuse and Alcoholism (NIAAA) statistics estimate that 1,519 college students pass away each year due to alcohol-related unintentional injuries, including motor vehicle accidents (Hingson et al., 2017).

Alcohol consumption among college students incites other lamentable consequences such as sexual assault. NIAAA statistics approximate that each year approximately 696,000 students between the ages of 18 to 24 are assaulted by another student who has been drinking (Hingson et al., 2005). In addition, NIAAA reports that each year approximately 97,000 college students experience an alcohol-related sexual assault or date rape (Hingson et al., 2017). This is another reason that the area of alcohol use among college students needs to be researched further.

**Prevalence of Alcohol Use among Hispanic College Students**

The Hispanic community in the U.S. is growing in a steady trend becoming the largest ethnic/racial minority by making 18.50% of the population in 2019 (United States Census Bureau [U.S. Census Bureau], 2019). Subsequently, a growth in Hispanic student population is
occurring (Vaughan et al., 2015) with 22.70% of Hispanics accounting for all people enrolled in college (U.S. Census Bureau, 2017). Based on the reported statistics, it is evident that Hispanic college students compose a growing percentage of college students (National Center for Education Statistics, 2018) and need to be represented in alcohol research on college campuses.

Furthermore, second in place to their non-Hispanic white counterparts, Hispanic college students have reported among the highest rates of alcohol use and binge drinking (SAMHSA, 2017). Approximately 50.00% of Hispanic college students report at least one episode of binge drinking per week (Venegas et al., 2012). These patterns of heavy drinking can be associated with the reported findings that Hispanic college students are more likely to perceive binge drinking as part of their culture (Shields et al., 2016). Another explanation for the heavy drinking rates among Hispanics may be the sociocultural environment in the U.S.-Mexico border that creates a unique context where Hispanic college students have an increase availability to alcohol use (Caetano et al., 2012; Venegas et al., 2012).

The current study was designed to gather information about emerging adults across the nation, in addition to a sample of emerging adults representing a college student population living in the U.S.-Mexico border. Specifically, the study aimed to extend the knowledge about undergraduate college student drinking patterns attending predominantly Hispanic universities compared to a sample of emerging adults across the nation. For this study, college students attending The University of Texas at El Paso (UTEP) were invited to share information about their drinking. El Paso, Texas is the most populated border city between Texas and its four neighboring Mexican states (Texas Commission on Environmental Quality, 2021). When describing the institution, UTEP’s student population is composed of 83.00% Hispanics (The University of Texas at El Paso, 2021), consistent with the Hispanic population in El Paso, Texas.
Therefore, the prevalence and consequences of alcohol use among Hispanic college students can be reflected upon the demographics of the undergraduate student population attending the local university.

**Consequences of Alcohol Use among Hispanic College Students**

In addition to the consequences previously described, findings have shown that Hispanic college students living at the U.S.-Mexico border have a higher risk for alcohol use and alcohol-related consequences (Lui et al. 2020; McKinnon et al., 2003). Further, alcohol abuse during college increases the probability of meeting the criteria for alcohol use disorder later in life (Knight et al., 2002). High consumption of alcohol abuse, as presented during alcohol dependency, has been associated with health risk factors as an adult. For instance, alcohol use among Hispanics has been related to a faster progression to negative short-term and long-term health outcomes such as alcohol use disorders and other alcohol-related diseases (Caetano et al., 2008; Chartier & Caetano, 2010). Although non-Hispanic Whites report higher rates of alcohol use disorder than other ethnicities, Hispanics are more likely to experience persistent dependence once alcohol dependency is present (Chartier, & Caetano, 2010). Additionally, it has been reported that compared to Whites, Hispanics and Blacks are at a greater risk for developing a liver disease (Flores et al., 2008) while the prevalence of chronic liver disease in Hispanics is twice that of non-Hispanic Whites (Kochanek et al., 2017). Moreover, Hispanics are approximately two times more likely to die from an alcohol-related cancer than non-Hispanic Whites (Kochanek et al., 2017) and Hispanic men have the highest mortality rate of liver cirrhosis (Stinson et al., 2001).

Related to alcohol use treatment utilization, data shows that Asians and Hispanics adults in need of alcohol treatment were less likely to be provided a specialty alcohol treatment such as
alcohol rehabilitation compared to Whites and Blacks (SAMHSA, 2008). Additionally, it has been found that Blacks and Hispanics who report a high severity of alcohol-related consequences were less likely to utilize alcohol use treatment compared to Whites who report similar problems (Schmidt et al., 2007). Even when Hispanics utilize services, studies show a lower rate of alcohol use treatment completion for Blacks and Hispanics than Whites (Bluthenthal et al. 2007). When presented with the consequences of alcohol use among college students and after examining those specific to Hispanic college students, it can be inferred that risk and protective factors of harmful alcohol use and related consequences need to be considered.

**RISK AND PROTECTIVE FACTORS OF HARMFUL ALCOHOL USE**

Based on the prevalence of alcohol use among emerging adults including college students, and the consequences resulting from the reported behaviors, research must focus on expanding the literature on factors that contribute and protect against alcohol use and alcohol-related consequences. Two factors that have been associated with alcohol use are childhood experiences and psychosocial maturity.

**Childhood Experiences**

Childhood experiences, best described as adverse childhood experiences and positive childhood experiences, shape future behaviors. Adverse childhood experiences are defined as the occurrence of childhood abuse or neglect as well as the presence of childhood dysfunction (Felitti et al., 1998). On the other hand, positive childhood experiences involve having an established family-child communication, having family support, and feeling a sense of belonging (Baglivio & Wolff, 2021). Specifically, findings indicate that adverse childhood experiences and positive childhood experiences influence the physical and mental health outcome in adulthood (Shonkoff et al., 2012). Unfortunately, adverse childhood experiences are common among the
population. Data reflects that close to two-thirds of adults have experienced a minimum of one adverse childhood experience (61.00%) while nearly 1 in every 6 adults have experienced 4 or more adverse childhood experiences (Merrick et al., 2019).

Consequently, childhood characteristics have been associated with alcohol consumption. For example, adverse childhood experiences such as childhood trauma have been associated with alcohol abuse (Defronzo & Pawlak, 1993). An explanation for this association may be that adults who have experience an adverse childhood seek alcohol later in life as a way of coping. A retrospective study indicated that adverse childhood experiences are also related to having consumed alcohol at any time in a lifespan and with alcohol initiation at an early age (Dube et al., 2006). Based on the definition of adverse alcohol experiences, alcohol initiation at an early age can be the consequence of the childhood neglect experienced by a person that can increase their accessibility to alcohol. Additionally, adverse childhood experiences, as described by household challenges and child abuse, were associated with excessive alcohol use at a later point in life (Lee & Chen, 2017).

It has been proposed that positive childhood experiences can reduce the impact of adverse childhood experiences leading to an increase in healthy development (Sege & Browne, 2017). Positive childhood experiences can serve as protective factors that allow a person to develop resiliency and continued growth despite experiencing a traumatic event (Skodol et al., 2007). For instance, positive childhood experiences were associated with a reduction of adolescent substance use and an overall better adult functioning (Kosterman et al., 2011). The findings suggests that positive childhood experiences can reduce the effects of adverse experiences that have been associated with alcohol use and alcohol-related consequences.
Psychosocial Maturity

Psychosocial maturity characterizes the sociological and psychological views of a person, or the societal requirements as well as the healthy development of that individual (Greenberger & Sørensen, 1974). The concept of psychosocial maturity has been related to different risk-taking behavior such as alcohol use. For example, the risk-taking style of temperance (impulsivity) was associated with several behaviors including alcohol consumption (Riggs Romaine, 2019). Based on these findings, it can be concluded that lower levels of psychosocial maturity led to a lower ability to control impulsivity resulting in higher alcohol use. It has also been reported that psychosocial maturity serves as a better predictor of risk-taking behavior than age (Pailing & Reniers, 2018) as maturity level may not match the expected level based on age. Lower levels of mature psychosocial development places a person at a higher vulnerability to drink excessively due to peer pressure (Adalbjarnardottir, 2002). In addition, college students that report a lower mature identity showed a higher difficulty delaying gratification (Nurmi et al., 1997). Based on the findings, higher psychosocial development should help reduce the effect that peer pressure has on drinking as well reducing the need to satisfy immediate gratification through alcohol use.

Research has found that the cessation of alcohol use disorder in the transition from adolescence to young adulthood indicates a recovery and a movement towards growth and maturity to match those of their counterparts who do not have an alcohol use disorder (Hicks et al., 2011). These findings associate low psychosocial maturity with higher alcohol use and indicate that higher psychosocial maturity levels should ease the consumption of alcohol use. Furthermore, it has been found that among female college students, psychosocial maturity is directly associated with alcohol misuse and is a partial mediator for the effects of parent
problems (described by the students’ perceptions of parental psychological control and poor connection with parents) and emotional regulation (Fischer et al., 2007). On the other hand, parent problems were indirectly related to alcohol use problems through emotion regulation among male college students (Fischer et al., 2007). It can be concluded that higher psychosocial maturity is associated with a reduction in alcohol use and alcohol-related consequences.

PROXIMAL DETERMINANTS OF ALCOHOL USE AND ALCOHOL-RELATED CONSEQUENCES

Proximal determinants of alcohol use and alcohol-related consequences need to be examined to understand its association to risk and protective factors of alcohol use. Drinking motives and protective behavioral strategies serve as precursors, or proximal determinants, to alcohol use and alcohol-related consequences and, thus, represent important outcomes in and of themselves.

Drinking Motives

According to the motivational model developed by Cox and Klinger (1988), the decision to drink in any given circumstance is driven by rational and effective components. These components, now defined as drinking motives, are the proximal determinants of alcohol use (Cooper et al., 2016; Kuntsche et al., 2010) and are often learned from interactions with family and friends (LaBrie et al. 2007). Moreover, motivations to drink can have an external or an internal source and reflect either a positive or negative valence (Cox & Klinger, 1988). For example, a person may drink to socialize with friends or to forget about personal problems. Based on the motivational model developed by Cox and Klinger (1988), it has been proposed that there are four drinking motives that include enhancement, social, coping, and conformity (Cooper, 1994). As described by the author, enhancement motives are internal positive
reinforcement motives, such as drinking to increase positive mood or well-being. Social motives are external positive reinforcement motives, like drinking to gain positive social rewards. Coping motives are internal negative reinforcement motives or drinking to reduce or regulate negative emotions. Lastly, conformity motives are an external negative reinforcement, such as drinking to avoid social rejection.

The four proposed drinking motives have been associated with different patterns of alcohol consumption as well as different levels of alcohol-related consequences (Bernstein et al., 2011). For example, the coping drinking motive is one reason why college students may consume alcohol. Although it is a less commonly reported drinking motive than the social motive, coping motives have been associated with negative alcohol-related consequences (Cooper et al., 2016). Additionally, a study reported that drinking motives described as mood regulatory motives, or enhancement and coping, and negative reinforcement motives, or conformity, mediate the association of alcohol-related outcomes (Roos et al., 2015). Moreover, a study found that people who were considered extreme drinkers (described as men who drank 10 or more drinks and women who drank 8 or more drinks on their maximum drinking occasion/day) at baseline, compared to binge drinkers and non-binge drinkers, reported higher levels of social, enhancement, and coping motives (White et al., 2016). Drinkers who met the description of an extreme drinker at a follow-up point reported an increase in social and enhancement motives compared to the non-extreme group. Lastly, people who were extreme drinkers at baseline and reported a reduction in drinking at a later follow-up point had a reduction in enhancement and coping motives.

Furthermore, enhancement motives involve increasing positive affect provided by alcohol use and it has also been indirectly related to negative alcohol-related consequences such as heavy
drinking (Cooper et al., 2016). This may be explained by the high volume of alcohol a person may consume to increase the positive feeling associated with using alcohol. Lastly, socialization is one of the most frequent reasons why college students engage in drinking (LaBrie et al., 2007). Social motives for drinking have also been found to predict alcohol-related consequences in female college students. College students often engage in drinking during social gatherings if they see their peers consuming alcohol. Thus, social motives may be the determinant that most contributes to alcohol use among college students (Kuntsche et al., 2010). Comprehensively, the four types of drinking motives are associated with alcohol use and alcohol-related consequences among college students and emerging adults in general.

**Protective Behavioral Strategies**

Protective behavioral strategies (Martens et al., 2005) are cognitive behavioral strategies a person can engage while drinking that can help reduce alcohol use and alcohol-related consequences (Pearson, 2013). Specifically, three types of protective behavioral strategies have been identified including stopping/limiting drinking, manner of drinking, and serious harm reduction (Martens et al., 2005; Martens et al., 2007). Stopping/limiting drinking includes strategies that directly or indirectly result in a reduction or complete stop of alcohol use (Martens et al., 2005). Manner of drinking describes different forms a person can consume alcohol that can result in a reduction in use. Serious harm reduction strategies are behaviors that can help avoid potentially dangerous consequences. In general, protective behavioral strategies have been described as active strategies that can be taught to people undergoing prevention and/or intervention programs (Martens et al., 2005). In contrast with other behavioral strategies that aim to reduce alcohol use, protective behavioral strategies are applied when a person is actively
consuming alcohol. Therefore, protective behavioral strategies aim to reduce alcohol use and alcohol-related consequences rather than promote abstinence.

Past studies have reported that protective behavioral strategies serve as a moderator between the association of binge drinking and alcohol-related problems. The effects were stronger when binge drinking was measured using a dichotomous variable compared to a continuous variable (Borden et al., 2011). Overall, this indicates that the use of protective behavioral strategies contributes to a reduction in alcohol-related consequences even when a person engages in episodes of binge drinking. Moreover, although a greater use of protective behavioral strategies has been associated with a decrease in alcohol-related consequences, less frequent use of protective behavioral strategies is associated with an increase in alcohol-related consequences (Araas & Adams, 2008).

Cross-sectional and longitudinal studies among college students who consume alcohol support the relationship between more frequent use of one or more of the three types of protective behavioral strategies and less alcohol use and fewer alcohol-related problems (Pearson, 2013). For instance, one study found that a higher frequency of use of protective behavioral strategies reduced the positive association between negative urgency and alcohol use/problems (Weaver et al., 2012). Additionally, an association between increases in protective behavioral strategies across time and less alcohol use and alcohol-related consequences has been found among college students (Martens et al., 2011). Specifically, an increase in the manner of drinking strategies is associated with a reduction in alcohol use while an increase in serious harm reduction strategies is associated with a reduction in alcohol-related problems. It can be concluded that changes in protective behavioral strategies over time influence alcohol use and
alcohol-related consequences at future time points in college students and emerging adults in general.

Summary

Risk and protective factors for alcohol use and consequently alcohol-related consequences have been identified and described, including childhood experiences and psychosocial maturity. For example, adverse childhood experiences such as childhood trauma have been associated with alcohol abuse (Defronzo & Pawlak, 1993) while positive childhood experiences can reduce the impact of adverse childhood experiences leading to an increase in healthy development (Sege & Browne, 2017), such as a reduction in alcohol use (Kosterman et al., 2011). Additionally, lower levels of psychosocial maturity led to a lower ability to control impulsivity resulting in higher alcohol use (Riggs Romaine, 2019). Subsequently, proximal determinants of alcohol use and alcohol-related consequences were examined to understand its association to risk and protective factors of alcohol use, including drinking motives and protective behavioral strategies. For example, drinking motives have been associated with different patterns of alcohol consumption as well as different levels of alcohol-related consequences (Bernstein et al., 2011). Additionally, protective behavioral strategies (Martens et al., 2005) are cognitive behavioral strategies a person can engage while drinking that can help reduce alcohol use and alcohol-related consequences (Pearson, 2013). A theoretical perspective of alcohol use can now help define the association between proximal determinants of alcohol use and alcohol-related consequences and risk and protective factors. Self-determination theory and attachment theory in relation to alcohol use will now be examined and associated with risk and protective factors of alcohol use.
THEORETICAL PERSPECTIVE OF ALCOHOL USE

Self-Determination Theory

Self-determination theory is based on an integrative process identified by intrinsic motivation and internalization that helps assimilate and regulate sources of motivation from internal and external environments (Ryan & Deci, 2019). Specifically, self-determination theory is composed of three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 1985). Autonomy is described as deriving one’s behavior (Deci & Ryan, 1985) that will allow a person to engage in the actions they desire. Competence involves having a successful feeling to execute one’s capacities (Deci, 1975) and being able to achieve proficiency on tasks. Lastly, relatedness incorporates the connection and sense of belonging with significant others (Ryan, 1993) that will result in the experience of affection. The three basic psychological needs need to be satisfied for an individual to experience well-being as described by the theory of basic psychological needs.

The basic psychological needs theory is composed of positive and negative aspects that guide motivation to engage in a behavior, which has been identified as the dual-process model in self-determination theory (Jang et al., 2016). The dual process model makes a distinction between autonomy support and psychological control by considering the conditions under which people engage in situations that support gratification and frustration (Li et al., 2015). It has been reported that need satisfaction serves as a mediator in the relationship between autonomy support and optimal consequences including well-being, engagement, and positive affect (Jang et al., 2016). On the other hand, need frustration serves as a mediator in the relationship between psychological control and non-optimal consequences including ill-being, disengagement, and negative affect.
Furthermore, the concept of self-determination theory is well-known for its application to behavioral change and maintenance of the achieved behavioral change (Kwasnicka et al., 2016). For example, self-determination theory explains that a sense of autonomy and competence is necessary during internalization and integration because it helps a person self-regulate and sustain behaviors that increase well-being. Through the implementation of autonomy, a person has control of their behavior and can decide the appropriate course of action. Findings show that autonomous motivation, or sense of choice, and controlled motivation, or sense of demand, predict behavioral outcomes (Deci & Ryan, 2008). Behavioral outcome changes are maintained through the person’s competence or their ability to master the new behavior. Additionally, relatedness also contributes to the process of behavioral change as people are more likely to embrace behaviors like those of people they trust (Ryan et al., 2008). Nonetheless, when a person embraces behaviors of others it can include both positive and negative patterns. Thus, an emphasis on positive associations with others can be translated into positive patterns of behavioral change that can help prevent and/or reduce the effects of alcohol use.

**Self-Determination Theory and Alcohol Use**

Basic psychological needs have been associated with alcohol use. For instance, high autonomy has been associated with a reduction in alcohol consumption (Hove, 2010). In college students, having an autonomous orientation is associated with less alcohol consumption while controlled orientation is associated with greater alcohol consumption (Chawla et al., 2009). The findings suggest that an increase in autonomy will result in a decrease in alcohol consumption. Moreover, a qualitative study identified four dyadic categories after conducting interviews with adolescents in substance use treatment and their caregivers. Compared to extrinsic dyads (treatment motivated by caregiver), intrinsic dyads (treatment motivated by adolescent) showed
higher autonomy support while adolescents showed more engagement in treatment (Cornelius et al., 2017). Therefore, when providing services to at-risk college students and emerging adults, autonomy should be emphasized since it can increase the possibility of a change in behaviors.

The basic psychological need of relatedness has also been associated with alcohol use. Relatedness to others influences drinking since college brings a need for relatedness that is often linked to drinking (Grant et al., 2013). For example, selecting new peer groups, commonly seen during student transitions to college, influences alcohol use (Abar & Maggs, 2010). Additionally, students may seek relatedness to others through Greek affiliation, who have reported higher levels of alcohol consumption compared to peers (Park et al., 2009). Based on the findings, it can be inferred that relatedness is an important predictor of alcohol use.

**Attachment Theory**

Attachment theory focuses on emotional bonds between humans. According to John Bowlby, there is a set of intersecting but distinct motivational systems, including an attachment system that guides human behavior (Kotov, 2006). One type of relationship in the attachment system includes parental attachment; this type of attachment can be described as the overall parental responsiveness towards their children (Bowlby, 1988). During infancy, individuals develop internal working models of themselves and others that help determine the type of behavior they expect from their caregivers (Bowlby, 1973). Respectively, the internalization of the security provided by the attachment is imprinted through interactions with the child’s caregiver and will become, to a relative extent, resistant to change across the lifespan (Bowlby, 1988). Therefore, internal working models offer a mechanism for continuity in attachment style across time that can help understand how relationships during infancy can determine adult relationships (Bowlby, 1979). Insecure parental attachment during childhood has been theorized
to result in a reduction of self-regulation, emotion recognition, and interpersonal attachment security (Lyvers et al., 2019).

Adult’s attachment style is influenced by the childhood interactions with his or her caregiver (Bowlby, 1969). Consequently, the attachment styles a person can develop include secure, anxious, and avoidant (Ainsworth et al., 1978). It has been reported that people who reflect a secure attachment style get close to others without difficulty. Specifically, people with a secure attachment style feel comfortable to depend on others, and for others to depend on them, and are not concern about abandonment or emotional attachment (Ainsworth et al., 1978). Those who have an avoidant attachment style feel uncomfortable to be close to others. This is reflected by expressing difficulty to trust and depend on others, and are nervous of emotional attachment (Ainsworth et al., 1978). On the other hand, people who have an anxious attachment style report that others resist to get as close as they would like. Characteristically, anxiously attach people constantly worry about abandonment or not being loved and seek an extremely close emotional attachment to others (Ainsworth et al., 1978).

**Attachment Theory and Alcohol Use**

Past findings have associated attachment styles with alcohol use. For example, adolescents and young adults characterized to have developed an insecure attachment are prone to alcohol and substance use disorders (Kotov, 2006). On the other hand, parenting styles that promote the development of autonomy contribute to the well-being of adolescents. Higher levels of parental support (measured through involvement, autonomy support, and warmth) were associated with higher well-being and autonomous-self in adolescents (Kocayörük et al., 2015). Additionally, family attachment, or sustaining a healthy relationship with family members, is a more significant predictor of adolescent alcohol and marijuana use than family structure. A
weaker family attachment has been associated with a higher reporting of alcohol and marijuana use (Barfield-Cottledge, 2015).

Although findings have reported that the lack of a biological father is associated with an increased rate of alcohol use, a higher association has been found between alcohol use and greater problems in relating to the biological father (Jones & Benda, 2004). The study did not expand the current findings to non-biological fathers. Also, fathers who met the criteria of alcohol use disorder reported having insecure attachment styles compared to fathers who did not report a disorder (Hazarika & Bhagabati, 2018). The findings highlight the need to develop secure attachment in children of alcoholic parents to protect them from drinking as a coping and a learned mechanism. In general, it can be concluded that a secure attachment is needed for both children of alcoholic and non-alcoholic parents to develop a protective factor against alcohol use.

To continue, a structural equation model reflected that secure peer attachment was related to positive views of alcohol norms and less behavioral control toward alcohol while secure maternal attachment predicted attitudes and behavioral control toward alcohol, leading to anti-risk beliefs (Lac et al., 2013). In addition, alcohol attitudes, norms, and behavioral control helped explain alcohol intentions. People with an anxious attachment style may experience greater alcohol-related problems resulting from drinking-to-cope actions that is not attributable to quantity consumed compared to people with an avoidant attachment style (Molnar et al., 2010). Therefore, when considering the effect attachment styles have on alcohol use, the difference between the two insecure attachment styles should also be evaluated.

Furthermore, it has also been proposed that young adults may become “attached” to alcohol as a substitute for earlier available objects, enacting a similar insecure relationship they had with a parent (Kotov, 2006). Therefore, treatment for alcohol use should consider one’s
attachment style to promote successful recovery (Hazarika & Bhagabati, 2018). Treatment for alcohol use should also include an assessment of their capacity for separation and transition (Kotov, 2006). For example, treatment can aim to build closeness and secure closeness slowly and in a non-confrontational manner to help create a secure attachment (Sawicka et al., 2009).

**Self-Determination Theory and Attachment Theory**

The integration of self-determination theory and attachment theory can provide a better understanding of behavior related to alcohol use among emerging adults including those who have the role of college students. This is in view of the fact that similar concepts are shared between self-determination theory and attachment theory such as proposing that certain innate tendencies motivate human behaviors (Whipple et al., 2009). For example, security of attachment is reflected through a balance between an infant’s need for protection and their need to explore the environment (Grossmann et al., 2008). The need for exploration can be expressed as intrinsic motivation, a term used in self-determination theory (Whipple et al., 2009). Nonetheless, this motivation interacts with the environment, and it can be described using the concept of basic psychological needs where social context can help satisfy the needs or not.

Furthermore, self-determination theory and attachment theory are complementary to each other since both theories emphasize the importance of autonomy, competence, and relatedness (Ryan & Deci, 2001). Particularly, it has been proposed that security of attachment is comprised of the primary caregivers’ sensitivity and responsiveness (Bowlby, 1969; Bowlby 1982) as sensitive caregivers provide timely and appropriate responsiveness to the needs of an individual (La Guardia et al., 2000). In self-determination theory, the concept of sensitivity and responsiveness has been conceptualized in the three psychological needs: autonomy, competence, and relatedness (La Guardia et al., 2000). Therefore, caregivers (or any role in an
adult relationship) who provide sensitivity and responsiveness help promote the satisfaction of the basic psychological needs.

The basic psychological needs can be used to understand the connection between parenting and child development (Noom et al. 1999) that can later be translated into early adulthood. Specifically, adolescents are more likely to develop an inner compass, or a set of values, interests and goals that can guide them to make life choices consistent with their basic needs and authentic self when their parents show inherent values, support an exploration of their children’s values, and foster an inner valuing in their children based on authentic values and interests (Yu et al., 2021). Through this process, parents are promoting autonomy support for their children. In situations when the parent overlooks the child’s psychological needs, unfavorable conditions may arise (Allen et al. 1994). For example, attachment avoidance attenuates the parenting effects for fostering and exploring inner values, showing weaker effects when adolescents have high attachment avoidance with parents (Yu et al., 2021).

Past studies have found that greater levels of secure attachment to close others (i.e., parents, romantic partner, and best friend) are associated with a greater well-being (La Guardia et al., 2000; Leak & Cooney, 2001). Additionally, the fulfillment of the basic psychological needs positively predicts overall attachment security of a person, model of self, and model of other (La Guardia et al., 2000). This means that a greater overall attachment security and need satisfaction is associated with a greater well-being. In close association, self-determination theory states that autonomy, competence, and relatedness must be met for a person to have a healthy level of well-being (Deci & Ryan, 1985), a concept that is described as optimal psychological functioning and experience (Ryan & Deci, 2001). This concept is supported through the findings that suggest that autonomy in adolescents is strengthen when the parents provide autonomy support (Yu et al.,
In self-determination theory, attachment security is related to the concept of relatedness given that both analyze the connections to another person. Moreover, student athletes who have an avoidant attachment style can have a greater well-being if they think that their basic psychological needs are satisfied within the relationship with their parents (Felton & Jowett, 2013). In romantic relationships, a secure attachment style and well-being is mediated by the satisfaction of the need of autonomy (Leak & Cooney, 2001). These findings further support the idea of connecting attachment theory and self-determination theory.

**Self-Determination Theory, Attachment Theory, Drinking Motives, Protective Behavioral Strategies, Childhood Experiences, and Psychosocial Maturity**

Self-determination theory states that people evolve to gain psychological needs and abilities at different stages in life. For example, parents encourage growth and achievement in their children’s psychological needs and abilities that promotes overall well-being (Ryan and Deci 2000), a claim that can be applied to attachment theory. When a person experiences neglect and inconsistent responsiveness, it can lead to the development of an insecure attachment style (Fletcher et al., 2015). Accordingly, childhood characteristics have been associated with alcohol consumption. Specifically, adverse childhood experiences including childhood trauma have been associated with alcohol abuse (Defronzo & Pawlak, 1993). Therefore, the association between self-determination theory, attachment theory, and childhood experiences should be examined.

Parental over involvement can lead to an insecure attachment style, which has been associated with a higher level of alcohol consumption and lower levels of psychological needs satisfaction and self-control (Cui et al., 2018). On the other hand, research has shown that parents who support the development of their children’s autonomy results in their children having a higher ability to control their behavior (Roth et al., 2009), consequently, reducing the
risk for alcohol use and related consequences. Previous findings reported that lower levels of psychosocial maturity led to a lower ability to control impulsivity leading to higher alcohol use (Riggs Romaine, 2019). Therefore, the association between self-determination theory, attachment theory, and psychosocial maturity should be examined.

The perceptions of social support and having someone to take care of a person are important to the levels of well-being in college students (Whitney, 2010). However, adolescents and young adults who have developed an insecure attachment are prone to alcohol and substance use disorders (Kotov, 2006). Based upon the findings, young adults who present an insecure attachment are more likely to consume alcohol as a reinforcement such as an enhancement motive where people drink to increase positive mood or well-being. College students that view alcohol use as a positive reinforcement are more likely to engage in risky alcohol use and show lower levels of self-determination (Neighbors et al., 2003). Another positive reinforcement includes social motives like drinking to gain positive social rewards. Socialization is one of the most frequent reasons why college students engage in drinking (LaBrie et al., 2007). Therefore, the association between self-determination theory, attachment theory, and drinking motives should be examined.

After controlling for number of drinks per week, college students who reported higher enhancement and social motives for drinking engaged in protective behavioral strategies less frequently (Patrick et al., 2011). Similar results were seen with coping motives that were associated with less frequent use of individual protective strategies. Significant interactions of drinking motives showed that higher coping and conformity motives were associated with negative outcomes among college students who engaged in fewer protective behavioral strategies. On the other hand, students with higher levels of conformity motives engaged in
protective behavioral strategies more frequently. Results show that using protective behavioral strategies more frequently was associated with consuming less alcohol and having less alcohol-related consequences. Additionally, a study tested the mediation effects of protective behavioral strategies in the association between drinking motives and alcohol use and alcohol-related consequences (Martens et al., 2007). It was reported that enhancement and social motives were partially mediated by protective behavioral strategies, but coping motives were not related to protective behavioral strategies. Thus, the association between self-determination theory, attachment theory, and protective behavioral strategies should be examined.

**CURRENT STUDY**

Previous research has identified a higher probability of heavy drinking during emerging adulthood with an increasing risk among college students (SAMHSA, 2015). It has also been reported that second in place to their non-Hispanic white counterparts, Hispanic college students have reported among the highest rates of alcohol use and binge drinking (SAMHSA, 2017). Correspondingly, research must focus on expanding the literature on factors that contribute and protect against alcohol use and alcohol related problems as well as those that serve as a proximal determinant to alcohol use among emerging adults in general, those attending college, and those attending a predominantly Hispanic serving institution.

The integration of both self-determination theory and attachment theory can provide an example of how insecure attachment styles may result in the dissatisfaction of one or more of the three basic psychological needs (Ryan & Deci, 2002). The current study examined the association between attachment styles, basic psychological needs, and the proximal determinants of alcohol use and alcohol-related consequences, drinking motives and protective behavioral strategies. In addition, it examined the association between attachment styles, basic
psychological needs, with risk and protective factors of alcohol use and alcohol-related consequences that include childhood experiences and psychosocial maturity. Specifically, the current study tested the following hypotheses:

1. Negative childhood experiences would be associated with insecure attachment styles.
2. Insecure attachment styles would be associated with higher number of drinking motives while secure attachment styles would be associated with higher use of protective behavioral strategies.
3. Insecure attachment styles would be associated with higher basic psychological needs frustration while secure attachment styles would be associated with higher basic psychological needs satisfaction.
4. Higher basic psychological needs satisfaction would be associated with a reduction in drinking motives and an increase in protective behavioral strategies use.
5. Drinking motives and the use of protective behavioral strategies would be associated with the latent variable of engagement in drinking.

Secondarily, the following hypotheses were also tested:

1. Psychosocial maturity would moderate the associations between attachment style and drinking motives, reducing drinking motives.
2. Basic psychological needs would mediate the associations between attachment style and drinking motives and attachment style and protective behavioral strategies.
Chapter 2: Method

The current study proposed a statistical model that integrated attachment theory and self-determination theory to examine how attachment styles and basic psychological needs directly influence drinking motives and protective behavioral strategies, which are known to predict excessive alcohol use and alcohol-related problems among emerging adults. In addition, it examined the association between attachment styles, basic psychological needs, and its relation to childhood experiences and psychosocial maturity.

PARTICIPANTS

Participants were recruited from UTEP and the online recruitment site, Prolific. The UTEP recruitment process consisted in obtaining a randomized sample of 3,000 undergraduate students currently enrolled at the university from the Center for Institutional Evaluation, Research, and Planning (CIERP) at UTEP to invite them to participate in the study. Obtaining a randomized sample of undergraduate students was a technique used to increase the generalizability of the findings at the university level. Mass emails were sent to the randomized undergraduate sample to recruit participants for the study via the Qualtrics invitation feature. Weekly recruitment emails were sent from February 2022 to March 2022 to increase survey response rate and reduce non-response survey attrition. It is important to note that UTEP undergraduate students who agreed to participate in the study completed screening questions to identify their drinking status. Only those that met the criteria of binge drinking participated in the study. In detail, the inclusion criteria for UTEP participants are described below:

1. Be between the ages of 18 to 25, corresponding to emerging adulthood, the typical college student age range.

2. Be enrolled in an undergraduate program.
3. Engaged in a minimum of one binge drinking episode in the past three months.

The exclusion criteria are described below:

1. Have an age outside of the typical college student age range.

2. Does not engage in at least one episode of binge drinking in the last three months.

The Prolific recruitment process consisted in obtaining a prescreened sample of emerging adults using the Prolific features. Specifically, adults aged 18 through 25, residing in the U.S., and reported consuming a minimum of one drink per week were included resulting in a prescreened sample of 7,653 potential participants. Prolific users from the prescreen sample were invited to complete a screening survey to identify binge drinkers. Two screening surveys were made available, one for males and one for females. Once again, only those that met the criteria of binge drinking were invited to participate in the study. In detail, the inclusion criteria for Prolific participants are described below:

1. Be between the age of 18 to 25, corresponding to emerging adulthood

2. Engaged in a minimum of one binge drinking episode in the past three months.

The exclusion criteria are described below:

1. Have an age outside of the emerging adulthood stage

2. Does not engage in at least one episode of binge drinking in the last three months.

In relation to the inclusion and exclusion criteria, NIAAA defines binge drinking as alcohol consumption that results in a blood alcohol concentration (BAC) of 0.08% or higher (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2021). This is described as consuming 5 or more drinks for males, or 4 or more drinks for females, in a 2-hour timeframe.

At UTEP, the recruitment process involved screening 178 potential participants (\( n_{males} = 46, n_{females} = 132 \)) who responded to the Qualtrics invitation, out of the 3,000 students invited, to
determine if they met the inclusion criteria of binge drinking. Out of the 178 responses received from UTEP students, 76 met the inclusion criteria of binge drinking, or were eligible participants. Out of those 76 eligible participants, 19 failed to complete the survey and were excluded from the total sample. The recruitment process in Prolific involved screening 854 potential participants \((n_{males} = 273, n_{females} = 581)\) who provided a response to the screening survey, out of the 7,653 potential participants in the prescreened sample, to determine if they met the criteria of binge drinking. Out of the 854 responses received from the prescreened Prolific users, 650 users met the inclusion criteria of binge drinking, or were eligible participants.

To note, one attention check per measure was included in the survey, or a total of 10 attention checks, for both UTEP and Prolific participants. None of the participants failed more than two attention checks, therefore, all completed responses were retained and included in the final sample. Additionally, the timestamps for the completed surveys were verified to ensure that respondents provided their answers within an adequate timeframe. Specifically, any survey response completed in less than 6 minutes was set to be eliminated. None of the survey responses met the elimination criteria. Overall, between UTEP and Prolific, a total of 1,032 participants \((n_{males} = 319, n_{females} = 713)\) were screened. Out of the screened sample, a total of 437 participants were recruited for the study from UTEP \((n_{UTEP} = 57)\) and Prolific \((n_{Prolific} = 380)\) between February and March 2022. Figures 2.1 provides a flowchart that describes the participation recruitment process for the study.
Figure 2.1

Flowchart of the participation recruitment process for the study

As described by the emerging adult definition, participants’ age range between 18 and 25 years old ($M = 22.30, SD = 1.91$). Most of the sample identified as cis women (67.43%). Other respondents reported that they identify as cis man (26.38%), trans man (0.46%), trans women (0.46%), or selected the option of identifying with another identity (4.59%). In general, the sample consisted of mainly White (83.52%) participants. A smaller percentage reported to be African American (4.12%), Asian American (5.26%), Native America/ Alaskan Native (0.69%), Native Hawaiian/ other Pacific Islander (0.23%), or other (4.12%). When asked if they
considered themselves Hispanic, Latino, or a person of Spanish origin, most of the respondents reported that they did not (77.34%).

Survey respondents were also asked about their class standing. Most participants reported that they had completed their bachelor’s degree (28.15%). Also, other participants reported that they were a senior (20.37%), or junior (13.50%) in college. Over half of the participants reported that they were enrolled full-time in college (51.95%) while 10.07% were enrolled part-time. Also, 36.61% of the sample indicated that they were not enrolled in college. Refer to Table 2.1 for a complete description of the participants’ demographic characteristics and Table 2.2 for the sociocultural characteristics.
Table 2.1

Demographic Characteristics of the Study Sample (N = 437)

<table>
<thead>
<tr>
<th>Categorical variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>315</td>
<td>27.92</td>
</tr>
<tr>
<td>Male</td>
<td>122</td>
<td>72.08</td>
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<tr>
<td><strong>Gender</strong></td>
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<td></td>
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<tr>
<td>Cis Man</td>
<td>115</td>
<td>26.3</td>
</tr>
<tr>
<td>Cis Woman</td>
<td>294</td>
<td>67.43</td>
</tr>
<tr>
<td>Trans Man</td>
<td>2</td>
<td>0.46</td>
</tr>
<tr>
<td>Trans Women</td>
<td>2</td>
<td>0.46</td>
</tr>
<tr>
<td>Another Identity</td>
<td>20</td>
<td>4.59</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>3</td>
<td>0.69</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>365</td>
<td>83.52</td>
</tr>
<tr>
<td>African American</td>
<td>18</td>
<td>4.12</td>
</tr>
<tr>
<td>Asian American</td>
<td>23</td>
<td>5.26</td>
</tr>
<tr>
<td>Native American/Alaskan Native</td>
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<td>0.69</td>
</tr>
<tr>
<td>Native Hawaiian/other Pacific Islander</td>
<td>1</td>
<td>0.23</td>
</tr>
<tr>
<td>Other has other ancestry</td>
<td>18</td>
<td>4.12</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>9</td>
<td>2.06</td>
</tr>
<tr>
<td><strong>Hispanic/Latino or Spanish Origin</strong></td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>97</td>
<td>22.20</td>
</tr>
<tr>
<td>No</td>
<td>338</td>
<td>77.34</td>
</tr>
<tr>
<td>Prefer not to answer</td>
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<td>0.46</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
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<td></td>
</tr>
<tr>
<td>Single (never married)</td>
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<td>75.29</td>
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<tr>
<td>Engaged</td>
<td>13</td>
<td>2.98</td>
</tr>
<tr>
<td>Married</td>
<td>22</td>
<td>5.03</td>
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<tr>
<td>Widow/Widower</td>
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<td>0.23</td>
</tr>
<tr>
<td>Living with significant other</td>
<td>70</td>
<td>16.02</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>2</td>
<td>0.46</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Continuous variables</th>
<th>M (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>22.30 (1.91)</td>
<td>18 - 25</td>
</tr>
</tbody>
</table>
Table 2.2

*Sociocultural Characteristics of the Study Sample (N = 437)*

<table>
<thead>
<tr>
<th>Categorical variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class Standing</strong></td>
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<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>20</td>
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<tr>
<td>Sophomore</td>
<td>41</td>
<td>9.38</td>
</tr>
<tr>
<td>Junior</td>
<td>59</td>
<td>13.50</td>
</tr>
<tr>
<td>Senior</td>
<td>89</td>
<td>20.37</td>
</tr>
<tr>
<td>Master’s student</td>
<td>26</td>
<td>5.95</td>
</tr>
<tr>
<td>PhD student</td>
<td>9</td>
<td>2.06</td>
</tr>
<tr>
<td>Completed bachelor’s degree</td>
<td>123</td>
<td>28.15</td>
</tr>
<tr>
<td>Completed master’s degree</td>
<td>12</td>
<td>2.75</td>
</tr>
<tr>
<td>Completed doctorate degree</td>
<td>1</td>
<td>0.23</td>
</tr>
<tr>
<td>Not currently enrolled in college</td>
<td>37</td>
<td>8.47</td>
</tr>
<tr>
<td>Never enrolled in college</td>
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<td>3.89</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>2</td>
<td>0.46</td>
</tr>
<tr>
<td><strong>Student Status</strong></td>
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<td></td>
</tr>
<tr>
<td>Part-time</td>
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</tr>
<tr>
<td>Full-time</td>
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<td>51.95</td>
</tr>
<tr>
<td>Not enrolled in college</td>
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<td>36.61</td>
</tr>
<tr>
<td>Prefer not to answer</td>
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<td>1.37</td>
</tr>
<tr>
<td><strong>Living Arrangement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residence Halls/Dorm Room</td>
<td>34</td>
<td>7.80</td>
</tr>
<tr>
<td>Fraternity/Sorority House</td>
<td>5</td>
<td>1.15</td>
</tr>
<tr>
<td>Off-Campus Housing/Apartment/House</td>
<td>342</td>
<td>78.44</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>55</td>
<td>12.62</td>
</tr>
<tr>
<td><strong>Work Status</strong></td>
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<td></td>
</tr>
<tr>
<td>I do not work</td>
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<td>24.26</td>
</tr>
<tr>
<td>Working part-time</td>
<td>167</td>
<td>38.22</td>
</tr>
<tr>
<td>Working full-time</td>
<td>157</td>
<td>35.93</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>7</td>
<td>1.60</td>
</tr>
</tbody>
</table>
MEASURES

The survey was made available to the participants in an online format in English and Spanish to accommodate to the participants’ preference. A back translation method was used to ensure the quality of the translated measures. Specifically, the author of the document, a native Spanish-speaker, translated the measures to Spanish and another graduate student back translated the Spanish translations to English. Any discrepancies were discussed and resolved before finalizing the measure translations.

To start, demographic characteristics of interest were collected. Demographic characteristics that were collected include age, race/ethnicity, gender, marital status, and employment status. In addition, college enrollment status such as being enrolled full-time and part-time, college classification, and living arrangements were also collected. Categorical variables were created for each demographic characteristic that was collected, except for the continuous variable of age. Appendix A contains a complete list of the demographic questions.

Measures of Risk and Protective Factors of Harmful Alcohol Use

**Positive and Adverse Childhood Experiences Survey (PACES)**

Childhood experiences was assessed using the Positive and Adverse Childhood Experiences Survey (PACES; Leitch, 2015). The PACES scale consists of 20 items that are answered using a dichotomous response of either yes or no. The scale contains items that describe both positive and adverse childhood experiences lead to a continuous score for each subscale through the sum of items. Examples of items that describe positive childhood experiences include, ‘Was there an adult in your family who took an interest in you in a positive way?’ and ‘Did your family look out for each other and support each other most of the time?’ On the other hand, items that describe negative childhood experiences include questions like, ‘Was
there violence in your house such as hitting, throwing things, kicking, threatening with a weapon such as gun or knife?’ and ‘Did you experience death of a parent, abandonment, or divorce?’

Refer to Appendix B for the complete survey. It is important to note that although the PACES is not a validated measure, it contains items describing negative childhood experiences from the Adverse Childhood Experiences (ACE) Questionnaire (Felitti et al., 1998). The ACE questionnaire has been validated and demonstrated adequate reliability ($\alpha = 0.88$, Dube et al., 2006). For the current study, the PACES measure reported a low reliability ($\alpha = 0.47$) if treated as a composite score, and moderate reliability for the positive childhood experiences ($\alpha = 0.79$) and the negative childhood experiences ($\alpha = 0.77$) subscales. The measure was used to describe both positive and negative childhood experiences in the evaluation of the association of childhood experiences and attachment style.

**Psychosocial Maturity Inventory (PSMI)**

Psychosocial maturity was measured using the Psychosocial Maturity Inventory (PSMI; Greenberger et al., 1974) to obtain a self-reliance score, an identity score, and a work orientation score, leading to an overall PSMI score. The PSMI scale contains 30 items that can be answered using a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The subscales as well as the overall score are continuous variables produced by a composite score. The self-reliance subscale includes items like ‘It is not very practical to decide what kind of job you want because that depends so much on other people.’ The identity subscale is composed of items like ‘I can’t really say what my interests are’ and ‘I act like something I’m not a lot of the time.’ Lastly, the work orientation subscale is composed of items like ‘If something more interesting comes along, I will usually stop any work I’m doing’ and ‘Hard work is never fun.’

Appendix C contains a complete list of items. The scale has a high internal consistency as shown
in the subscales, self-reliance ($\alpha = 0.82$), identity ($\alpha = 0.85$), and work orientation ($\alpha = 0.81$; Greenberger et al., 1974). For the current study, the overall score showed a high reliability ($\alpha = 0.91$), as well as the subscales of self-reliance ($\alpha = 0.73$), identity ($\alpha = 0.87$), and work orientation ($\alpha = 0.77$). The measure was used to create the variable used as the moderator, to determine the moderator effect of psychosocial maturity on the association of attachment style, drinking motives, and protective behavioral strategies.

**Measures of Theoretical Perspective of Alcohol Use**

**Attachment Style Questionnaire-SF (ASQ-SF)**

Attachment styles were measured using the Attachment Style Questionnaire-SF (ASQ-SF; Feeney et al., 1994; Alexander et al., 2001). The ASQ-SF is composed of 29 items that describe experiences in relationships that can be answered using a 6-point Likert scale ranging from 1 (*totally disagree*) to 6 (*totally agree*). The measure contains two subscales, avoidance and relationship anxiety, that ask participants to state how much they agree or disagree with statements related to attachment in relationships. Scores created two continuous variables reflecting avoidance and relationship anxiety through the sum of items. The avoidance subscale is composed of items like ‘Doing your best is more important than getting along with others’ and ‘My relationships with people are generally superficial.’ Items in the relationship anxiety include ‘I find it hard to make a decision unless I know what other people think’ and ‘I find that others are reluctant to get as close as I would like.’ See Appendix D. The scale has a high internal consistency as shown in the subscales of avoidance ($\alpha = 0.83$) and relationship anxiety ($\alpha = 0.85$; Karantzas et al., 2010). The measure reported moderate reliability in the current study ($\alpha = 0.77$), low reliability in the avoidance subscale ($\alpha = 0.46$) and high reliability in the relationship
anxiety subscale ($\alpha = 0.81$). The measure was used to create the variable used to evaluate the association of attachment style, drinking motives, and protective behavioral strategies.

**Basic Need Satisfaction and Frustration Scale (BPNSFS)**

The basic psychological needs were assessed using the scale Basic Need Satisfaction and Frustration Scale (BPNSFS; Chen et al., 2015) to obtain a degree to which a person meets the satisfaction of autonomy, competence, and relatedness, and its frustration on a daily basis.

BPNSFS consists of 24 items that can be answered using a 5-point Likert scale ranging from 1 (*not true at all*) to 5 (*completely true*). It is composed of six subscales that measures both the satisfaction and frustration in autonomy, relatedness, and competence. Subscale scores create continuous variables reflecting each of the six subscales composite scores. Items that measure autonomy satisfaction and frustration include ‘I feel a sense of choice and freedom in the things I undertake’ and ‘I feel forced to do many things I wouldn’t choose to do.’ Additionally, items in the relatedness satisfaction and frustration subscale include ‘I feel connected with people who care for me, and for whom I care’ and ‘I feel the relationships I have are just superficial’. Lastly, a few examples of the items in the competence subscale include ‘I feel capable at what I do’ and ‘I feel insecure about my abilities.’ Refer to Appendix E for a complete list of items. The scale reported a high internal consistency for the subscales of autonomy ($\alpha = 0.82$), relatedness ($\alpha = 0.87$), and competence ($\alpha = 0.89$; Chen et al., 2015). In the current study, the measure showed low reliability for the overall measure ($\alpha = 0.38$), and moderate to high reliability for the autonomy satisfaction ($\alpha = 0.79$), autonomy frustration ($\alpha = 0.81$), relatedness satisfaction ($\alpha = 0.90$), relatedness frustration ($\alpha = 0.83$), competence satisfaction ($\alpha = 0.87$), and competence frustration ($\alpha = 0.89$) subscales. The measure was used to create the variable used for the mediation effect of basic psychological needs on the association of attachment style, drinking
motives, and protective behavioral strategies.

**Measures of Proximal Determinants of Alcohol Use and Alcohol-Related Consequences**

*Drinking Motives Questionnaire-Revised (DMQ-R)*

Drinking motives was assessed using the Drinking Motives Questionnaire-Revised (DMQ-R; Cooper et al., 1994) that measures social, coping with depression, coping with anxiety, enhancement, and conformity motives. The DMQ-R scale contains 20 items that are rated using a 5-point Likert scale ranging from 1 (*almost never/never*) to 5 (*almost always/always*). The scale contains four subscales that measure social, coping, enhancement, and conformity motives for drinking that result in a continuous variable through the composite subscale scores. Social motives are measured using items like ‘Because it helps you enjoy a party’ and ‘To celebrate a special occasion with friends.’ Items describing coping motives include ‘To forget your worries’ and ‘Because it helps you when you feel depressed or nervous.’ The enhancement subscale includes items like ‘Because you like the feeling’ and ‘Because it is fun.’ Lastly, the conformity motive subscale is composed of items like ‘Because your friends pressure you to drink’ and ‘To fit in a group you like.’ See Appendix F for a detailed list of items. The scale has a high internal consistency as reported in the social (α = 0.86), coping (α = 0.89), enhancement (α = 0.86), and conformity (α = 0.86) subscales (Kuntsche et al., 2008). The measure reflected high reliability in the current study (α = 0.88) as well as in the subscales of social (α = 0.88), coping (α = 0.86), enhancement (α = 0.83), and conformity (α = 0.81). The measure was used to create the variable used to evaluate the association of attachment style, protective behavioral strategies, drinking motives and protective behavioral strategies. Additionally, drinking motives was assessed to determine its association with the latent variable, engagement in drinking.
Protective Behavioral Strategies Scale-20 (PBSS-20)

Protective behavioral strategies were measured using the Protective Behavioral Strategies Scale-20 (PBSS-20; Treloar et al., 2015). The PBSS-20 scale contains 20 items with responses ranging from 1 (never) to 6 (always). The scale is composed of three subscales that measure behaviors of serious harm reduction, stopping drinking/limiting, and manner of drinking that produced a continuous score for each subscale through the sum of items. Items in the serious harm reduction subscale include, ‘Use a designated driver’ and ‘Know where your drink has been at all times.’ The stopping/limiting drinking includes items like ‘Determine not to exceed a set of number of drinks’ and ‘Leave the bar/party at a predetermined time.’ The manner of drinking subscale contains items like ‘Avoid mixing different types of alcohol’ and ‘Avoid drinking games.’ Appendix G contains a complete list of items. The scale reflects high internal consistency for serious harm reduction ($\alpha = 0.86$), stopping/limiting drinking ($\alpha = 0.87$), and manner of drinking ($\alpha = 0.85$; Treloar et al., 2015). The measure showed a high reliability in the current study ($\alpha = 0.80$), and moderate reliability in the serious harm reduction ($\alpha = 0.68$), stopping/limiting drinking ($\alpha = 0.78$), and manner of drinking ($\alpha = 0.69$) subscales. The measure was used to create the variable used to evaluate the association of attachment style, basic psychological needs, drinking motives, and protective behavioral strategies. Additionally, protective behavioral strategies were evaluated to determine its association with the latent variable, engagement in drinking.

Measures of Alcohol Use and Alcohol-Related Consequences

Alcohol Use Disorders Identification Test (AUDIT)

Moreover, the presence of harmful alcohol use was assessed using the Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993). The questionnaire includes 10
items related to alcohol consumption. Example questions include ‘How often do you have a
drink containing alcohol?’ and ‘During the past year, how often have you had a feeling of guilt
or remorse after drinking?’ See Appendix H for a full description of the AUDIT. Items 1 through
8 are scored using a 0 to 4 range while items 9 and 10 are scored using a 0, 2, or 4 and summed
up to obtain a total score, or a continuous variable. A total score of 8 or more is associated with
harmful drinking while a score of 13 or more in women, and 15 or more in men indicates alcohol
dependence. A high internal consistency was reported for the measure ($\alpha = 0.85$; Daeppen et al.,
2000). In the current study, the measure showed moderate reliability ($\alpha = 0.74$). The AUDIT was
assessed to identify the presence of harmful alcohol use in participants but was not evaluated in
the models of interest.

**Daily Drinking Questionnaire (DDQ)**

The quantity and frequency of alcohol consumption was measured using the Daily
Drinking Questionnaire (DDQ; Collins et al., 2005). The scale asks respondents to provide an
estimate of the number of drinks consumed each day over the past month, creating a continuous
variable by summing the number of drinks per week. Specifically, the DDQ asks respondents to
indicate in a calendar their drinking rate and time drinking during a typical week and heaviest
drinking week in the last 30 days. Measure items include ‘How often did you drink during the
last month?’ and ‘Think of a typical weekend evening (Friday or Saturday) during the last
month…How much did you drink on that evening?’ Appendix I contains the list of survey items.
The measure reported a high internal consistency ($\alpha = 0.83$; Gearhardt et al., 2009). High
reliability was also found in the current study ($\alpha = 0.95$). The DDQ was collected to obtain
information about the quantity and frequency of alcohol consumption but was not be evaluated in
the models of interest.
**Brief-Young Adult Alcohol Consequences Questionnaire (B-YAACQ)**

Alcohol problems were assessed using the 24-item Brief-Young Adult Alcohol Consequences Questionnaire (B-YAACQ; Kahler et al., 2005). The scale measures a list of things that may happen to people either during, or after they have been drinking alcohol. The B-YAACQ is composed of 24 items that are answered using a dichotomous response of either yes or no and the sum of affirmative cases is used to create a total score that represents a continuous variable. Respondents had to indicate if things like ‘While drinking, I have said or done embarrassing things,’ ‘The quality of my work or school work has suffered because of my drinking,’ or ‘I have driven a car when I knew I had too much to drink to drive safely’ have happened to them in the past month. Appendix J contains the list of survey items. The measure reported a high internal consistency ($\alpha = 0.84$) that was maintained at follow up ($\alpha = 0.89$; Kahler et al., 2008). A high reliability was reported by the measure in the current study ($\alpha = 0.86$). The B-YAACQ was collected to obtain information about alcohol-related problems but was not evaluated in the models of interest.

**Measures of Coronavirus Impact**

Lastly, the impact of the coronavirus (COVID) was measured using the Coronavirus Impact Scale (CIS; Stoddard & Kaufman, 2020). The scale is composed of two subscales, a COVID impact score and the direct or familial experience. It asks respondents to indicate the impact COVID has had in several areas of their life by responding to 12 items. Responses for the first 10 items range from 1 (*no change* or *none*) to 4 (*severe*). The responses for the last 2 items range from 1 (*mild*) to 4 (*dead of family member*). Items in the impact score subscale include the ratings on how much the pandemic has changed the participants’ life in categories like ‘food access’ and ‘mental health treatment access.’ A continuous score for the impact score subscale
was obtained through the sum of items 1 through 8. Items in the direct or familiar experience subscale contained items regarding the personal and familial diagnosis of COVID and were not included in the impact score. See Appendix K for a complete list of items. The scale reflects high internal consistency for impact score ($\alpha = 0.64$-$0.75$; Stoddard et al., 2021). The measure showed moderate reliability in the current study ($\alpha = 0.80$). The measure created the variable that was used to control for the impact of COVID in alcohol use. Refer to Table 2.3 for a summary of the measures collected for the present study.

### Table 2.3

**Measures Collected for the Present Study Sample**

<table>
<thead>
<tr>
<th>Measure</th>
<th># Of Items</th>
<th>Scoring</th>
<th>Total Score Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measures of Risk and Protective Factors of Harmful Alcohol Use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive and Adverse Childhood Experiences Survey (PACES)</td>
<td>20</td>
<td>Yes/No</td>
<td>0-20</td>
</tr>
<tr>
<td>Psychosocial Maturity Inventory (PSMI)</td>
<td>30</td>
<td>1-4</td>
<td>1-4</td>
</tr>
<tr>
<td>Attachment Style Questionnaire-SF (ASQ-SF)</td>
<td>29</td>
<td>1-6</td>
<td>29-174</td>
</tr>
<tr>
<td>Basic Need Satisfaction and Frustration Scale (BPNSFS)</td>
<td>24</td>
<td>1-5</td>
<td>24-120</td>
</tr>
<tr>
<td><strong>Measures of Proximal Determinants of Alcohol Use and Alcohol-Related Consequences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking Motives Questionnaire-Revised (DMQ-R)</td>
<td>20</td>
<td>1-5</td>
<td>5-25</td>
</tr>
<tr>
<td>Protective Behavioral Strategies Scale-20 (PBSS-20)</td>
<td>20</td>
<td>1-6</td>
<td>20-120</td>
</tr>
<tr>
<td><strong>Measures of Alcohol Use and Alcohol-Related Consequences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol Use Disorders Identification Test (AUDIT)</td>
<td>10</td>
<td>0-4</td>
<td>0-40</td>
</tr>
<tr>
<td>Daily Drinking Questionnaire (DDQ)</td>
<td>Weekly Report</td>
<td># Of drinks</td>
<td>----</td>
</tr>
<tr>
<td>Brief-Young Adult Alcohol Consequences Questionnaire (B-YAACQ)</td>
<td>24</td>
<td>Yes/No</td>
<td>0-24</td>
</tr>
<tr>
<td><strong>Measures of Coronavirus Impact</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coronavirus Impact Scale (CIS)</td>
<td>12</td>
<td>1-4</td>
<td>4-48</td>
</tr>
</tbody>
</table>
RESEARCH DESIGN

The study, which integrates attachment style and basic psychological needs and determines the role of childhood experiences and psychosocial maturity, involved a correlational survey to establish the proposed theoretical framework. A cross-sectional survey design can help establish preliminary relationship between the variables (Wang & Cheng, 2020). This understanding can then be translated to the development of theoretically informed interventions that can help people with insecure attachments styles reduce alcohol problems among emerging adults.

Cross-sectional designs should be considered the method of choice under certain situations. For example, cross-sectional designs are recommended when it is not known if X and Y covary (Spector, 2019). This is the case of the current study as little is known about the relationship of the variables that are being investigated: attachment styles, drinking motives and protective behavioral strategies. Additionally, cross-sectional design is preferable when the study aims to examine the effects of a naturally occurring X (Spector, 2019). In the case of the current study, the effect attachment styles, that are developed at a younger age (Bowlby, 1988), has on drinking motives and protective behavioral strategies was examined. Therefore, using a cross-sectional design is the preferred method to establish the proposed theoretical framework at an early stage in research.

PROCEDURES

The present study identified the association between attachment styles and basic psychological needs, drinking motives, protective behavioral strategies, childhood experiences, and psychosocial maturity along with alcohol use and alcohol-related consequences. Approval from the Institutional Review Board (IRB) at UTEP was obtained prior to the outset of the
current study. Potential participants who are enrolled at UTEP were recruited to be part of the survey. Mass invitations using the Qualtrics invitation tool were sent to a randomized undergraduate sample of 3,000 students to invite them to participate in the study. After completing screening questions, those that met the criteria of binge drinking were able to participate in the study. As a result of their participation, students were offered a $5.00 Amazon gift card in compensation for their time. In addition, potential participants who are Prolific users were recruited to be part of the survey. Prescreened participants were invited to complete a screening survey and those meeting the criteria of binge drinkers were invited to participate in the study. As a result of their participation, students were offered a $5.60 Prolific credit in compensation for their time.

The email sent to the undergraduate sample contained the survey link that directed them to the Qualtrics survey. Also, the Prolific website provided the survey link to the users. The survey link introduced the participants to the informed consent form. Participants were asked to indicate electronic informed consent before they were able participate in the survey. Upon accessing the link, the consenting information appeared, and they had the options to agree to take part in the study or decline. If participants declined their participation, they were not able to proceed to the online survey and were automatically exited from informed consent page. If the UTEP undergraduate student and Prolific user agreed to participate, they were asked to complete the survey online. The average completion time for the current study was 25 minutes.

**DATA ANALYSIS**

The survey was designed to collect information from emerging adults about their attachment styles, basic psychological needs, drinking motives, protective behavioral strategies, alcohol use and alcohol-related consequences, childhood experiences, and psychosocial maturity.
The survey was distributed via email and the Prolific website, where the online survey link was found, and the data collected was de-identified and not linked to any participant. Additionally, the data was analyzed in an aggregated form.

Descriptive analyses were conducted to obtain the frequency of the demographic variables. In addition, the statistical models examined how attachment styles and basic psychological needs associate with drinking motives and protective behavioral strategies. Specifically, the current study used linear regressions and structural equation modeling (SEM) to test the following hypotheses:

1. Negative childhood experiences would be associated with insecure attachment styles.
2. Insecure attachment styles would be associated with higher number of drinking motives while secure attachment styles would be associated with higher use of protective behavioral strategies.
3. Insecure attachment styles would be associated with higher basic psychological needs frustration while secure attachment styles would be associated with higher basic psychological needs satisfaction.
4. Higher basic psychological needs satisfaction would be associated with a reduction in drinking motives and an increase in protective behavioral strategies use.
5. Drinking motives and the use of protective behavioral strategies would be associated with the latent variable of engagement in drinking.

Secondarily, the following hypotheses were tested to using Hayes Process Macro to examine the moderated mediation:

1. Psychosocial maturity would moderate the associations between attachment style and drinking motives, reducing drinking motives.
2. Basic psychological needs would mediate the associations between attachment style and drinking motives and attachment style and protective behavioral strategies.

A series of theoretically framed SEM models (Figure 2.2-2.12) that could explain the relationship between the variables of interest with engagement in drinking were tested. Specifically, a complete model testing the relationship of the variables of interest (Figure 2.2) was developed in addition to decomposed models focusing on attachment theory or self-determination theory (Figure 2.3-2.12).

**Structural Equation Modeling**

SEM is described as a set of statistical techniques that allow to test models that include the effect different variables have on the outcome of interest and the interaction of the variables (Weston & Gore, 2006). SEM can serve as a method to obtain a summary of the interrelationships among variables and as a method to test hypothesized relationships between variables. Therefore, when defining SEM, its two primary components need to be addressed: the measurement model and the structural model. The measurement model focuses on the relationship between the observed variables measure based on the proposed hypothesis and the constructs. On the other hand, the structural model focuses on the interrelationship among constructs.

The component of measurement model in SEM allows to test how well observed variables relate and can identify the underlying constructs based on the proposed hypothesis (Weston & Gore, 2006). For this component, confirmatory factor analysis is implemented to test the model where the hypothesized constructs are referred to as latent variables. Latent variables are defined based on the extent to which the measures that describe it are related to one another. Measures that are strongly correlated to one another will result in a latent variable that is more
accurately defined.

Moreover, the component of structural model in SEM includes equations that define the hypothesized relationship among the proposed latent variables (Weston & Gore, 2006). The relationships among the latent variables can be expressed as covariances, direct effects, or indirect (mediated) effects. Specifically, covariances are described as nondirectional relationships among independent latent variables. Direct effects describe the relationship among measured variables and latent variables. Indirect effects consist of the relationship between an independent latent variable and a dependent latent variable that is being mediated by one or several latent variables (Baron & Kenny, 1986). Mediation can be presented as full or partial.

**Steps in SEM**

Six steps are necessary in SEM model testing including data collection, model specification, identification, estimation, evaluation, and modification (Hoyle, 1995). During model specification, the researcher identifies relationships that are hypothesized to exist among observed and latent variables (Weston & Gore, 2006). In model specification, the researcher determines whether the model is over-, under-, or just-identified by calculating the degrees of freedom. This process is achieved by subtracting the number of parameters estimated from the number of correlations in the correlation matrix using the following formula:

\[
\text{(no. observed variables \([\text{no. observed variables} + 1]\))/2.}
\]

To continue, the model estimation process consists of calculating the value of the unknown parameters as well as the error associated with the estimated value (Weston & Gore, 2006). Model evaluation occurs after the model is evaluated. During this process, the researcher determines if the associations among the measured variables and the latent variable in the model appropriately display the observed associations in the data. The model should evaluate the a)
significance and strength of the estimated parameters; b) variance accounted for in the endogenous observed and in the latent variables; c) overall model fit, indicated by the fit indices. Lastly, model modification is needed to obtain the best-fitting model. The model can be modified by adjusting the estimated models through the process of freeing or setting parameters.

It is suggested for model specification and identification to occur before data collection. During the process of data collection, the researcher needs to consider several factors necessary to test the model. For example, the sample size will determine the power of the SEM. Therefore, it is recommended to use larger samples when testing complex models (MacCallum et al., 1996). Another issue to consider is multicollinearity, or when two variables are highly correlated. Univariate and multivariate outliers also need to be considered and transformed or changed when necessary. When testing the model, it is assumed that the multivariate distribution is normal. If a model is not normally distributed, results may incorrectly suggest that a model is a good fit or poor fit. Additionally, missing data should be identified as missing completely at random, missing at random, or not missing at random and addressed using techniques that can handle missing data.

**Fit Indices**

Fit indices are used to evaluate if a model is representative of the data being analyzed, or a good-fitting SEM model. When assessing the model one of the profile of indices that must be examined is the chi-squared statistic, $\chi^2$. The $\chi^2$ is testing the null hypothesis stating that no differences exist between the model that is being proposed and the data structure (Smith & McMillan, 2001). A good fitting model would retain the null hypothesis and report a non-significant $\chi^2$ ($p > 0.05$). The comparative fit index (CFI) is a fit index that is also examined. The CFI ranges from 0 to 1, with values greater than or equal to 0.90 reflecting a good model fit. The
root mean square error of approximation (RMSEA) is also frequently examined. RMSEA values are interpreted based on the following guide: 0 = perfect fit; < 0.05 = close fit; 0.05 to 0.08 = fair fit; 0.08 to 0.10 = mediocre fit; > 0.10 = poor fit (Byrne, 1998, as cited in Smith & McMillan, 2001). Lastly, the standardized root mean square residual (SRMR) was used to evaluate the SEM models, with values less than 0.08 determining a good model fit (Hu & Bentler, 1999). Using the fit indices, the model fit can be deduced.

**Moderator Variables**

A moderator variable is not part of the causal sequences between two variables, the independent variable, and the dependent variable. Nonetheless, a moderator affects the relationship of $X$ and $Y$ in a way that the relationship differs based on the value of the moderator (MacKinnon et al., 2007). A moderator variable affects the direction and/or the strength between the independent and dependent variable (Baron & Kenny, 1986) but does not directly cause a change in the outcome.

When testing moderator effects, the hypothesis about a moderator is supported if the interaction between the independent variable and the moderator is significant. A complete understanding on the relationship between the independent variable and the moderator is possible after examining the interaction using a process called probing (Aiken & West, 1991). Also, it is recommended for the moderator variable to not be correlated with the independent variable and the dependent variable to reach a clearly interpretable interaction term (Baron & Kenny, 1986).

**Mediator Variables**

Mediating variables can represent behavioral, biological, psychological, or social constructs that disseminate the effect of one variable to another variable (MacKinnon et al., 2007). That is, a mediating variable affects the relationship between the independent variable and
the dependent variable by transferring its effect to the outcome of interest. A two-variable relationship represents the relationship between two variables, $X$ and $Y$ and it considers how $X$ can serve as a cause of $Y$ (MacKinnon et al., 2007). In a mediation model, a third variable is introduced into the $X \rightarrow Y$ relationship, such that $X$ is the cause of the mediator, $M$, and $M$ is the cause of $Y$, resulting in $X \rightarrow M \rightarrow Y$. Therefore, a mediator variable is part of the causal sequence between two variables.

A widely used method to examine mediation include the causal steps approach discussed by Baron and Kenny (1986). Four steps are described in this approach to establish mediation (Baron & Kenny, 1986; MacKinnon et al., 2007). First, a significant association between the independent variable and the dependent variable is needed. Second, a significant association between the independent variable and the mediating variable is needed. Third, the mediating variable should be significantly associated with the dependent variable when both the independent variable and mediating variable are predictors of the dependent variable. Fourth, the coefficient associating the independent variable and the dependent variable must be larger than the coefficient associating the independent variable to the dependent variable in the regression model where the independent variable and the mediating variable predict the dependent variable.

Thus, the mediating variable framework can be applied to prevention and treatment research. For example, interventions can be designed to have an impact in the outcome of interest by focusing on mediating variable that are causally related to the outcome (MacKinnon et al., 2007). Past research has emphasized on the importance of assessing mediation in treatment and prevention research (Baranowski et al., 1998; Donaldson, 2001; Kraemer et al., 2002). The current study integrates attachment styles and basic psychological needs and determines the role of childhood experiences and psychosocial maturity; this understanding can then be translated to
the development of theoretically informed interventions that can help people with insecure attachments styles reduce alcohol problems among emerging adults.

The mediation analyses between the variables of interest were conducted using cross-sectional data and arguments supporting and discouraging this practice have been developed. Maxwell and Cole (2007) state that a strong mediation claim based on the analysis of cross-sectional data cannot be justified. Nonetheless, Shrout (2011) states that there are occasions when analyses of cross-sectional correlations can show possible causal mechanisms. The commentary states that this can be an accepted method when there are well-founded theories that describe the causal direction of the processes, and for which the interpretation of the cross-sectional measures is informative about the temporal process (Shrout, 2011). This was the case in Schmitt et al. (2017) that looked at the mediation analysis of diabetes self-management on depression and HbA1c that have been theoretically linked. In the current study, the relationship between attachment style and self-determination theory was examined. Past studies have asserted an association between both theories that were examined, attachment style and self-determination theory, in relationship to well-being (La Guardia et al., 2000).

**Moderated Mediation**

Moderation and mediation can be integrated into a model. A moderated mediation is present when the mediating model producing the outcome depends on the direction and/or the strength of the moderator (Muller et al., 2005). Specifically, if the $X \rightarrow M \rightarrow Y$ process is related to another variable, the process is being moderated by that variable (Hayes, 2015). Proponents of the method state that for a mediation to be moderated, at least one of the paths in the $X \rightarrow M \rightarrow Y$ system must be moderated (Muller et al., 2005). For example, an indirect effect is the result of two effects (the effect of $X$ on $M$ and the effect of $M$ on $Y$ controlling for $X$) and if one of these
effects is moderated, then indirect effect is also moderated (Hayes, 2015). If there is no statistical evidence that one of the paths is moderated, then the indirect effect cannot be evaluated as a moderation.
Figure 2.2

*SEM Model 1: Relationship between Childhood Experiences, Attachment Styles, Basic Psychological Needs, Psychosocial Maturity, Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking*
Figure 2.3

SEM Model 2: Relationship between Childhood Experiences, Attachment Styles, Basic Psychological Needs, Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking
Figure 2.4

SEM Model 3: Relationship between Childhood Experiences, Attachment Styles, Basic Psychological Needs, Psychosocial Maturity, Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking
Figure 2.5

SEM Model 4: Relationship between Childhood Experiences, Attachment Styles, Psychosocial Maturity, Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking
Figure 2.6

SEM Model 5: Relationship between Childhood Experiences, Attachment Styles, Basic Psychological Needs, Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking
Figure 2.7

SEM Model 6: Relationship between Childhood Experiences, Attachment Styles, Basic Psychological Needs, Psychosocial Maturity, Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking
Figure 2.8

SEM Model 7: Relationship between Childhood Experiences, Attachment Styles, Basic Psychological Needs, Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking
Figure 2.9

SEM Model 8: Relationship between Childhood Experiences, Attachment Styles, Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking
Figure 2.10

*SEM Model 9: Relationship between Childhood Experiences, Basic Psychological Needs, Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking*
Figure 2.11

SEM Model 10: Relationship between Protective Behavioral Strategies, Drinking Motives, and the Latent Variable of Engagement in Drinking
Figure 2.12

SEM Model 11: Relationship between Attachment Styles, Basic Psychological Needs, and the Latent Variable of Engagement in Drinking
Figure 2.13

*Moderated Mediation between Attachment Styles, Basic Psychological Needs, Psychosocial Maturity, and Drinking Motives*

Figure 2.14

*Moderated Mediation between Attachment Styles, Basic Psychological Needs, Psychosocial Maturity, and Drinking Motives*
Chapter 3: Results

Linear regression, SEM, and moderated mediation were used to test the previously stated hypotheses regarding the associations between attachment theory and self-determination theory. Specifically, the current study tested hypotheses related to the association between attachment styles and basic psychological needs satisfaction with proximal determinants of alcohol use and alcohol-related consequences as well as the risk and protective factors involving alcohol use. Given the fact that each variable is composed of several subscales, both the composite scores and subscale scores were used to compute the linear regressions. This allowed the identification of specific associations within each variable.

LINEAR REGRESSIONS

Childhood Experiences and Attachment Styles

Linear regressions were conducted using the statistical software, SPSS 27. The first hypothesis was tested; negative childhood experiences were expected to be associated with insecure attachment styles. Linear regressions demonstrated a statistically significant relationship between insecure attachment styles and childhood experiences ($F(1,435) = 128.46, p < .001), R^2 = 0.23$. Insecure attachment styles decreased by 2.47 with overall positive childhood experiences ($\beta = -0.48, t(435) = -11.33, p < .001$; see Table 3.1). When assessing the relationship between the attachment style, avoidance, and childhood experiences, a statistically significant association was found ($F(2,434) = 49.82, p < .001), R^2 = 0.19$ (see Table 3.2). A statistically significant result was found between the attachment style, relationship anxiety, and childhood experiences ($F(2,434) = 44.59, p < .001), R^2 = 0.17$; see Table 3.3). These results confirmed the first hypothesis about childhood experiences and attachment styles.
Table 3.1

*Regression Analysis Summary for Childhood Experiences Predicting Insecure Attachment*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>140.38</td>
<td>3.48</td>
<td>3.48</td>
<td>40.36</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>PACES</td>
<td>-2.47</td>
<td>0.22</td>
<td>-0.48</td>
<td>-11.33</td>
<td>&lt;.001</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = 0.23$

Table 3.2

*Regression Analysis Summary for Childhood Experiences Predicting Avoidance*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>63.55</td>
<td>2.14</td>
<td>29.68</td>
<td>4.08</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>PACES Positive Experiences</td>
<td>-1.39</td>
<td>0.23</td>
<td>-0.30</td>
<td>-6.03</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>PACES Negative Experiences</td>
<td>1.07</td>
<td>0.25</td>
<td>0.21</td>
<td>4.25</td>
<td>&lt;.001</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = 0.19$

Table 3.3

*Regression Analysis Summary for Childhood Experiences Predicting Relationship Anxiety*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>51.18</td>
<td>2.26</td>
<td>22.66</td>
<td>4.05</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>PACES Positive Experiences</td>
<td>-0.98</td>
<td>0.24</td>
<td>-0.20</td>
<td>-4.05</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>PACES Negative Experiences</td>
<td>1.51</td>
<td>0.27</td>
<td>0.28</td>
<td>5.69</td>
<td>&lt;.001</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = 0.17$
Attachment Styles, Drinking Motives, and Protective Behavioral Strategies

The second hypothesis, insecure attachment styles would be associated with higher number of drinking motives while secure attachment styles would be associated with higher use of protective behavioral strategies was tested. Results from linear regressions showed a statistically significant relationship between insecure attachment styles and drinking motives $F(1,435) = 43.99, p < .001, R^2 = 0.09.$ Drinking motives increased by 0.05 with insecure attachment styles $(\beta = 0.30, t (435) = 6.63, p < .001; \text{see Table 3.4}).$ When assessing the relationship between the subscale social drinking motives and insecure attachment styles, there was a non-significant statistical relationship, $F(2,434) = 1.28, p = .278, R^2 = 0.01; \text{see Table 3.5).}$ Coping drinking motives and insecure attachment styles reported a statistically significant association, $F(2,434) = 62.25, p < .001, R^2 = 0.22; \text{see Table 3.6.}$ The relationship between enhancement drinking motives and insecure attachment styles was non-significant statistically $(F(2,434) = 2.83, p = .655), R^2 = 0.01; \text{see Table 3.7.}$ Lastly, the relationship between conformity drinking motives and insecure attachment styles was statistically significant, $F(2,434) = 9.70, p < .001, R^2 = 0.04; \text{see Table 3.8.}$ The linear regression results partially confirmed the hypothesis about drinking motives and insecure attachment styles.

Table 3.4

Regression Analysis Summary for Insecure Attachment Styles Predicting Drinking Motives

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta ($\beta$)</th>
<th>$t$</th>
<th>$p$</th>
<th>Fit $R^2$</th>
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<tr>
<td>(Constant)</td>
<td>8.93</td>
<td>0.74</td>
<td>12.05</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ASQ-SF</td>
<td>0.05</td>
<td>0.01</td>
<td>0.30</td>
<td>6.63</td>
<td>&lt;.001</td>
<td>0.09</td>
</tr>
</tbody>
</table>

69
### Table 3.5

*Regression Analysis Summary for Attachment Styles Predicting Social Motives*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>16.11</td>
<td>1.17</td>
<td>7</td>
<td>13.79</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Avoidance</td>
<td>0.01</td>
<td>0.02</td>
<td>0.02</td>
<td>0.38</td>
<td>.707</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>0.03</td>
<td>0.02</td>
<td>0.06</td>
<td>1.10</td>
<td>.272</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = 0.01$

### Table 3.6

*Regression Analysis Summary for Attachment Styles Predicting Coping Motives*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.06</td>
<td>1.13</td>
<td>3</td>
<td>0.95</td>
<td>.345</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Avoidance</td>
<td>0.09</td>
<td>0.02</td>
<td>0.21</td>
<td>4.07</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>0.14</td>
<td>0.02</td>
<td>0.33</td>
<td>6.47</td>
<td>&lt;.001</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = 0.22$

### Table 3.7

*Regression Analysis Summary for Attachment Styles Predicting Enhancement Motives*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
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</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>13.70</td>
<td>1.14</td>
<td>0</td>
<td>12.01</td>
<td>&lt;.001</td>
<td></td>
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<tr>
<td>ASQ-SF Avoidance</td>
<td>0.01</td>
<td>0.02</td>
<td>0.03</td>
<td>0.45</td>
<td>.655</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>0.04</td>
<td>0.02</td>
<td>0.10</td>
<td>1.71</td>
<td>.088</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = 0.01$
Table 3.8

Regression Analysis Summary for Attachment Styles Predicting Conformity Motives

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
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<tbody>
<tr>
<td>(Constant)</td>
<td>5.75</td>
<td>0.87</td>
<td></td>
<td>6.64</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Avoidance</td>
<td>-0.01</td>
<td>0.02</td>
<td>-0.03</td>
<td>-0.52</td>
<td>0.600</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>0.07</td>
<td>0.02</td>
<td>0.22</td>
<td>3.95</td>
<td>&lt;.001</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = 0.04$

Protective behavioral strategies were statistically significant related to insecure attachment styles $F (1,435) = 4.13, p = .043, R^2 = 0.01$. The use of protective behavioral strategies decreased by 0.05 with insecure attachment styles ($β = -0.01, t (435) = -2.03, p = .043$; see Table 3.9). The relationship between the protective behavioral strategy, serious harm reduction, and insecure attachment styles showed a statistically significant result, $F (2,434) = 4.07, p = .018, R^2 = 0.02$; see Table 3.10. A non-significant statistically association was reported between stopping/limiting drinking strategies and insecure attachment styles ($F (2,434) = 1.77, p = .171; R^2 = 0.01$; see Table 3.11) as well as between manner of drinking strategies and insecure attachment styles ($F (2,434) = 1.54, p = .219; R^2 = 0.01$; see Table 3.12). The linear regression results partially confirmed the hypothesis about protective behavioral strategies and insecure attachment styles.
Table 3.9

Regression Analysis Summary for Insecure Attachment Styles Predicting Protective Behavioral Strategies

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>58.83</td>
<td>2.61</td>
<td>1.00</td>
<td>22.55</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF</td>
<td>-0.05</td>
<td>0.03</td>
<td>-0.10</td>
<td>-2.03</td>
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$R^2 = 0.01$

Table 3.10

Regression Analysis Summary for Attachment Styles Predicting Serious Harm Reduction Strategies

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<th>p</th>
<th>Fit</th>
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<tbody>
<tr>
<td>(Constant)</td>
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<td>1.00</td>
<td>22.58</td>
<td>&lt;.001</td>
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</tr>
<tr>
<td>ASQ-SF Avoidance</td>
<td>-0.06</td>
<td>0.02</td>
<td>-0.16</td>
<td>-2.83</td>
<td>.005</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>0.02</td>
<td>0.02</td>
<td>0.07</td>
<td>1.23</td>
<td>.219</td>
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</table>

$R^2 = 0.02$

Table 3.11

Regression Analysis Summary for Attachment Styles Predicting Stopping/Limiting Drinking Strategies

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<tr>
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<th>p</th>
<th>Fit</th>
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<tbody>
<tr>
<td>(Constant)</td>
<td>10.71</td>
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<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Avoidance</td>
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<td>0.02</td>
<td>-0.01</td>
<td>-0.20</td>
<td>.846</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>-0.03</td>
<td>0.02</td>
<td>-0.08</td>
<td>-1.46</td>
<td>.144</td>
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$R^2 = 0.01$
### Table 3.12

*Regression Analysis Summary for Attachment Styles Predicting Manner of Drinking Strategies*

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<tr>
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<th>Beta (β)</th>
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<th>Fit</th>
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</thead>
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<tr>
<td>(Constant)</td>
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<tr>
<td>ASQ-SF Avoidance</td>
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<td>0.03</td>
<td>0.01</td>
<td>0.15</td>
<td>.878</td>
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</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>-0.05</td>
<td>0.03</td>
<td>-0.09</td>
<td>-1.55</td>
<td>.122</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = 0.01$

### Attachment Styles and Basic Psychological Needs

The third hypothesis, insecure attachment styles would be associated with higher basic psychological needs frustration while secure attachment style would be associated with higher basic psychological needs satisfaction was tested. Basic psychological needs were statistically significant associated with insecure attachment styles ($F(1,435) = 497.12, p < .001; R^2 = 0.53$). Satisfaction of basic psychological needs decreased by 0.610 with insecure attachment styles ($\beta = -0.73, t(434) = -22.30, p < .001$; see Table 3.13). A statistically significant relationship was found between autonomy satisfaction and insecure attachment styles ($F(2,434) = 65.49, p < .001; R^2 = 0.23$; see Table 3.14). Autonomy frustration was statistically significantly associated with insecure attachment styles ($F(2,434) = 94.77, p < .001; R^2 = 0.30$; see Table 3.15). When assessing relatedness satisfaction and insecure attachment styles, a statistically significant relationship was found ($F(2,434) = 125.09, p < .001; R^2 = 0.37$; see Table 3.16). Relatedness frustration was statistically significantly associated with insecure attachment styles ($F(2,434) = 180.94, p < .001; R^2 = 0.46$; see Table 3.17). A statistically significant relationship was reported between competence satisfaction and insecure attachment styles ($F(2,434) = 112.64, p < .001; R^2 = 0.34$; see Table 3.18). Competence frustration was statistically significantly associated with
insecure attachment styles ($F(2,434) = 222.18, p < .001; R^2 = 0.51; \text{see Table 3.19}$). The linear regression results confirmed the hypothesis about attachment styles and basic psychological needs.

Table 3.13

Regression Analysis Summary for Insecure Attachment Styles Predicting Basic Psychological Needs

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
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<tr>
<td>(Constant)</td>
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<td>2.85</td>
<td>51.92</td>
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<tr>
<td>ASQ-SF</td>
<td>-0.61</td>
<td>0.03</td>
<td>-0.73</td>
<td>-22.30</td>
<td>&lt;.001</td>
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$R^2 = 0.53$

Table 3.14

Regression Analysis Summary for Attachment Styles Predicting Autonomy Satisfaction

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>20.97</td>
<td>0.69</td>
<td>30.61</td>
<td>&lt;.001</td>
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<td></td>
</tr>
<tr>
<td>ASQ-SF Avoidance</td>
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<td>0.01</td>
<td>-0.15</td>
<td>-3.04</td>
<td>.003</td>
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<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>-0.10</td>
<td>0.01</td>
<td>-0.38</td>
<td>-7.58</td>
<td>&lt;.001</td>
<td></td>
</tr>
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</table>

$R^2 = 0.23$

Table 3.15

Regression Analysis Summary for Attachment Styles Predicting Autonomy Frustration

<table>
<thead>
<tr>
<th>Variable</th>
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<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
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</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>2.04</td>
<td>0.76</td>
<td>2.67</td>
<td>.008</td>
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<td></td>
</tr>
<tr>
<td>ASQ-SF Avoidance</td>
<td>0.05</td>
<td>0.02</td>
<td>0.14</td>
<td>2.98</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>0.14</td>
<td>0.02</td>
<td>0.46</td>
<td>9.63</td>
<td>&lt;.001</td>
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$R^2 = 0.30$
Table 3.16

Regression Analysis Summary for Attachment Styles Predicting Relatedness Satisfaction

<table>
<thead>
<tr>
<th>Variable</th>
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<th>SE</th>
<th>Beta (β)</th>
<th>T</th>
<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>25.99</td>
<td>0.66</td>
<td>6</td>
<td>39.49</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Avoidance</td>
<td>-0.12</td>
<td>0.01</td>
<td>-0.41</td>
<td>-9.07</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>-0.08</td>
<td>0.01</td>
<td>-0.27</td>
<td>-5.89</td>
<td>&lt;.001</td>
<td></td>
</tr>
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</table>

$R^2=0.37$

Table 3.17

Regression Analysis Summary for Attachment Styles Predicting Relatedness Frustration

<table>
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<th>Variable</th>
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<th>SE</th>
<th>Beta (β)</th>
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<th>p</th>
<th>Fit</th>
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<tbody>
<tr>
<td>(Constant)</td>
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<td>-4.03</td>
<td>&lt;.001</td>
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</tr>
<tr>
<td>ASQ-SF Avoidance</td>
<td>0.06</td>
<td>0.01</td>
<td>0.18</td>
<td>4.35</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>0.17</td>
<td>0.01</td>
<td>0.56</td>
<td>13.13</td>
<td>&lt;.001</td>
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</table>

$R^2=0.46$

Table 3.18

Regression Analysis Summary for Attachment Styles Predicting Competence Satisfaction

<table>
<thead>
<tr>
<th>Variable</th>
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<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>23.08</td>
<td>0.68</td>
<td>33.82</td>
<td>&lt;.001</td>
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<td></td>
</tr>
<tr>
<td>ASQ-SF Avoidance</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.08</td>
<td>-1.71</td>
<td>.088</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>-0.15</td>
<td>0.01</td>
<td>-0.54</td>
<td>-11.55</td>
<td>&lt;.001</td>
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</tr>
</tbody>
</table>

$R^2=0.34$
Table 3.19

Regression Analysis Summary for Attachment Styles Predicting Competence Frustration

<table>
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<tr>
<th>Variable</th>
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<th>SE</th>
<th>Beta ($\beta$)</th>
<th>$t$</th>
<th>$p$</th>
<th>Fit</th>
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<tbody>
<tr>
<td>(Constant)</td>
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<td></td>
<td>-3.27</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Avoidance</td>
<td>0.04</td>
<td>0.02</td>
<td>0.11</td>
<td>2.82</td>
<td>.005</td>
<td></td>
</tr>
<tr>
<td>ASQ-SF Relationship Anxiety</td>
<td>0.24</td>
<td>0.02</td>
<td>0.64</td>
<td>15.95</td>
<td>&lt;.001</td>
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</table>

$R^2 = 0.51$

Basic Psychological Needs, Drinking Motives, and Protective Behavioral Strategies

The fourth hypothesis, higher basic psychological needs satisfaction would be associated with a reduction in drinking motives and an increase in protective behavioral strategies use was tested. The association between drinking motives and basic psychological needs was statistically significant, $F (1,435) = 27.79, p < .001, R^2 = 0.06$, as drinking motives decreased by 0.05 with basic psychological needs satisfaction ($\beta = -.245, t (435) = -5.27, p < .001$; see Table 3.20). The association between the social drinking motives and basic psychological needs was statistically significant, $F (6,430) = 5.35, p < .001, R^2 = 0.07$; see Table 3.21. Results show a statistically significant association between coping drinking motives and basic psychological needs, $F (6,430) = 15.88, p < .001, R^2 = 0.18$; see Table 3.22. The relationship between enhancement drinking motives and basic psychological needs was statistically significant ($F (6,430) = 2.93, p = .01; R^2 = 0.04$; see Table 3.23). Lastly, the relationship between conformity drinking motives and basic psychological needs was statistically significant, $F (6,430) = 7.22, p < .001, R^2 = 0.09$; see Table 3.24. The linear regression results confirmed the hypothesis about drinking motives and basic psychological needs.
Table 3.20

Regression Analysis Summary for Basic Psychological Needs Predicting Drinking Motives

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
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<th>p</th>
<th>Fit</th>
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<tbody>
<tr>
<td>(Constant)</td>
<td>17.65</td>
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<td>23.32</td>
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</tr>
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<td>BPNSNF</td>
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<td>0.01</td>
<td>-0.25</td>
<td>-5.27</td>
<td>&lt;.001</td>
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</tr>
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</table>

$R^2 = 0.06$

Table 3.21

Regression Analysis Summary for Basic Psychological Needs Predicting Social Motives

<table>
<thead>
<tr>
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<th>p</th>
<th>Fit</th>
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<tr>
<td>(Constant)</td>
<td>5.61</td>
<td>2.69</td>
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<td>2.09</td>
<td>.038</td>
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<tr>
<td>BPNSNF Autonomy Satisfaction</td>
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<td>0.10</td>
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<td>1.09</td>
<td>.277</td>
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<td>BPNSNF Autonomy Frustration</td>
<td>0.30</td>
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<td>0.23</td>
<td>3.53</td>
<td>&lt;.001</td>
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<td>BPNSNF Relatedness Satisfaction</td>
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<td>0.22</td>
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<td>0.002</td>
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<tr>
<td>BPNSNF Relatedness Frustration</td>
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<td>0.14</td>
<td>1.81</td>
<td>0.071</td>
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<tr>
<td>BPNSNF Competence Satisfaction</td>
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<td>0.363</td>
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<td>BPNSNF Competence Frustration</td>
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<td>-0.04</td>
<td>-0.48</td>
<td>0.630</td>
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$R^2 = 0.07$
### Table 3.22

**Regression Analysis Summary for Basic Psychological Needs Predicting Coping Motives**

<table>
<thead>
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<th>Fit</th>
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</thead>
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<td>(Constant)</td>
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<td>&lt;.001</td>
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</tr>
<tr>
<td>BPNSNF Autonomy Satisfaction</td>
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<td>0.10</td>
<td>-0.06</td>
<td>-0.95</td>
<td>.342</td>
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<tr>
<td>BPNSNF Autonomy Frustration</td>
<td>0.19</td>
<td>0.09</td>
<td>0.13</td>
<td>2.17</td>
<td>.030</td>
<td></td>
</tr>
<tr>
<td>BPNSNF Relatedness Satisfaction</td>
<td>-0.05</td>
<td>0.10</td>
<td>-0.35</td>
<td>-0.53</td>
<td>.595</td>
<td></td>
</tr>
<tr>
<td>BPNSNF Relatedness Frustration</td>
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<td>0.10</td>
<td>0.07</td>
<td>0.96</td>
<td>.339</td>
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<tr>
<td>BPNSNF Competence Satisfaction</td>
<td>-0.11</td>
<td>0.11</td>
<td>-0.07</td>
<td>-0.97</td>
<td>.332</td>
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</tr>
<tr>
<td>BPNSNF Competence Frustration</td>
<td>0.18</td>
<td>0.10</td>
<td>0.15</td>
<td>1.83</td>
<td>.068</td>
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</table>

*R² = 0.07*

### Table 3.23

**Regression Analysis Summary for Basic Psychological Needs Predicting Enhancement Motives**

<table>
<thead>
<tr>
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<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
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<td></td>
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<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>BPNSNF Autonomy Satisfaction</td>
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<td>0.10</td>
<td>0.09</td>
<td>1.33</td>
<td>.184</td>
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</tr>
<tr>
<td>BPNSNF Autonomy Frustration</td>
<td>0.22</td>
<td>0.08</td>
<td>0.18</td>
<td>2.65</td>
<td>.008</td>
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</tr>
<tr>
<td>BPNSNF Relatedness Satisfaction</td>
<td>0.16</td>
<td>0.10</td>
<td>0.11</td>
<td>1.59</td>
<td>.112</td>
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</tr>
<tr>
<td>BPNSNF Relatedness Frustration</td>
<td>0.02</td>
<td>0.10</td>
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<td>.859</td>
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</tr>
<tr>
<td>BPNSNF Competence Satisfaction</td>
<td>-0.17</td>
<td>0.11</td>
<td>-0.13</td>
<td>-1.55</td>
<td>.122</td>
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</tr>
<tr>
<td>BPNSNF Competence Frustration</td>
<td>0.00</td>
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<td>0.00</td>
<td>0.02</td>
<td>.981</td>
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</table>

*R² = 0.04*
Table 3.24

Regression Analysis Summary for Basic Psychological Needs Predicting Conformity Motives

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
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<th>Beta (β)</th>
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<th>p</th>
<th>Fit</th>
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</tr>
<tr>
<td>BPNSNF Autonomy Satisfaction</td>
<td>0.00</td>
<td>0.07</td>
<td>0.00</td>
<td>0.06</td>
<td>0.955</td>
<td>0.955</td>
</tr>
<tr>
<td>BPNSNF Autonomy Frustration</td>
<td>0.13</td>
<td>0.06</td>
<td>0.14</td>
<td>2.14</td>
<td>0.033</td>
<td>0.033</td>
</tr>
<tr>
<td>BPNSNF Relatedness Satisfaction</td>
<td>0.13</td>
<td>0.07</td>
<td>0.12</td>
<td>1.73</td>
<td>0.084</td>
<td>0.084</td>
</tr>
<tr>
<td>BPNSNF Relatedness Frustration</td>
<td>0.36</td>
<td>0.08</td>
<td>0.36</td>
<td>4.81</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>BPNSNF Competence Satisfaction</td>
<td>0.01</td>
<td>0.08</td>
<td>0.01</td>
<td>0.11</td>
<td>0.915</td>
<td>0.915</td>
</tr>
<tr>
<td>BPNSNF Competence Frustration</td>
<td>-0.11</td>
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<td>-0.13</td>
<td>-1.50</td>
<td>0.134</td>
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</table>

$R^2 = 0.09$

Protective behavioral strategies and basic psychological needs were statistically significantly associated, $F (1,435) = 18.30, p < .001, R^2 = 0.04$, as protective behavioral strategies decreased by 0.126 with basic psychological needs satisfaction ($β = -.20, t (435) = -4.28, p < .001$; see Table 3.25). The relationship between the protective behavioral strategy, serious harm reduction, and insecure attachment styles showed a statistically significant result, $F (6,430) = 5.76, p < .001, R^2 = 0.07$; see Table 3.26. A statistically significant association was reported between stopping/limiting drinking strategies and basic psychological needs ($F (6,430) = 3.23, p = .004; R^2 = 0.04$; see Table 3.27). Results also show a statistically significant association between manner of drinking strategies and basic psychological needs ($F (6,430) = 2.51, p = .022; R^2 = 0.03$; see Table 3.28). Nonetheless, individually, the basic psychological needs satisfaction or frustration did not statistically significantly contribute to the manner of drinking strategies.
The linear regression results partially confirmed the hypothesis about basic psychological needs and protective behavioral strategies.

Table 3.25

Regression Analysis Summary for Basic Psychological Needs Predicting Protective Behavioral Strategies

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p</th>
<th>Fit</th>
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<tr>
<td>(Constant)</td>
<td>42.82</td>
<td>2.58</td>
<td></td>
<td>16.60</td>
<td>&lt;.001</td>
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<tr>
<td>BPNSNF</td>
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<td>0.29</td>
<td>0.20</td>
<td>4.28</td>
<td>&lt;.001</td>
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</table>

$R^2 = 0.04$

Table 3.26

Regression Analysis Summary for Basic Psychological Needs Predicting Serious Harm Reduction Strategies

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<tr>
<td>(Constant)</td>
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<td>BPNSNF Autonomy Satisfaction</td>
<td>0.08</td>
<td>0.08</td>
<td>0.07</td>
<td>1.00</td>
<td>0.316</td>
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<tr>
<td>BPNSNF Autonomy Frustration</td>
<td>0.10</td>
<td>0.07</td>
<td>0.10</td>
<td>1.45</td>
<td>0.148</td>
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<tr>
<td>BPNSNF Relatedness Satisfaction</td>
<td>0.24</td>
<td>0.08</td>
<td>0.20</td>
<td>2.91</td>
<td>0.004</td>
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<tr>
<td>BPNSNF Relatedness Frustration</td>
<td>-0.13</td>
<td>0.08</td>
<td>-0.12</td>
<td>-1.55</td>
<td>0.123</td>
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<tr>
<td>BPNSNF Competence Satisfaction</td>
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<td>0.09</td>
<td>-0.01</td>
<td>-0.08</td>
<td>0.941</td>
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<tr>
<td>BPNSNF Competence Frustration</td>
<td>0.03</td>
<td>0.08</td>
<td>0.04</td>
<td>0.41</td>
<td>0.680</td>
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</table>

$R^2 = 0.07$
### Table 3.2

**Regression Analysis Summary for Basic Psychological Needs Predicting Stopping/Limited Drinking Strategies**

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
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<th>p</th>
<th>Fit</th>
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<tr>
<td>(Constant)</td>
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<td>2.08</td>
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<td>2.07</td>
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<tr>
<td>BPNSNF Autonomy Satisfaction</td>
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<td>0.08</td>
<td>0.11</td>
<td>1.66</td>
<td>0.098</td>
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</tr>
<tr>
<td>BPNSNF Autonomy Frustration</td>
<td>-0.06</td>
<td>0.07</td>
<td>-0.06</td>
<td>-0.90</td>
<td>0.368</td>
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</tr>
<tr>
<td>BPNSNF Relatedness Satisfaction</td>
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<td>0.08</td>
<td>1.09</td>
<td>0.276</td>
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<tr>
<td>BPNSNF Relatedness Frustration</td>
<td>0.16</td>
<td>0.08</td>
<td>0.16</td>
<td>2.02</td>
<td>0.044</td>
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</tr>
<tr>
<td>BPNSNF Competence Satisfaction</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>1.05</td>
<td>0.293</td>
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</tr>
<tr>
<td>BPNSNF Competence Frustration</td>
<td>-0.00</td>
<td>0.07</td>
<td>-0.00</td>
<td>-0.02</td>
<td>0.988</td>
<td></td>
</tr>
</tbody>
</table>

*R² = 0.04*

### Table 3.28

**Regression Analysis Summary for Basic Psychological Needs Predicting Manner of Drinking Strategies**

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
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<th>p</th>
<th>Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
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<td></td>
<td>6.73</td>
<td>.000</td>
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<tr>
<td>BPNSNF Autonomy Satisfaction</td>
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<td>.13</td>
<td>.12</td>
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<td>.083</td>
<td></td>
</tr>
<tr>
<td>BPNSNF Autonomy Frustration</td>
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<td>.11</td>
<td>-.07</td>
<td>-.99</td>
<td>.322</td>
<td></td>
</tr>
<tr>
<td>BPNSNF Relatedness Satisfaction</td>
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<td>.13</td>
<td>-.06</td>
<td>-.83</td>
<td>.405</td>
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<tr>
<td>BPNSNF Relatedness Frustration</td>
<td>-.02</td>
<td>.14</td>
<td>-.01</td>
<td>-.13</td>
<td>.901</td>
<td></td>
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<tr>
<td>BPNSNF Competence Satisfaction</td>
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<td>.15</td>
<td>.03</td>
<td>.33</td>
<td>.740</td>
<td></td>
</tr>
<tr>
<td>BPNSNF Competence Frustration</td>
<td>-.05</td>
<td>.13</td>
<td>-.03</td>
<td>-.36</td>
<td>.720</td>
<td></td>
</tr>
</tbody>
</table>

*R² = 0.03*
SEM

SEM was conducted using the statistical software, MPlus8 using the Maximum Likelihood estimation procedures. The hypothesis that drinking motives and the use of protective behavioral strategies would be associated with the latent variable of engagement in drinking was tested. A series of theoretically framed SEM models (refer to Figure 2.2-2.12) that could explain the relationship between the variables of interest with engagement in drinking were tested. Specifically, a complete model testing the relationship of the variables of interest (Figure 2.2) was developed in addition to decomposed models focusing on attachment theory and/or self-determination theory (Figures 2.3-2.12). The fit indices used to evaluate if the models were representative of the data being analyze were chi-squared statistic ($p \geq 0.050$), CFI ($\geq 0.90$), RMSEA ($\leq 0.05$), and SRMR ($\leq 0.08$).

SEM models were used to test if the association between attachment styles, basic psychological needs, drinking motives, protective behavioral strategies, childhood experiences, and psychosocial maturity would predict the latent variable of engagement in drinking. Each variable of interest was included into the model in the form of subscales composing each observed variable. For example, in the SEM model, attachment styles were represented through observed variables using the avoidance and relationship anxiety subscale scores that were created as described by the authors (ASQ-SF; Feeney et al., 1994; Alexander et al., 2001). Missing data for the items used to create the subscales for each of the variables of interest was less than 1%. Therefore, techniques to handle missing data were not applied to the dataset. In addition, a multicollinearity test showed that there was no multicollinearity between the variables by showing a variance inflation factor (VIF) of less than 5 for all the variables.
Prior to conducting the current study, a power analysis was conducted using Cohen and Cohen (1983) recommendations. The recommended sample size analysis was obtained using the statistical program, G*Power. Specifically, the small effect size, $d = 0.13$, was obtained from the comparison of secure and insecure attachment styles and substance use in a meta-analysis that evaluates the relatedness of attachment styles, psychopathology, and substance abuse (Camp, 2014). The power analysis indicated that a minimum of 362 participants would be needed to obtain the minimum accepted power, 0.80, $\alpha = 0.50$ (Suresh & Chandrashekara, 2012).

Figure 2.2 shows the complete SEM model that was used to test the relationship of the variables of interest to the latent variable, engagement in drinking. Results show poor fitting indices for the model used to assess the data, $\chi^2 (80) = 4493.43, p < .001$, RMSEA = 0.35, 90% confidence interval (C.I.) [0.35, 0.364], CFI = 0.31, SRMR = 0.24. Although the model resulted in a poor fit, the observed variables serving as indicators of the latent variable engagement in drinking were statistically significant associated: social drinking motives ($\beta = 0.31, p < .001$), coping drinking motives ($\beta = 0.31, p < .001$), enhancement drinking motives ($\beta = 0.46, p < .001$), conformity drinking motives ($\beta = 0.10, p = .018$), serious harm reduction strategies ($\beta = -0.28, p < .001$), stopping/limiting drinking strategies ($\beta = -0.56, p < .001$), and manner of drinking strategies ($\beta = -0.69, p < .001$). Some of variables serving as indicators of social drinking motives were also statistically significantly associated such as autonomy frustration ($\beta = 0.07, p = .008$) and relationship satisfaction ($\beta = 0.23, p = .002$). Coping drinking motives were statistically significantly associated with avoidance ($\beta = 0.57, p = .004$) while enhancement drinking motives were statistically significantly associated with autonomy frustration ($\beta = 0.15, p = .017$). Conformity motives were statistically significantly associated with psychosocial maturity ($\beta = -0.47, p < .001$), relatedness frustration ($\beta = 0.23, p < .001$), and the interaction
between relationship anxiety and psychosocial maturity ($\beta = 0.43, p < .001$). Serious harm reduction strategies were statistically significantly associated with psychosocial maturity ($\beta = 0.45, p < .001$), relatedness satisfaction ($\beta = 0.15, p = .014$), and relatedness frustration ($\beta = -0.17, p = .009$). Stopping/limited drinking strategies were statistically significantly associated with relatedness frustration ($\beta = 0.15, p = .036$). Manner of drinking strategies were not statistically significantly associated with any of the observed variables serving as indicators.

Autonomy satisfaction was significantly associated with avoidance ($\beta = -0.16, p = .003$) and relationship anxiety ($\beta = -0.39, p < .001$). Autonomy frustration was significantly associated with avoidance ($\beta = 0.15, p = .003$) and relationship anxiety ($\beta = 0.47, p = < .001$). Relatedness satisfaction was significantly associated with avoidance ($\beta = -0.43, p < .001$) and relationship anxiety ($\beta = -0.28, p < .001$). Relatedness frustration was significantly associated with avoidance ($\beta = 0.19, p < .001$) and relationship anxiety ($\beta = 0.58, p < .001$). Competence satisfaction was significantly associated with relationship anxiety ($\beta = -0.55, p < .001$). Competence frustration was significantly associated with avoidance ($\beta = 0.12, p = .006$) and relationship anxiety ($\beta = 0.66, p < .001$). Avoidance was significantly associated with positive childhood experiences ($\beta = -0.30, p < .001$) and negative childhood experiences ($\beta = 0.21, p < .001$). Relationship anxiety was significantly associated with positive childhood experiences ($\beta = -0.20, p < .001$) and negative childhood experiences ($\beta = 0.28, p < .001$). Refer to Figure 3.1 for the diagram of the output.

Decomposed models focusing on attachment theory and/or self-determination theory (Figures 2.3-2.12) were also tested as alternative models that may represent the relationship between the variables of interest and the latent variable engagement in drinking. SEM Model 2 assessed the relationship between childhood experiences, attachment styles, basic psychological
needs, protective behavioral strategies, drinking motives, and the latent variable of engagement in drinking (Figure 2.3). Results show poor fitting indices for the model used to assess the data, \( \chi^2(41) = 1148.72, p < .001, \) RMSEA = 0.21, 90% C.I. [0.20, 0.22], CFI = 0.65, SRMR = 0.12 (see Figure 3.2 for the diagram of the output). SEM Model 3 assessed the relationship between childhood experiences, attachment styles, basic psychological needs, psychosocial maturity, protective behavioral strategies, drinking motives, and the latent variable of engagement in drinking (Figure 2.4). Poor fitting indices for the model used to assess the data were displayed, \( \chi^2(47) = 3373.93, p < .001, \) RMSEA = 0.41, 90% C.I. [0.40, 0.42], CFI = 0.18, SRMR = 0.29 (refer to Figure 3.3 for the diagram of the output).

SEM Model 4 assessed the relationship between childhood experiences, attachment styles, psychosocial maturity, protective behavioral strategies, drinking motives, and the latent variable of engagement in drinking (Figure 2.5). The model used to assess the data showed poor fitting indices, \( \chi^2(35) = 3550.99, p < .001, \) RMSEA = 0.48, 90% C.I. [0.47, 0.49], CFI = 0.16, SRMR = 0.26 (Figure 3.4 shows the diagram of the output). SEM Model 5 assessed the relationship between childhood experiences, attachment styles, basic psychological needs, protective behavioral strategies, drinking motives, and the latent variable of engagement in drinking (Figure 2.6). Results show poor fitting indices for the model used to assess the data, \( \chi^2(41) = 700.72, p < .001, \) RMSEA = 0.19, 90% C.I. [0.18, 0.20], CFI = 0.54, SRMR = 0.13 (see Figure 3.5 for the diagram of the output).

SEM Model 6 examined the relationship between childhood experiences, attachment styles, basic psychological needs, psychosocial maturity, protective behavioral strategies, drinking motives, and the latent variable of engagement in drinking (Figure 2.7). Poor fitting indices for the model used to assess the data were found, \( \chi^2(80) = 5180.55, p < .001, \) RMSEA =
SEM Model 7 represented the relationship between childhood experiences, attachment styles, basic psychological needs, drinking motives, and the latent variable engagement in drinking (Figure 2.8). The model used to assess the data showed poor fitting indices, \( \chi^2 (56) = 1835.84, p < .001, \) RMSEA = 0.27, 90% C.I. [0.27, 0.28], CFI = 0.42, SRMR = 0.17 (refer to Figure 3.7 for the diagram of the output). SEM Model 8 assessed the relationship between childhood experiences, attachment styles, protective behavioral strategies, drinking motives, and the latent variable of engagement in drinking (Figure 2.9). Results show poor fitting indices for the model used to assess the data, \( \chi^2 (29) = 380.93, p < .001, \) RMSEA = 0.17, 90% C.I. [0.15, 0.18], CFI = 0.65, SRMR = 0.09 (see Figure 3.8 for the diagram of the output).

SEM Model 9 assessed the relationship between childhood experiences, basic psychological needs, protective behavioral strategies, drinking motives, and the latent variable engagement in drinking (Figure 2.10). Poor fitting indices for the model used to assess the data were found, \( \chi^2 (43) = 1384.84, p < .001, \) RMSEA = 0.27, 90% C.I. [0.26, 0.28], CFI = 0.45, SRMR = 0.15 (see Figure 3.9 for the diagram of the output). SEM Model 10 assessed the relationship between protective behavioral strategies, drinking motives, and the latent variable engagement in drinking (Figure 2.11). Results show poor fitting indices for the model used to assess the data, \( \chi^2 (14) = 242.37, p < .001, \) RMSEA = 0.19, 90% C.I. [0.17, 0.22], CFI = 0.61, SRMR = 0.11 (refer to Figure 3.10 for the diagram of the output). SEM Model 11 assessed the relationship between attachment styles, basic psychological needs, and the latent variable engagement in drinking (Figure 2.12). It showed poor fitting indices for the model used to assess the data, \( \chi^2 (20) = 339.41, p < .001, \) RMSEA = 0.19, 90% C.I. [0.17, 0.21], CFI = 0.85, SRMR =
0.06 (refer to Figure 3.11 for the diagram of the output). Table 3.29 shows a summary of the SEM models fit indices.

Table 3.29

**SEM Models Fit Indices**

<table>
<thead>
<tr>
<th>SEM Model</th>
<th>$\chi^2$</th>
<th>p</th>
<th>RMSEA</th>
<th>90% CI</th>
<th>CFI</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
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<td>0.35, 0.36</td>
<td>0.31</td>
<td>0.24</td>
</tr>
<tr>
<td>Figure 2.3</td>
<td>1148.72</td>
<td>&lt; .001</td>
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<td>0.12</td>
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<td>0.29</td>
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<tr>
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<td>0.47, 0.49</td>
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<td>0.26</td>
</tr>
<tr>
<td>Figure 2.6</td>
<td>700.72</td>
<td>&lt; .001</td>
<td>0.19</td>
<td>0.18, 0.20</td>
<td>0.54</td>
<td>0.13</td>
</tr>
<tr>
<td>Figure 2.7</td>
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<td>&lt; .001</td>
<td>0.38</td>
<td>0.37, 0.39</td>
<td>0.38</td>
<td>0.21</td>
</tr>
<tr>
<td>Figure 2.8</td>
<td>1835.84</td>
<td>&lt; .001</td>
<td>0.27</td>
<td>0.27, 0.28</td>
<td>0.42</td>
<td>0.17</td>
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<td>380.93</td>
<td>&lt; .001</td>
<td>0.17</td>
<td>0.15, 0.18</td>
<td>0.65</td>
<td>0.09</td>
</tr>
<tr>
<td>Figure 2.10</td>
<td>1384.84</td>
<td>&lt; .001</td>
<td>0.27</td>
<td>0.26, 0.28</td>
<td>0.45</td>
<td>0.15</td>
</tr>
<tr>
<td>Figure 2.11</td>
<td>242.37</td>
<td>&lt; .001</td>
<td>0.19</td>
<td>0.17, 0.22</td>
<td>0.61</td>
<td>0.11</td>
</tr>
<tr>
<td>Figure 2.12</td>
<td>339.41</td>
<td>&lt; .001</td>
<td>0.19</td>
<td>0.17, 0.21</td>
<td>0.85</td>
<td>0.06</td>
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</table>
Figure 3.1

Diagram Showing SEM Results for Figure 2.2
Figure 3.2

Diagram Showing SEM Results for Figure 2.3
Diagram Showing SEM Results for Figure 2.4
Figure 3.4

Diagram Showing SEM Results for Figure 2.5
Diagram Showing SEM Results for Figure 2.6
Diagram Showing SEM Results for Figure 2.7
Figure 3.7

Diagram Showing SEM Results for Figure 2.8
Figure 3.8

Diagram Showing SEM Results for Figure 2.9
Figure 3.9

Diagram Showing SEM Results for Figure 2.10
Figure 3.10

Diagram Showing SEM Results for Figure 2.11
Figure 3.12

Diagram Showing SEM Results for Figure 2.12
MODERATED MEDIATION

Moderated mediation was conducted using the tool Hayes PROCESS Macro installed in the statistical software, SPSS 27. The hypothesis that psychosocial maturity would moderate the associations between attachment style and drinking motives while basic psychological needs would mediate the associations between attachment style and drinking motives were tested (Figure 3.12). The moderated mediation model was tested using the composite scores for each variable. Results show that a statistically significant association between basic psychological needs as more insecure attachment styles result in lower basic psychological needs satisfaction (path a), $b = -0.61$, $t (435) = -22.30$, $p < .001$. Basic psychological needs were not statistically significant associated with drinking motives (path b), $b = 0.01$, $t (432) = 0.57$, $p = .568$. The relationship between insecure attachment styles and drinking motives, when assessed with basic psychological needs and psychosocial maturity, was statistically significant (path $c’$), $b = .04$, $t (432) = 3.27$, $p = .001$. Psychosocial maturity and drinking motives were statistically significantly associated, $b = -1.16$, $t (432) = -2.38$, $p = .018$. The interaction between insecure attachment styles and psychosocial maturity was not statistically significantly associated with drinking motives, $b = 0.01$, $t (432) = 1.05$, $p = .295$. This demonstrates that a moderation effect of psychosocial maturity does not occur between insecure attachment styles and drinking motives. The conditional direct effects of insecure attachment styles and drinking motives show a gradual change across psychosocial maturity at -1SD, SD, and +1SD: $c1 = 0.03$, $c2 = 0.04$, $c3 = 0.042$. Overall, the results reflect that a moderated mediation does not occur between psychosocial maturity, attachment styles, basic psychological needs and drinking motives. The moderated mediation hypothesis was not supported.
The hypothesis that psychosocial maturity would moderate the associations between attachment style and drinking motives while basic psychological needs would mediate the associations between attachment style and protective behavioral strategies were tested (Figure 3.13). A statistically significant association between basic psychological needs was present as more insecure attachment styles result in lower basic psychological needs satisfaction (path $a$), $b = -0.61, t (435) = -22.30, p = .001$. Basic psychological needs were statistically significant associated with protective behavioral strategies (path $b$), $b = 0.16, t (432) = 3.08, p = .002$, as protective behavioral strategies increased with a satisfaction of basic psychological needs. The relationship between insecure attachment styles and protective behavioral strategies, when assessed with basic psychological needs and psychosocial maturity, was not statistically significant (path $c'$), $b = .06, t (432) = 1.71, p = .088$. Psychosocial maturity and protective behavioral strategies were not statistically significantly associated, $b = 1.00, t (432) = 0.59, p = .559$. The interaction between insecure attachment styles and psychosocial maturity was not statistically significantly associated with protective behavioral strategies, $b = -0.03, t (432) = -0.62, p = .536$. This demonstrates that a moderation effect of psychosocial maturity does not occur between insecure attachment styles and protective behavioral strategies. The direct effects of insecure attachment styles and protective behavioral strategies show a gradual change across psychosocial maturity at -1SD, SD, and +1SD: $c1 = 0.08, c2 = 0.06, c3 =0.05$. Overall, the results reflect that a moderated mediation does not occur between psychosocial maturity, attachment styles, basic psychological needs, and protective behavioral strategies. The moderated mediation hypothesis was not supported.
**Figure 3.12**

*Results of Moderated Mediation of Basic Psychological Needs and Psychosocial Maturity between Avoidance and Drinking Motives*

**Figure 3.13**

*Results of Moderated Mediation of Basic Psychological Needs and Psychosocial Maturity between Avoidance and Serious Harm Reduction Strategies*
POST HOC EXPLORATORY ANALYSES

Post hoc exploratory analyses were conducted to identify relationships between variables and differences between samples. Specifically, post hoc exploratory path analyses, mediation analyses, independent samples t-test, and linear regressions were conducted to further expand the examination of the collected variables.

Post Hoc Exploratory Path Analyses

The proposed SEM model and alternative models were found to not be representative of the dataset collected but statistically significant associations were found between the variables of interest. Therefore, exploratory path analyses were conducted to evaluate the relationship of the variables of interest as well as with other measures of alcohol use and alcohol related problems, without the inclusion of the latent variable engagement in drinking.

A path analysis was conducted to examine the association between childhood experiences, attachment styles, basic psychological needs, protective behavioral strategies, and drinking motives (Figure 3.14). Poor fitting indices for the model used to assess the data were found, $\chi^2 (27) = 482.33, p < .001$, RMSEA = 0.20, 90% C.I. [0.18, 0.21], CFI = 0.68, SRMR = 0.13. See diagram of results in Figure 3.15. The association between childhood experiences, attachment styles, basic psychological needs, protective behavioral strategies, and drinking motives was examined using a path analysis (Figure 3.16). The model used to assess the data showed poor fitting indices, $\chi^2 (42) = 1617.45, p < .001$, RMSEA = 0.29, 90% C.I. [0.28, 0.31], CFI = 0.50, SRMR = 0.16. Diagram of results are in Figure 3.17.

The assessment of the association between childhood experiences, attachment styles, protective behavioral strategies, and drinking motives was conducted using a path analysis (Figure 3.18). Close to good fitting indices for the model used to assess the data were found, $\chi^2$
(15) = 140.65, \( p < .001 \), RMSEA = 0.14, 90\% C.I. [0.12, 0.16], CFI = 0.88, SRMR = 0.06. Refer to Figure 3.19 for a diagram of results. A path analysis was conducted to examine the association between childhood experiences, basic psychological needs, protective behavioral strategies, and drinking motives (Figure 3.20). Poor fitting indices for the model used to assess the data were found, \( \chi^2 (29) = 115.44, \ p < .001 \), RMSEA = 0.30, 90\% C.I. [0.28, 0.31], CFI = 0.53, SRMR = 0.11. See diagram of results in Figure 3.21.

The assessment of the association between childhood experiences, attachment styles, alcohol consumption, and alcohol-related consequences was conducted using a path analysis (Figure 3.22). Poor fitting indices for the model used to assess the data were found, \( \chi^2 (5) = 103.27, \ p < .001 \), RMSEA = 0.21, 90\% C.I. [0.18, 0.25], CFI = 0.82, SRMR = 0.09. Figure 3.23 shows a diagram of results. A path analysis was conducted to examine the association between childhood experiences, basic psychological needs, alcohol consumption, and alcohol-related consequences (Figure 3.24). Poor fitting indices for the model used to assess the data were found, \( \chi^2 (80) = 1137.27, \ p < .001 \), RMSEA = 0.37, 90\% C.I. [0.35, 0.39], CFI = 0.42, SRMR = 0.20. Refer to Figure 3.25 for a diagram of results.
Figure 3.14

Path Model 1: Relationship between Childhood Experiences, Attachment Styles, Basic Psychological Needs, Protective Behavioral Strategies, and Drinking Motives

Figure 3.15

Diagram Showing Path Model Results for Figure 3.14
Figure 3.16

Path Model 2: Relationship between Childhood Experiences, Attachment Styles, Basic Psychological Needs, Protective Behavioral Strategies, and Drinking Motives

Figure 3.17

Diagram Showing Path Model Results for Figure 3.16
Figure 3.18

Path Model 3: Relationship between Childhood Experiences, Attachment Styles, Protective Behavioral Strategies, and Drinking Motives

Figure 3.19

Diagram Showing SEM Results for Figure 3.18
Figure 3.20

Path Model 4: Relationship between Childhood Experiences, Basic Psychological Needs, Protective Behavioral Strategies, and Drinking Motives

Figure 3.21

Diagram Showing SEM Results for Figure 3.20
Figure 3.22

*Path Model 5: Relationship between Childhood Experiences, Attachment Styles, Alcohol Consumption, and Alcohol-Related Consequences*

Figure 3.23

*Diagram Showing SEM Results for Figure 3.23*
Figure 3.24

Path Model 6: Relationship between Childhood Experiences, Basic Psychological Needs, Alcohol Consumption, and Alcohol-Related Consequences

Figure 3.25

Diagram Showing SEM Results for Figure 3.24
Post Hoc Exploratory Mediation Analyses

The proposed moderated mediation model was not found significant in the collected dataset, albeit linear regressions show significant associations between attachment styles, basic psychological needs, drinking motives, and protective behavioral strategies, in both composite scores and subscale scores. Therefore, post hoc exploratory mediation analyses that included the evaluation of composite scores of each variable and each individual subscale representing attachment styles, basic psychological needs, drinking motives, and protective behavioral strategies were conducted as the primary interest of the current study was to examine the association between attachment theory and self-determination theory. A partial mediation model is tested using three regression models that predict: 1) $Y$ from $X$; 2) $M$ from $X$; and 3) $Y$ from both $X$ and $M$ (Baron & Kenny, 1996). Based on Baron & Kenny (1996) causal steps test, there are four conditions of mediation 1) $X$ must significantly predict $Y$; 2) $X$ must significantly predict $M$; and 3) $M$ must significantly predict $Y$; and 4) $X$ must predict $Y$ less strongly in model 3 than model 1. For a full mediation, a significant direct effect does not need to exist to assess the presence of a mediation (Hayes, 2018).

Two mediation models were conducted to assess the effect of attachment styles, basic psychological needs, drinking motives, and protective behavioral strategies using composite scores. Figure 3.26 shows that insecure attachment styles were a statistically significant predictor of drinking motives (path $c$), $b = .05, t (435) = 6.63, p = <.001$, where insecure attachment styles increased drinking motives. Insecure attachment styles were statistically significant negatively related to basic psychological needs as more insecure attachment styles results in lower basic psychological needs satisfaction (path $a$), $b = -0.61, t (435) = -22.30, p = <.001$. Basic psychological needs were not statistically significant related to drinking motives (path $b$), $b = -$
0.01, \( t(434) = -0.76, p = <.001 \). The relationship between insecure attachment styles and drinking motives decreased with basic psychological needs satisfaction (path \( c' \), \( b = 0.04, t(434) = 3.97, p = <.001 \). Using the bootstrapped C.I., the indirect effect was 0.01, 95% C.I. [-0.01, 0.02]. Therefore, basic psychological needs satisfaction did not mediate the effects of insecure attachment styles on drinking motives (\( F(2,434) = 22.26, p < .001; R^2 = 0.09 \)).

Figure 3.26

Results of Mediation of Basic Psychological Needs between Insecure Attachment Styles and Drinking Motives

Figure 3.27 reflects that insecure attachment styles was a statistically significant predictor of protective behavioral strategies (path \( c \), \( b = -0.05, t(435) = -2.03, p = .043 \), where insecure attachment styles decreased protective behavioral strategies. Insecure attachment styles were statistically significant related to basic psychological needs as more insecure attachment styles results in lower basic psychological needs satisfaction (path \( a \), \( b = -0.61, t(435) = -22.30, p = <.001 \). Basic psychological needs were statistically significant related to drinking motives (path \( b \), \( b = 0.18, t(434) = 4.06, p = <.001 \) as higher basic psychological needs satisfaction led to an
increase in protective behavioral strategies. The relationship between insecure attachment styles and protective behavioral strategies decreased with basic psychological needs satisfaction (path $c'$), $b = 0.04, t (434) = 1.55, p = .121$. The indirect effect was -0.11, 95% C.I. [-0.17, -0.05]. Basic psychological needs satisfaction mediated the effects of insecure attachment styles on protective behavioral strategies ($F (2,434) = 10.39, p < .001; R^2 = 0.05$).

Figure 3.27

Results of Mediation of Basic Psychological Needs between Insecure Attachment Styles and Protective Behavioral Strategies

A total of 84 possible combinations of mediation models using subscale scores to represent the variables of interest were assessed. Mediation models that resulted in a partial mediation are presented below (Figures 3.28-3.37). The model shown in Figure 3.28 indicated that avoidance was a statistically significant predictor of coping drinking motives (path $c$), $b = .173, t (435) = 8.69, p < .001$, where avoidance increased coping drinking motives. Avoidance was statistically significant related to autonomy satisfaction as more avoidance results in lower autonomy satisfaction (path $a$), $b = -0.10, t (435) = -8.07, p < .001$. Autonomy satisfaction was
statistically significant related to coping drinking motives as higher autonomy satisfaction leads to less coping drinking motives (path $b$), $b = -0.33$, $t (434) = -4.29$, $p = <.001$. The relationship between avoidance and coping drinking motives decreased with autonomy satisfaction (path $c'$), $b = 0.14$, $t (434) = 6.72$, $p = <.001$. Using the bootstrapped confidence interval, the indirect effect was 0.03, 95% C.I. [0.01, .05]. Autonomy satisfaction mediated the effects of avoidance on coping drinking motives ($F (2,434) = 48.47, p < .001; R^2 = 0.18$).

![Diagram](image)

**Figure 3.28**

*Results of Mediation of Autonomy Satisfaction between Avoidance and Coping Drinking Motives*

As illustrated in Figure 3.29, the model indicated that avoidance was a statistically significant predictor of coping drinking motives (path $c$), $b = .17$, $t (435) = 8.69$, $p = <.001$, where avoidance increased coping drinking motives. Avoidance was statistically significant related to autonomy frustration as more avoidance results in higher autonomy frustration (path $a$), $b = 0.13$, $t (435) = 8.94$, $p = <.001$. Autonomy frustration was statistically significant related to coping drinking motives as higher autonomy frustration leads to more coping drinking motives (path $b$), $b = 0.33$, $t (434) = 5.03$, $p = <.001$. The relationship between avoidance and
coping drinking motives decreased with autonomy satisfaction (path $c'$), $b = 0.13$, $t (434) = 6.22$, $p = <.001$. The indirect effect was 0.04, 95% C.I. [0.02, 0.06]. Autonomy frustration mediated the effects of avoidance on coping drinking motives ($F (2, 434) = 52.48$, $p < .001$; $R^2 = 0.20$).

![Diagram showing mediation of autonomy frustration between avoidance and coping drinking motives](image)

**Figure 3.29**

*Results of Mediation of Autonomy Frustration between Avoidance and Coping Drinking Motives*

Figure 3.30 illustrates that avoidance was a statistically significant predictor of coping drinking motives (path $c$), $b = .17$, $t (435) = 8.69$, $p = <.001$, where avoidance increased coping drinking motives. Avoidance was statistically significant related to relationship frustration as more avoidance results in higher relationship frustration (path $a$), $b = 0.15$, $t (435) = 11.66$, $p = <.001$. Relationship frustration was statistically significant related to coping drinking motives as higher relationship frustration leads to more coping drinking motives (path $b$), $b = 0.26$, $t (434) = 3.63$, $p = <.001$. The relationship between avoidance and coping drinking motives decreased with relationship frustration (path $c'$), $b = 0.13$, $t (434) = 5.92$, $p = <.001$. The indirect effect was 0.04,
95% C.I. [0.02, 0.06]. Relatedness frustration mediated the effects of avoidance on coping drinking motives \( (F(2,434) = 45.38, p < .001; R^2 = 0.17) \).

Avoidance was a statistically significant predictor of coping drinking motives (path \( c \)), \( b = .17, t(435) = 8.69, p = <.001 \), where avoidance increased coping drinking motives (see Figure 3.31). Avoidance was statistically significant related to competence satisfaction as more avoidance results in lower competence satisfaction (path \( a \)), \( b = -0.11, t(435) = -8.39, p = <.001 \). Competence satisfaction was statistically significant related to coping drinking motives as higher competence satisfaction leads to less coping drinking motives (path \( b \)), \( b = -0.35, t(434) = -4.98, p = <.001 \). The relationship between avoidance and coping drinking motives decreased with competence satisfaction (path \( c' \)), \( b = 0.13, t(434) = 6.42, p = <.001 \). The indirect effect was 0.04, 95% C.I. [0.02, 0.06]. Competence satisfaction mediated the effects of avoidance on coping drinking motives \( (F(2,434) = 52.19, p < .001; R^2 = 0.19) \).
Results of Mediation of Competence Satisfaction between Avoidance and Coping Drinking Motives

As observed in Figure 3.32, avoidance was a statistically significant predictor of coping drinking motives (path $c$), $b = .17$, $t (435) = 8.69$, $p = <.001$, where avoidance increased coping drinking motives. Avoidance was statistically significant related to competence frustration as more avoidance results in higher competence frustration (path $a$), $b = 0.18$, $t (435) = 10.96$, $p = <.001$. Competence frustration was statistically significant related to coping drinking motives as higher competence frustration leads to more coping drinking motives (path $b$), $b = 0.31$, $t (434) = 5.53$, $p = <.001$. The relationship between avoidance and coping drinking motives decreased with competence frustration (path $c'$), $b = 0.12$, $t (434) = 5.38$, $p = <.001$. The indirect effect was 0.06, 95% C.I. [0.03, 0.08]. Competence frustration mediated the effects of avoidance on coping drinking motives ($F (2,434) = 55.58$, $p < .001$; $R^2 = 0.20$).
Results of Mediation of Competence Frustration between Avoidance and Coping Drinking Motives

Modeled by Figure 3.33, relationship anxiety was a statistically significant predictor of coping drinking motives (path c), $b = 0.19$, $t (435) = 10.21$, $p = <.001$, where relationship anxiety increased coping drinking motives. Relationship anxiety was statistically significant related to autonomy satisfaction as higher relationship anxiety results in lower autonomy satisfaction (path $a$), $b = -0.12$, $t (435) = -10.93$, $p = <.001$. Autonomy satisfaction was statistically significant related to coping drinking motives as higher autonomy satisfaction leads to less coping drinking motives (path $b$), $b = -0.23$, $t (434) = -2.87$, $p = .004$. The relationship between relationship anxiety and coping drinking motives decreased with autonomy satisfaction (path $c'$), $b = 0.16$, $t (434) = 7.79$, $p = <.001$. The indirect effect was 0.03, 95% C.I. [0.01, .05]. Autonomy satisfaction mediated the effects of relationship anxiety on coping drinking motives ($F (2,434) = 57.07, p < .001; R^2 = 0.21$).
Figure 3.33

Results of Mediation of Autonomy Satisfaction between Avoidance and Coping Drinking Motives

Figure 3.34 indicates that relationship anxiety was a statistically significant predictor of coping drinking motives (path c), $b = 0.19$, $t(435) = 10.21$, $p < .001$, where relationship anxiety increased coping drinking motives. Relationship anxiety was statistically significant related to autonomy frustration as more relationship anxiety results in higher autonomy frustration (path a), $b = 0.17$, $t(435) = 13.32$, $p < .001$. Autonomy frustration was statistically significant related to coping drinking motives as higher autonomy frustration leads to more coping drinking motives (path b), $b = 0.22$, $t(434) = 3.17$, $p = .002$. The relationship between relationship anxiety and coping drinking motives decreased with autonomy frustration (path c'), $b = 0.15$, $t(434) = 6.99$, $p < .001$. The indirect effect was 0.04, 95% C.I. [0.01, 0.06]. Autonomy frustration mediated the effects of relationship anxiety on coping drinking motives ($F(2,434) = 58.22$, $p < .001$; $R^2 = 0.21$).
As modeled in Figure 3.35, relationship anxiety was a statistically significant predictor of conformity drinking motives (path $c$), $b = .06$, $t(435) = 4.38$, $p = .001$, where relationship anxiety increased conformity drinking motives. Relationship anxiety was statistically significant related to autonomy frustration as more avoidance results in higher autonomy frustration (path $a$), $b = 0.17$, $t(435) = 13.32$, $p = .001$. Autonomy frustration was statistically significant related to conformity drinking motives as higher autonomy frustration leads to more conformity drinking motives (path $b$), $b = 0.12$, $t(434) = 2.18$, $p = .030$. The relationship between relationship anxiety and coping drinking motives decreased with autonomy frustration (path $c'$), $b = 0.04$, $t(434) = 2.53$, $p = .001$. The indirect effect was 0.02, 95% C.I. [0.003, 0.04].

Autonomy frustration mediated the effects of relationship anxiety on coping drinking motives ($F(2,434) = 12.03$, $p < .001$; $R^2 = 0.05$).
Results of Mediation of Autonomy Frustration between Relationship Anxiety and Conformity Drinking Motives

Figure 3.36 shows that relationship anxiety was a statistically significant predictor of coping drinking motives (path c), $b = .19, t (435) = 10.21, p = <.001$, where relationship anxiety increased coping drinking motives. Relationship anxiety was statistically significant related to competence satisfaction as more relationship anxiety results in lower conformity satisfaction (path a), $b = -0.17, t (435) = -14.88, p = <.001$. Competence satisfaction was statistically significant related to coping drinking motives as higher conformity satisfaction leads to less coping drinking motives (path b), $b = -0.20, t (434) = -2.50, p = .013$. The relationship between relationship anxiety and coping drinking motives decreased with competence satisfaction (path c’), $b = 0.16, t (434) = 6.91, p = <.001$. The indirect effect was $0.03$, 95% C.I. [0.01, 0.06]. Competence satisfaction mediated the effects of relationship anxiety on coping drinking motives ($F (2,434) = 55.86, p < .001; R^2 = 0.21$).
Relationship anxiety was a statistically significant predictor of coping drinking motives (path c), $b = .19, t(435) = 10.21, p < .001$, where relationship anxiety increased coping drinking motives (Refer to Figure 3.37). Relationship anxiety was statistically significant related to competence frustration as higher relationship anxiety results in higher competence frustration (path $a$), $b = .26, t(435) = 20.73, p < .001$. Competence frustration was statistically significant related to coping drinking motives as higher competence frustration leads to more coping drinking motives (path $b$), $b = .18, t(434) = 2.59, p = .010$. The relationship between relationship anxiety and coping drinking motives decreased with autonomy satisfaction (path $c'$), $b = .14, t(434) = 5.47, p < .001$. The indirect effect was 0.05, 95% C.I. [0.01, 0.08]. Competence frustration mediated the effects of avoidance attachment style on coping drinking motives ($F(2,434) = 56.13, p < .001; R^2 = 0.21$).
Mediation models that resulted in a full mediation are presented below (Figure 3.38-3.41). Figure 3.38 indicates that avoidance was a statistically significant predictor of serious harm reduction drinking strategies (path c), $b = -0.04, t(435) = -2.57, p = .010$, where avoidance decreased serious harm reduction drinking strategies. Avoidance was statistically significant related to autonomy satisfaction as more avoidance results in lower autonomy satisfaction (path a), $b = -0.10, t(435) = -8.07, p < .001$. Autonomy satisfaction was statistically significant related to serious harm reduction drinking strategies as higher autonomy satisfaction leads to a higher use of serious harm reduction drinking strategies (path b), $b = 0.15, t(435) = 2.33, p = .021$. The relationship between avoidance and serious harm reduction drinking strategies decreased with autonomy frustration (path c'), $b = -0.03, t(434) = -1.57, p = .117$ and let to a non-significant direct effect. The indirect effect was $-0.02$, 95% C.I. $[-0.030, -0.001]$. Autonomy
satisfaction mediated the effects of avoidance on serious harm reduction drinking strategies ($F(2,434) = 6.04, p = .003; R^2 = 0.03$).

![Diagram of mediation](image)

**Figure 3.38**

*Results of Mediation of Autonomy Satisfaction between Avoidance and Serious Harm Reduction Strategies*

As reported in Figure 3.39, avoidance was a statistically significant predictor of serious harm reduction drinking strategies (path $c$), $b = -0.04, t(435) = -2.57, p = .010$, where avoidance increased serious harm reduction drinking strategies. Avoidance was statistically significant related to relatedness satisfaction as more avoidance results in lower relationship satisfaction (path $a$), $b = -0.16, t(435) = -14.14, p < .001$. Relatedness satisfaction was statistically significant related to serious harm reduction drinking strategies as higher relationship satisfaction led to more serious harm reduction drinking strategies (path $b$), $b = 0.32, t(434) = 4.88, p < .001$. The relationship between avoidance and serious harm reduction drinking strategies decreased with relatedness satisfaction (path $c'$), $b = 0.01, t(434) = 0.56, p = .58$ and let to a non-significant direct effect. The indirect effect was $-0.05, 95\%$ C.I. $[-0.08, -0.03]$. Relationship
satisfaction mediated the effects of avoidance on serious harm reduction drinking strategies ($F(2,434) = 15.40, p < .001; R^2 = 0.07$).

In Figure 3.40 it can be observed that avoidance was a statistically significant predictor of serious harm reduction drinking strategies (path $c$), $b = -.04, t(435) = -2.57, p = .010$, where avoidance decreased serious harm reduction drinking strategies. Avoidance was statistically significant related to relationship frustration as more avoidance results in higher relationship frustration (path $a$), $b = 0.15, t(435) = 11.66, p = <.001$. Relationship frustration was statistically significant related to serious harm reduction drinking strategies as higher relationship frustration leads to less serious harm reduction drinking strategies (path $b$), $b = -0.21, t(434) = -3.47, p = .001$. The relationship between avoidance and serious harm reduction drinking strategies decreased with relationship frustration (path $c'$), $b = -0.01, t(434) = -0.58, p = .562$ and let to a non-significant direct effect. The indirect effect was $-0.03$, 95% C.I. [-0.05, -0.01]. Relationship
frustration mediated the effects of avoidance on serious harm reduction drinking strategies ($F(2,434) = 9.41, p < .001; R^2 = 0.04$).

![Diagram](image)

Figure 3.40

Results of Mediation of Relationship Frustration between Avoidance and Serious Harm Reduction Strategies

Figure 3.41 shows that relationship anxiety was a statistically significant predictor of enhancement drinking motives (path $c$), $b = .04$, $t (435) = 2.34$, $p = .012$, where relationship anxiety increased enhancement drinking motives. Relationship anxiety was statistically significant related to autonomy frustration as higher relationship anxiety results in higher autonomy frustration (path $a$), $b = 0.17$, $t (435) = 13.32$, $p = <.001$. Autonomy frustration was statistically significant related to enhancement drinking motives as higher autonomy frustration leads to more enhancement drinking motives (path $b$), $b = .16$, $t (434) = 2.28$, $p = .023$. The relationship between avoidance attachment style and enhancement drinking motives decreased with autonomy frustration (path $c'$), $b = 0.02$, $t (434) = 0.75$, $p = .453$ and let to a non-significant direct effect. The indirect effect was 0.03, 95% C.I. [0.004, 0.049]. Autonomy frustration
mediated the effects of avoidance attachment style on enhancement drinking motives \( F(2, 434) = 5.36, p = .005; R^2 = 0.02 \).

![Diagram](attachment:diagram.png)

**Figure 3.41**

*Results of Mediation of Autonomy Frustration between Relationship Anxiety and Enhancement Drinking Motives*

**Post Hoc Exploratory Independent Samples t-Tests**

Post hoc exploratory independent samples t-test were conducted in SPSS 27 to examine differences between the means reported by Prolific participants and UTEP participants in the variables collected. Differences between the means reported by participants who are college students and non-college students were also examined using independent samples t-test. Lastly, an independent samples t-test was used to assess differences in means reported by males and females.

Independent samples t-test show a statistically significant difference between the means reported by Prolific users \( M = 3.03, SD = 0.44 \) and UTEP students \( M = 3.28, SD = 0.43 \) in self-reliance \( t(435) = -3.97, p = <.001 \). A statistically significant difference was also seen in the means of relationship anxiety between Prolific users \( M = 47.67, SD = 11.67 \) and UTEP
students \((M = 42.30, SD = 13.37), t (435) = 3.17, p = 0.002\). Autonomy frustration was also statistically significantly different between Prolific users \((M = 11.40, SD = 3.71)\) and UTEP students \((M = 10.28, SD = 3.59), t (435) = 2.12, p = 0.035\). Statistically significant differences were reported for all drinking motives: social motives in Prolific users \((M = 18.04, SD = 4.62)\) and UTEP students \((M = 15.93, SD = 5.25), t (435) = 3.16, p = 0.002\); coping motives in Prolific users \((M = 12.99, SD = 5.10)\) and UTEP students \((M = 11.44, SD = 5.51), t (435) = 2.11, p = 0.035\); enhancement motives in Prolific users \((M = 16.30, SD = 4.52)\) and UTEP students \((M = 14.35, SD = 5.22), t (435) = 2.97, p = 0.003\); conformity motives in Prolific users \((M = 8.53, SD = 3.69)\) and UTEP students \((M = 7.21, SD = 2.69), t (435) = 2.59, p = 0.010\); and total drinking motives in Prolific users \((M = 13.96, SD = 3.12)\) and UTEP students \((M = 12.23, SD = 3.48), t (435) = 3.85, p < .001\). Also, statistically significantly differences were seen in the means of manner of drinking protective strategies in Prolific users \((M = 24.36, SD = 6.10)\) and UTEP students \((M = 26.28, SD = 7.12), t (435) = -2.16, p = .031\). AUDIT scores were statistically significantly different between Prolific users \((M = 4.95, SD = 4.33)\) and UTEP students \((M = 3.23, SD = 2.63), t (432) = 2.92, p = 0.004\). Average drinks consumed per week were statistically significantly different between Prolific users \((M = 10.97, SD = 10.54)\) and UTEP students \((M = 7.73, SD = 6.14), t (432) = 2.22, p = .027\). Lastly, heaviest drinks consumed per week were statistically significantly different between Prolific users \((M = 17.51, SD = 14.49)\) and UTEP students \((M = 11.82, SD = 8.14), t (435) = 2.85, p = .005\). Refer to Table 3.30 for a complete list of means and results for the independent samples t-test.
Table 3.30

Independent Samples t-Test Comparing Prolific and UTEP Samples

<table>
<thead>
<tr>
<th>Variables</th>
<th>Prolific (n = 380)</th>
<th>UTEP (n = 57)</th>
<th>Independent Samples t-test</th>
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<tbody>
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<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
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<tr>
<td>PACES-Positive Experiences</td>
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<tr>
<td>PBSS- Manner of Drinking</td>
<td>24.36</td>
<td>6.10</td>
<td>26.28</td>
</tr>
<tr>
<td>PBSS- Total Protective Strategies</td>
<td>53.31</td>
<td>10.54</td>
<td>55.83</td>
</tr>
<tr>
<td>AUDIT</td>
<td>4.95</td>
<td>4.33</td>
<td>3.23</td>
</tr>
<tr>
<td>DDQ- Average Drinks per Week</td>
<td>10.97</td>
<td>10.54</td>
<td>7.73</td>
</tr>
<tr>
<td>DDQ- Heaviest Drinks per Week</td>
<td>17.51</td>
<td>14.49</td>
<td>11.82</td>
</tr>
<tr>
<td>BYAACQ Total Score</td>
<td>7.02</td>
<td>5.06</td>
<td>6.14</td>
</tr>
<tr>
<td>CIS- Overall Impact</td>
<td>15.87</td>
<td>4.19</td>
<td>15.91</td>
</tr>
</tbody>
</table>

Results from the independent samples t-test show a statistically significant difference between the means reported by college students ($M = 3.11, SD = 0.44$) and non-college students ($M = 2.99, SD = 0.43$) in self-reliance ($t(435) = 2.71, p = .007$). Identity means were also...
statistically significantly different between college students ($M = 3.12, SD = 0.61$) and non-college students ($M = 2.99, SD = 0.68$), $t (435) = 2.00, p = .046$. Lastly, a statistically significantly difference was reported in social drinking motives between college students ($M = 18.28, SD = 4.63$) and non-college students ($M = 16.93, SD = 4.84$), $t (435) = 2.89, p = .004$. See Table 3.31 for a complete list of means and results for the independent samples $t$-test.

Table 3.31

Independent Samples $t$-Test Comparing College and Non-College Students

<table>
<thead>
<tr>
<th>Variables</th>
<th>College ($n = 271$)</th>
<th>Non-College ($n = 166$)</th>
<th>Independent Samples $t$-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
</tr>
<tr>
<td>PACES-Positive Experiences</td>
<td>7.85</td>
<td>2.37</td>
<td>7.43</td>
</tr>
<tr>
<td>PACES- Adverse Experiences</td>
<td>2.09</td>
<td>2.15</td>
<td>2.39</td>
</tr>
<tr>
<td>PACES- Overall</td>
<td>15.75</td>
<td>3.91</td>
<td>15.04</td>
</tr>
<tr>
<td>PSMI- Self-Reliance</td>
<td>3.11</td>
<td>0.44</td>
<td>2.99</td>
</tr>
<tr>
<td>PSMI- Identity</td>
<td>3.12</td>
<td>0.61</td>
<td>2.99</td>
</tr>
<tr>
<td>PSMI- Work Orientation</td>
<td>2.81</td>
<td>0.56</td>
<td>2.86</td>
</tr>
<tr>
<td>PSMI- Overall</td>
<td>3.01</td>
<td>0.45</td>
<td>2.95</td>
</tr>
<tr>
<td>ASQSF- Avoidance</td>
<td>54.98</td>
<td>11.33</td>
<td>55.68</td>
</tr>
<tr>
<td>ASQSF- Relationship Anxiety</td>
<td>46.37</td>
<td>12.09</td>
<td>47.94</td>
</tr>
<tr>
<td>ASQSF- Insecure Attachment</td>
<td>101.35</td>
<td>20.32</td>
<td>103.62</td>
</tr>
<tr>
<td>BPNSNF- Autonomy Satisfaction</td>
<td>14.14</td>
<td>2.97</td>
<td>13.59</td>
</tr>
<tr>
<td>BPNSNF- Autonomy Frustration</td>
<td>11.12</td>
<td>3.64</td>
<td>11.46</td>
</tr>
<tr>
<td>BPNSNF- Relatedness Satisfaction</td>
<td>15.77</td>
<td>3.46</td>
<td>15.87</td>
</tr>
<tr>
<td>BPNSNF- Relatedness Frustration</td>
<td>8.30</td>
<td>3.64</td>
<td>8.27</td>
</tr>
<tr>
<td>BPNSNF- Competence Satisfaction</td>
<td>14.71</td>
<td>3.22</td>
<td>14.48</td>
</tr>
<tr>
<td>BPNSNF- Competence Frustration</td>
<td>10.81</td>
<td>4.34</td>
<td>11.36</td>
</tr>
<tr>
<td>BPNSNF- Total Need Satisfaction</td>
<td>86.38</td>
<td>16.51</td>
<td>84.84</td>
</tr>
<tr>
<td>DMQR- Social Motives</td>
<td>18.28</td>
<td>4.63</td>
<td>16.934</td>
</tr>
<tr>
<td>DMQR- Coping Motives</td>
<td>12.58</td>
<td>5.10</td>
<td>13.13</td>
</tr>
<tr>
<td>DMQR- Enhancement Motives</td>
<td>16.19</td>
<td>4.64</td>
<td>15.80</td>
</tr>
<tr>
<td>DMQR- Conformity Motives</td>
<td>8.61</td>
<td>3.77</td>
<td>7.934</td>
</tr>
<tr>
<td>DMQR- Total Drinking Motives</td>
<td>13.91</td>
<td>3.28</td>
<td>13.45</td>
</tr>
<tr>
<td>PBSS- Serious Harm Reduction</td>
<td>19.88</td>
<td>3.66</td>
<td>19.37</td>
</tr>
<tr>
<td>PBSS- Stopping/Limiting Drinking</td>
<td>9.28</td>
<td>3.69</td>
<td>9.43</td>
</tr>
<tr>
<td>PBSS- Manner of Drinking</td>
<td>24.41</td>
<td>6.21</td>
<td>24.95</td>
</tr>
<tr>
<td>PBSS- Total Protective Strategies</td>
<td>53.57</td>
<td>10.68</td>
<td>53.75</td>
</tr>
<tr>
<td>AUDIT</td>
<td>4.62</td>
<td>4.02</td>
<td>4.89</td>
</tr>
<tr>
<td>DDQ- Average Drinks per Week</td>
<td>10.64</td>
<td>11.42</td>
<td>8.73</td>
</tr>
</tbody>
</table>
Independent samples $t$-test reflect a statistically significant difference in the means of relationship anxiety between males ($M = 43.93, SD = 12.34$) and females ($M = 48.14, SD = 11.72$), $t (435) = -3.33, p < .001$. The means for the overall insecure attachment were also statistically significantly different between males ($M = 98.97, SD = 20.35$) and females ($M = 103.47, SD = 20.74$), $t (435) = -2.05, p = .041$. Statistically significantly mean differences were seen in the use of most protective behavioral strategies between males and females: serious harm reduction strategies in males ($M = 17.54, SD = 4.71$) and females ($M = 20.51, SD = 3.22$), $t (435) = -7.54, p < .001$; manner of drinking strategies in males ($M = 23.18, SD = 6.66$) and females ($M = 25.17, SD = 6.03$), $t (435) = -3.00, p = .003$; and total use of protective behavioral strategies in males ($M = 49.82, SD = 12.29$) and females ($M = 55.11, SD = 9.88$), $t (435) = -4.68, p < .001$.

Average number of drinks consumed per week was also statistically significantly different between males ($M = 13.65, SD = 12.65$) and females ($M = 9.36, SD = 8.73$), $t (432) = 4.01, p < .001$. Heaviest number of drinks consumed per week was also statistically significantly different in males ($M = 21.25, SD = 17.03$) and females ($M = 15.07, SD = 12.19$), $t (432) = 4.21, p < .001$. Lastly, a statistically significant difference was found in the overall impact of COVID-19 in males ($M = 14.89, SD = 4.68$) and females ($M = 16.26, SD = 3.97$), $t (432) = -3.06, p = .002$. Table 3.32 contains a complete list of means and results for the independent samples $t$-test.
### Table 3.32

**Independent Samples t-Test Comparing Males and Females**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Males ($n = 380$)</th>
<th>Females ($n = 57$)</th>
<th>Independent Samples $t$-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>PACES-Positive Experiences</td>
<td>7.50</td>
<td>7.76</td>
<td>435</td>
</tr>
<tr>
<td>PACES- Adverse Experiences</td>
<td>2.09</td>
<td>2.25</td>
<td>435</td>
</tr>
<tr>
<td>PACES- Overall</td>
<td>15.41</td>
<td>15.51</td>
<td>435</td>
</tr>
<tr>
<td>PSMI- Self-Reliance</td>
<td>3.10</td>
<td>3.05</td>
<td>435</td>
</tr>
<tr>
<td>PSMI- Identity</td>
<td>3.09</td>
<td>3.06</td>
<td>435</td>
</tr>
<tr>
<td>PSMI- Work Orientation</td>
<td>2.83</td>
<td>2.82</td>
<td>435</td>
</tr>
<tr>
<td>PSMI- Overall</td>
<td>3.01</td>
<td>2.98</td>
<td>435</td>
</tr>
<tr>
<td>ASQSF- Avoidance</td>
<td>55.04</td>
<td>55.32</td>
<td>435</td>
</tr>
<tr>
<td>ASQSF- Relationship Anxiety</td>
<td>43.93</td>
<td>48.14</td>
<td>435</td>
</tr>
<tr>
<td>ASQSF- Insecure Attachment</td>
<td>98.97</td>
<td>103.47</td>
<td>435</td>
</tr>
<tr>
<td>BPNSNF- Autonomy Satisfaction</td>
<td>13.98</td>
<td>13.91</td>
<td>435</td>
</tr>
<tr>
<td>BPNSNF- Autonomy Frustration</td>
<td>11.30</td>
<td>11.23</td>
<td>435</td>
</tr>
<tr>
<td>BPNSNF- Relatedness Satisfaction</td>
<td>15.65</td>
<td>15.87</td>
<td>435</td>
</tr>
<tr>
<td>BPNSNF- Relatedness Frustration</td>
<td>8.311</td>
<td>8.28</td>
<td>435</td>
</tr>
<tr>
<td>BPNSNF- Competence Satisfaction</td>
<td>15.11</td>
<td>14.43</td>
<td>435</td>
</tr>
<tr>
<td>BPNSNF- Competence Frustration</td>
<td>10.76</td>
<td>11.12</td>
<td>435</td>
</tr>
<tr>
<td>BPNSNF- Total Need Satisfaction</td>
<td>86.36</td>
<td>85.57</td>
<td>435</td>
</tr>
<tr>
<td>DMQR- Social Motives</td>
<td>17.07</td>
<td>18.04</td>
<td>435</td>
</tr>
<tr>
<td>DMQR- Coping Motives</td>
<td>12.28</td>
<td>12.98</td>
<td>435</td>
</tr>
<tr>
<td>DMQR- Enhancement Motives</td>
<td>16.71</td>
<td>15.79</td>
<td>435</td>
</tr>
<tr>
<td>DMQR- Conformity Motives</td>
<td>8.40</td>
<td>8.34</td>
<td>435</td>
</tr>
<tr>
<td>DMQR- Total Drinking Motives</td>
<td>13.61</td>
<td>13.79</td>
<td>435</td>
</tr>
<tr>
<td>PBSS- Serious Harm Reduction</td>
<td>17.54</td>
<td>20.51</td>
<td>435</td>
</tr>
<tr>
<td>PBSS- Stopping/Limiting Drinking</td>
<td>9.10</td>
<td>9.43</td>
<td>435</td>
</tr>
<tr>
<td>PBSS- Manner of Drinking</td>
<td>23.18</td>
<td>25.17</td>
<td>435</td>
</tr>
<tr>
<td>PBSS- Total Protective Strategies</td>
<td>49.82</td>
<td>55.11</td>
<td>435</td>
</tr>
<tr>
<td>AUDIT</td>
<td>5.42</td>
<td>4.46</td>
<td>435</td>
</tr>
<tr>
<td>DDQ- Average Drinks per Week</td>
<td>13.65</td>
<td>9.36</td>
<td>432</td>
</tr>
<tr>
<td>DDQ- Heaviest Drinks per Week</td>
<td>21.25</td>
<td>12.19</td>
<td>432</td>
</tr>
<tr>
<td>BYAACQ Total Score</td>
<td>6.89</td>
<td>6.91</td>
<td>435</td>
</tr>
<tr>
<td>CIS- Overall Impact</td>
<td>14.89</td>
<td>16.26</td>
<td>435</td>
</tr>
</tbody>
</table>
Post Hoc Exploratory Hierarchical Multiple Linear Regressions Considering the Effects of COVID-19

Hierarchical multiple linear regressions considering the effects of COVID-19 on the relationship between proximal outcomes of alcohol use, alcohol use, and alcohol-related consequences and attachment styles and basic psychological needs were examined. A total of four hierarchical multiple linear regressions were conducted in SPSS 27. The first hierarchical multiple linear regression examined the association of attachment styles and basic psychological needs with drinking motives while controlling for the impact of COVID-19. In step 1, the impact of COVID-19 contributed significantly to the regression model, $F(1,435) = 5.81, p = .016$, and accounted for 1.32% of the variance in drinking motives. When insecure attachment styles and basic psychological needs were added in step 2, the model explained 9.35% of the variance, $F(3,433) = 14.89, p < .001$). Therefore, the impact of COVID-19 did not contribute to the variance beyond the contribution of insecure attachment styles and basic psychological needs to drinking motives.

The second hierarchical multiple linear regression examined the association of attachment styles and basic psychological needs with protective behavioral strategies while controlling for the impact of COVID-19. In step 1, the impact of COVID-19 did not contribute significantly to the regression model, $F(1,435) = 0.03, p = .861$, and accounted for 0.01% of the variance in drinking motives. The model explained 4.92% of the variance when insecure attachment styles and basic psychological needs were added in step 2, $F(3,433) = 7.46, p < .001$). The impact of COVID-19 did not contribute to the variance beyond the contribution of insecure attachment styles and basic psychological needs to protective behavioral strategies.
The third hierarchical multiple linear regression examined the association of attachment styles and basic psychological needs with alcohol use while controlling for the impact of COVID-19. In step 1, the impact of COVID-19 contributed significantly to the regression model, $F(1,435) = 8.19, p = .004$, and accounted for 1.85% of the variance in drinking motives. In step 2, insecure attachment styles and basic psychological needs were added, and the model explained 9.51% of the variance, $F(3,433) = 15.17, p < .001$). The impact of COVID-19 did not contribute to the variance beyond the contribution of insecure attachment styles and basic psychological needs to alcohol use.

The fourth hierarchical multiple linear regression examined the association of attachment styles and basic psychological needs with alcohol-related consequences while controlling for the impact of COVID-19. In step 1, the impact of COVID-19 did not contribute significantly to the regression model, $F(1,435) = 24.17, p < .001$, and accounted for 5.05% of the variance in drinking motives. Insecure attachment styles and basic psychological needs were added in step 2 and the model explained 10.07% of the variance, $F(3,433) = 17.28, p < .001$). The impact of COVID-19 did not contribute to the variance beyond the contribution of insecure attachment styles and basic psychological needs to alcohol-related consequences.
Chapter 4: Discussion

The current study recruited participants from UTEP, including an undergraduate student college sample, and from the online recruitment site, Prolific. The online survey completed by the participants was designed to collect information from emerging adults about the variables of interest in the present study. The present study contributed to the understanding of the integrative association of self-determination theory and attachment theory in relation to drinking motives and protective behavioral strategies in emerging adults. Examining the association between attachment styles and basic psychological needs satisfaction with proximal determinants of alcohol use as well as risk and protective factors, provided a foundational understanding of the processes that connect the variables.

Summary of Linear Regressions Results

Relationship between Childhood Experiences and Attachment Styles

The hypothesis that negative childhood experiences would be associated with insecure attachment styles was tested. The present study confirmed the first hypothesis that negative childhood experiences would be associated with insecure attachment styles, to include avoidance and relationship anxiety. In addition, it was demonstrated that insecure attachment styles were less likely to be associated with positive childhood experiences. More in detail, it was also reported that avoidance and relationship anxiety decreased with positive childhood experiences. The current results are supported by previous findings that state that adverse childhood experiences and positive childhood experiences influence the physical and mental health outcome in adulthood (Shonkoff et al., 2012). As presented in the findings, adverse childhood experiences have an impact in adulthood leading to insecure attachment styles, especially in
females. Additionally, adolescents and young adults who have developed an insecure attachment are prone to alcohol and substance use disorders (Kotov, 2006), as reflected in the present study.

In the current sample, a higher-than-average percentage of people experiencing a minimum of one adverse childhood experience was identified. Data reflects that close to two-thirds of adults have experienced a minimum of one adverse childhood experience (61.00%; Merrick et al., 2019), while in the present study this description represented 74.14% of the sample. More extensively, adverse childhood experiences have been associated with alcohol abuse (Defronzo & Pawlak, 1993) while positive childhood experiences have been found to reduce the impact of adverse childhood experiences leading to an increase in healthy development (Sege & Browne, 2017). Similar findings were reported in the current study as more adverse childhood experiences were associated with higher alcohol use.

**Relationship between Attachment Styles and the Proximal Determinants of Alcohol Use:**

**Drinking Motives and Protective Behavioral Strategies**

The study also evaluated the hypothesis that insecure attachment styles would be associated with higher number of drinking motives. The results partially confirmed the hypothesis that insecure attachment styles would be associated with higher number of drinking motives. Results demonstrated that drinking motives increased with insecure attachment styles. Specifically, coping and conformity drinking motives increased with avoidance and relationship anxiety while there was no association between social and enhancement drinking motives with insecure attachment styles. Although it is a less commonly reported drinking motive than the social motive, coping motives have been associated with negative alcohol-related consequences (Cooper et al., 2016). One explanation for these findings may be that drinking motives were studied in relation to attachment styles. It has been reported that people who experience an
adverse childhood are more likely to engage in excessive alcohol use later in life (Lee & Chen, 2017). Also, adverse childhood experiences have been associated with an insecure attachment style (Defronzo & Pawlak, 1993). Thus, it can be concluded that people with insecure attachment styles are prone to engage in alcohol use as a way of coping with more frequency than having other drinking motives. Therefore, it is important to introduce healthy ways of coping to emerging adults to reduce alcohol-related consequences.

The hypothesis testing the relationship of secure attachment styles and a higher use of protective behavioral strategies was also assessed. The use of protective behavioral strategies decreased with insecure attachment styles. In particular, the use of serious harm reduction strategies decreased with avoidance. Nonetheless, insecure attachment styles were not significantly associated with stopping/limiting drinking strategies and manner of drinking strategies, although the expected direction was observed. It can be concluded that the results partially confirmed the hypothesis about protective behavioral strategies and insecure attachment styles. When describing protective behavioral strategies, serious harm reduction strategies are known to focus on reducing the potential harms of alcohol use. Specifically, serious harm reduction strategies have a direct effect on alcohol-related consequences, confirmed by past findings associating it with fewer alcohol-related consequences (Napper et al., 2014). Therefore, one explanation for the findings could be that people with an avoidance attachment style are more likely to engage in serious harm reduction strategies, such as “Know [-ing] where your [-their] drink has been at all times,” to prevent alcohol-related consequences given that avoidant attachment style is reflected by expressing difficulty to trust on others (Ainsworth et al., 1978). These findings warrant the need to continue to study the effect attachment style has on protective behavioral strategies since both factors also have an association with alcohol. For example, it has
been reported that a higher frequency of use of protective behavioral strategies reduced the positive association between negative urgency and alcohol use/problems (Weaver et al., 2012). Therefore, future studies should evaluate how secure and insecure attachment styles differentiate in the use of protective behavioral strategies given that the measured used to assess attachment style only provided the subscales for avoidance and relationship anxiety.

**Relationship Examining the Integration of Attachment Theory and Self-Determination Theory: Attachment Styles and Basic Psychological Needs**

It was hypothesized that insecure attachment styles would be associated with higher basic psychological needs frustration while secure attachment styles would be associated with higher basic psychological needs satisfaction. Satisfaction of basic psychological needs decreased with insecure attachment styles. Specifically, the satisfaction of autonomy, relatedness, and competence decreased with avoidance and relationship anxiety. Correspondingly, the frustration of autonomy, relatedness, and competence increased with avoidance and relationship anxiety. Therefore, the hypothesis that insecure attachment styles would be associated with higher basic psychological needs frustration while secure attachment style would be associated with higher basic psychological needs satisfaction was confirmed. Past findings support the results since parenting styles that promote the development of autonomy contribute to the well-being of adolescents. That is, parents who help develop a secure attachment in their children will also help develop autonomy. For example, it has been found that higher levels of parental support were associated with higher well-being and autonomous-self in adolescents (Kocayörük et al., 2015). Therefore, future studies should evaluate specific factors that help develop a secure attachment to increase not only secure attachments but also autonomy in children to decrease alcohol use in the future.
Furthermore, parental over involvement can lead to an insecure attachment style, which has been associated with a higher level of alcohol consumption and lower levels of psychological needs satisfaction and self-control (Cui et al., 2018). On the other hand, parents who support the development of their children’s autonomy results in their children having a higher ability to control their behavior (Roth et al., 2009), consequently, reducing the risk for alcohol use and related consequences. The current findings demonstrate this association showing a reduction in alcohol use with the satisfaction of basic psychological needs. Therefore, future studies should more closely examining the role of parental involvement in addition to attachment styles and how they may influence drinking behaviors in young adults.

**Relationship between Basic Psychological Needs and the Proximal Determinants of Alcohol Use: Drinking Motives and Protective Behavioral Strategies**

The study tested the hypothesis that higher basic psychological needs satisfaction would be associated with a reduction in drinking motives. Drinking motives decreased with basic psychological needs satisfaction. Individually, social drinking motives increased with autonomy frustration and relatedness satisfaction. Coping and enhancement drinking motives increased with autonomy frustration. Also, conformity drinking motives increased with autonomy frustration and relatedness frustration. Thus, the results confirmed that higher basic psychological needs satisfaction would be associated with a reduction in drinking motives. One explanation for the findings could be that autonomy is described as deriving one’s behavior (Deci & Ryan, 1985) that will allow a person to engage in the actions they desire. It is possible that when a person does not feel that they can engage in the actions they desire, they are more likely to engage in risky behaviors, such as alcohol use, to reduce the autonomy frustration.
To continue, analyses were conducted to test the hypothesis that higher basic psychological needs satisfaction would be associated with an increase in protective behavioral strategies use was tested. Overall, protective behavioral strategies increased with basic psychological needs satisfaction. The use of serious harm reduction strategies increased with relatedness satisfaction. Stopping/limiting drinking strategies also increased with relatedness frustration. Individually, the basic psychological needs satisfaction or frustration did not significantly contribute to the manner of drinking strategies. Thus, the results partially confirmed the hypothesis that higher basic psychological needs satisfaction would be associated with an increase in protective behavioral strategies. One explanation for the current findings could be that relatedness incorporates the connection and sense of belonging with significant others (Ryan, 1993) and its frustration could contribute a reduce participation in drinking. Therefore, the reduce satisfaction of relatedness may bring a positive protective factor against alcohol use.

Previous findings support the relationships between basic psychological needs and the proximal determinants of alcohol use presented in the current study. For instance, it has been reported that high autonomy has been associated with a reduction in alcohol consumption (Hove, 2010). Also, in college students, having an autonomous orientation is associated with less alcohol consumption while controlled orientation is associated with greater alcohol consumption (Chawla et al., 2009). This demonstrates the association between autonomy satisfaction and frustration with proximal determinants of alcohol use such as protective behavioral strategies and drinking motives. In the present study, the satisfaction of basic psychological needs was associated with a reduction in alcohol use.
Summary of SEM

A series of theoretically framed SEM models that could explain the relationship between the variables of interest with engagement in drinking were analyzed. These were used to test the hypothesis that drinking motives and the use of protective behavioral strategies would be associated with the latent variable of engagement in drinking. A complete model that tested the relationship of the variables of interest was developed in addition to decomposed models focusing on attachment theory and/or self-determination theory. Although the models were not a good representation of the data collected, the variables serving as indicators of engagement in drinking were significantly associated. For example, there was an association between drinking motives, protective behavioral strategies, and basic psychological needs as well as insecure attachment styles. There were also associations between basic psychological needs and insecure attachment styles. Insecure attachment styles were also associated with childhood experiences while psychosocial maturity was related to some of the drinking motives and protective behavioral strategies. One explanation for the current findings can be that although an association between the variables of interest is present, the association between basic psychological needs, attachment styles, and the proximal determinants is not best describe in the form of a mediation. For example, it could be that both basic psychological need and attachment styles are a direct precursor of the proximal determinants of alcohol use and alcohol-related consequences and are both being predicted by childhood experiences.

The associations between insecure attachment styles and basic psychological needs presented in the current study indicates that the integration of self-determination theory and attachment theory should continue to be examined. Based on a theoretical framework, associations between the two theories have been adequately established in this preliminary study.
For example, in self-determination theory, parents can encourage or discourage the achievement of their children’s psychological needs (Ryan & Deci 2000). In attachment theory, when a person experiences neglect and inconsistent responsiveness, it can lead to the development of an insecure attachment style (Fletcher et al., 2015). Respectively, adverse childhood experiences, including childhood trauma, have been associated with alcohol abuse (Defronzo & Pawlak, 1993) as well as the satisfaction of basic psychological needs with a reduction in alcohol use (Martens et al., 2011). These mechanisms engrained into each theory also help integrate them. As noted in the description of the theories, the interaction between parents and their children can shape their response when presented to risky situations, such as alcohol use.

Future measurement models developed on a theoretical framework should be proposed and tested that can model the current data. For example, models created using certain subscales to represent the variables of interest can be assessed to find a good fitting model. Based on the results obtained from the SEM models reported herein, an association between the variables exist. Therefore, testing additional models composed of selected subscales may be beneficial.

Summary of Moderated Mediation

The current study evaluated how attachment styles associate with drinking motives and/or protective behavioral strategies and the effect of basic psychological needs as a mediator in this association. The moderating effect of psychosocial maturity on the associations between attachment style and drinking motives and/or protective behavioral strategies was also assessed. It was found that insecure attachment styles result in lower basic psychological needs satisfaction while basic psychological needs were not significantly associated with drinking motives. A moderation effect of psychosocial maturity did not occur between insecure attachment styles and drinking motives. Overall, the results reflect that a moderated mediation did not occur between
psychosocial maturity, attachment styles, basic psychological needs and drinking motives. Thus, the moderated mediation hypothesis for drinking motives was not supported.

When assessing the model for protective behavioral strategies, insecure attachment styles resulted in lower basic psychological needs satisfaction while protective behavioral strategies increased with a satisfaction of basic psychological needs. The moderation effect of psychosocial maturity did not occur between insecure attachment styles and protective behavioral strategies. The results reflect that a moderated mediation did not occur between psychosocial maturity, attachment styles, basic psychological needs, and protective behavioral strategies. Thus, the moderated mediation hypothesis for protective behavioral strategies was not supported. One explanation for the current findings can be that although the variables of interest are related, psychosocial maturity does not moderate the association between attachment styles and drinking motives and protective behavioral strategies but is rather associated in a different manner. For example, it could be that psychosocial maturity is a direct precursor of the proximal determinants of alcohol use and alcohol-related consequences.

**Summary of Post Hoc Exploratory Analyses**

Post hoc exploratory path analyses, mediation analyses, independent samples t-test, and linear regressions were conducted to further expand the examination of theoretical constructs. Note that these analyses were conducted as exploratory analyses, therefore, do not test any hypotheses related to the study. Post hoc analyses should be used to develop future hypotheses for studies rather than for making conclusions about the current study (Curran-Everett & Milgrom, 2013). Therefore, the limitations of the presented post hoc exploratory analyses results should be noted.
Post Hoc Exploratory Path Analyses

Exploratory path analyses were conducted to evaluate the relationship of the variables of interest as well as with other measures of alcohol use and alcohol related problems since significant associations were found between the variables of interest in the evaluated SEM models. Like the SEM models, the path models did not represent the data that was collected.

The path model assessing the association between childhood experiences, attachment styles, protective behavioral strategies, and drinking motives was closely representative of the data that was analyze. This close to good model representation was reduced when assessing attachment styles with basic psychological needs. Similarly, the assessment of the association between childhood experiences, attachment styles, alcohol consumption, and alcohol-related consequences reported a close representation of the data. Once again, this close to good model representation was reduced when assessing attachment styles with basic psychological needs.

The path analysis results suggest that attachment styles may serve as a better predictor of proximal determinants of alcohol use and subsequently alcohol use than basic psychological needs. Although an association was also found among basic psychological needs and proximal determinants of alcohol use, the association is stronger with attachment styles. The results suggest that basic psychological needs may have an indirect effect in the relationship of attachment styles and proximal determinants of alcohol use.

Post Hoc Exploratory Mediation Analyses

Post hoc exploratory mediation analyses that included the evaluation of composite scores of each variable and each individual subscale representing attachment styles, basic psychological needs, drinking motives, and protective behavioral strategies were conducted. A mediation model using composite scores found that basic psychological needs satisfaction did not mediate
the effects of insecure attachment styles on drinking motives. On the other hand, basic psychological needs satisfaction was found to mediate the effects of insecure attachment styles on protective behavioral strategies. Combinations of mediation models using subscale scores to represent the variables of interest were assessed. Out of 84 possible models, 14 models showed a mediation effect. Most frequently, the association of a type of insecure attachment style and coping motives was mediated by a type of basic psychological need.

As previously stated, given that attachment styles were being assessed as one of the variables of interest, insecure attachment styles may have been associated to a greater extent with coping drinking motives. Based on the current findings, it can be concluded that people with insecure attachment styles are less likely to satisfy one or more of their three basic psychological needs. This would make people prone to engage in alcohol use as a way of coping with more frequency than having other drinking motives. In the present study, it was found that basic psychological needs often mediated the relationship between both insecure attachment styles and coping motives.

Post Hoc Exploratory Independent Samples t-Tests

Post hoc exploratory independent samples t-test were conducted to examine differences between the means reported by 1) Prolific participants and UTEP participants; 2) college students and non-college students; and 3) males and females. Prolific users reported a significantly lower level in the psychosocial maturity subscale of self-reliance compared to UTEP students. A significantly higher level of relationship anxiety and autonomy frustration was also reported among Prolific users compared to UTEP students. A significantly higher number of social motives, coping motives, enhancement motives, conformity motives, and total drinking motives was found in Prolific users compared to UTEP students. Also, significant differences
were reported in the means of manner of drinking protective strategies in Prolific users than in UTEP students. AUDIT scores, average drinks consumed per week and heaviest drinks consumed per week were higher for Prolific users compared to UTEP students. Overall, the present findings suggest that the two populations are distinct from one another in psychosocial maturity, attachment styles, drinking and drinking motives, and protective behavioral strategies. Future studies should evaluate these differences in each of these samples in greater depth.

The psychosocial maturity subscale of self-reliance reported by college students was significantly higher than that reported by non-college students. The psychosocial maturity subscale of identity was significantly higher in college students than in non-college students. A significantly higher number of social drinking motives was reported among college students compared to non-college students. Briefly, the current findings suggest that the two populations are distinct from one another in terms of psychosocial maturity and drinking motives. Thus, each of these samples should be evaluate in future research.

Furthermore, relationship anxiety and the overall insecure attachment were also significantly higher in females than in males while serious harm reduction strategies, manner of drinking strategies, and total use of protective behavioral strategies were significantly lower in males compared to females. Average number of drinks consumed per week and heaviest number of drinks consumed per week was significantly higher in males than females. Lastly, males reported a significantly lower overall impact of COVID-19 than females. In sum, the present findings suggest that the two populations are distinct from one another in terms of attachment styles, drinking, and drinking motives. Therefore, each of these samples should be evaluate in greater depth in future research.
Post Hoc Exploratory Hierarchical Multiple Linear Regressions Considering the Effects of COVID

Hierarchical multiple linear regressions considering the effects of COVID-19 on the relationship between the proximal outcomes of alcohol use, alcohol use, and alcohol-related consequences and attachment styles and basic psychological needs were examined. The hierarchical multiple linear regressions examined the association of attachment styles and basic psychological needs with 1) drinking motives, 2) protective behavioral strategies, 3) alcohol use, and 4) alcohol-related consequences. It was determined that the impact of COVID-19 did not contribute to the variance of the variables being predicted beyond the contribution of insecure attachment styles and basic psychological needs.

Implications to Self-Determination Theory and Attachment Theory

Self-determination theory is composed of three basic psychological needs that need to be satisfied for an individual to experience well-being (Deci & Ryan, 1985). The concept of self-determination theory is well-known for its application to behavioral change and maintenance of the achieved behavioral change (Kwasnicka et al., 2016). For instance, autonomous motivation and controlled motivation predict behavioral outcomes (Deci & Ryan, 2008), such that autonomy has been associated with a reduction in alcohol consumption (Hove, 2010). Furthermore, one type of relationship in the attachment system that guides human behavior includes parental attachment (Kotov, 2006). Insecure parental attachment during childhood has been theorized to result in a reduction of self-regulation, emotion recognition, and interpersonal attachment security (Lyvers et al., 2019). Like the gratification or frustration of basic psychological needs, past findings have associated attachment styles with alcohol use in the future. For example,
adolescents and young adults characterized to have developed an insecure attachment are prone to alcohol and substance use disorders (Kotov, 2006; Molnar et al., 2010).

Although the SEM models that were tested did not accurately represent a good fit to the data, associations between the variables were found in the present study. Continued research investigating the integration of self-determination theory and attachment theory can provide a better understanding how their association is related to alcohol use among emerging adults. A theoretical integration between both theories has been established based on past research. For instance, self-determination theory states that parents encourage achievement in their children’s psychological needs (Ryan and Deci 2000). Based on attachment theory, experiencing neglect and inconsistent responsiveness, lead to the development of an insecure attachment style (Fletcher et al., 2015). Research has shown that parents who support the development of their children’s autonomy results in their children having a higher ability to control their behavior (Roth et al., 2009), consequently, reducing the risk for alcohol use and related consequences by developing a secure attachment style. Therefore, a secure attachment style fosters the satisfaction of basic psychological needs as seen in the presented results of the current study.

**Limitations**

The current study presents several limitations. First, the non-experimental design does not allow the study to establish temporal precedence or causality. The use of cross-sectional data for the current study limits the findings to represent the studied population at one specific point in time allowing only the evaluation of the prevalence of the desired outcome (Setia, 2016). Participants were selected to be part of the study based on the inclusion and exclusion criteria set for the present study and exposure and outcome was measured at the same time. Nonetheless, the cross-sectional designed allowed the examination of the association between the variables of
interest. The correlational survey was used to establish the proposed theoretical framework since a cross-sectional survey design can help establish preliminary relationship between the variables (Wang & Cheng, 2020) at an early stage in research.

Another limitation to this study was the recruitment process strategy. The recruitment process at the predominantly Hispanic serving institution was affected by external factors and the participants representing this group was a relatively small sample. Therefore, the results obtained from the UTEP sample cannot be generalized to the university as a whole. Notwithstanding, recruiting participants from across the nation allowed for the generalization of the results to a broader population. Also, having a heterogeneous sample allowed the current study to identify differences between Prolific users and UTEP students in addition to the differences between college students and non-college students.

Furthermore, some of the measures used to assess the variables of interest indicated a low reliability when assessed as one composite score rather than treated as separately subscales. For example, the Basic Psychological Need Satisfaction and Frustration scale showed a low reliability, $\alpha = 0.38$, as well as the Positive and Adverse Childhood Experiences Survey ($\alpha = 0.47$). Nonetheless, when evaluated based on the subscales presented by the authors of each scale, both measures reported acceptable reliability for their subscales ($> \alpha = 0.77$). This suggests that future examination of items included in the measures should be conducted to improve the reliability of the measures.

Lastly, the present study used self-reported measures to collect information from participants. It has been established that self-reported measures can lead to response bias like responding to survey items in a socially desirable form (Paulhus, 1991). Nonetheless, the use of specifically designed scales allow the measurement and control of response bias (McDonald,
2008) such as including items that measure feelings that everyone experiences at some point in their lives (i.e., anger). Using self-reported measures is one of the most prevalent methods of collecting data in most areas of the social sciences including psychology (Schwarz, 1999, as cited in McDonald, 2008). Self-reported measures are an efficient method of collecting data from many participants in a quick and relatively inexpensive way (McDonald, 2008). Therefore, it is not uncommon for self-reported measures to be used in alcohol research.

**Practical Implications**

Identifying risk and protective factors for alcohol use and alcohol-related consequences among emerging adults is an important task for researchers. This is because emerging adulthood has been associated with an overall increase in alcohol consumption and the period with the highest prevalence of alcohol use (Auerbach & Collins, 2006). Results obtained from the current study can serve as the foundation for future research integrating attachment theory and self-determination theory to assess alcohol use and alcohol-related consequences. For example, the findings from the current study showing an association between insecure attachment style and alcohol use illustrate the need to develop secure attachment in childhood which may lead to protective effects on alcohol use. Thus, this knowledge can be translated to the development of interventions that can help emerging adults with insecure attachments styles and unsatisfied basic psychological needs reduce their alcohol consumption. Also, it can help identify risk factors for alcohol use at an early stage and prevent the initiation of alcohol use and consequently the probability of binge drinking in a future.

Specifically, the current knowledge, in addition to the knowledge obtained about the research topic in the future, can be translated into college prevention programs and interventions that can prevent and reduce drinking. Currently, college campuses across the U.S. implement
several strategies that have a positive impact on reducing alcohol abuse (U.S. Department of Education, 2008). For example, colleges often extend the hours of operations of the library and recreational facilities for the students to have a safe place to spend time. Colleges also restrict alcohol promotions and advertisement on campus. Interventions also include launching social media campaigns to inform students about statistics about college drinking since it has been determined that most students overestimate the alcohol consumption of their college peers.

In the case when alcohol abuse is present, college campuses try to find interventions to reduce alcohol drinking targeting only those students with alcohol abuse. For example, most colleges provide the Brief Alcohol Screening and Intervention of College Students (BASICS) harm-reduction intervention for college students (Youth.Gov, 2022). In general, BASICS aims to help students make better decisions about using alcohol by using an empathetic approach. The intervention has three main aims: 1) reduce alcohol use and alcohol-related consequences, 2) increase healthier choices among emerging adults, and 3) provide information and coping skills that will help reduce risky choices (Youth.Gov, 2022). Nonetheless, most colleges offer the intervention once students have encountered an academic problem related to alcohol use. Interventions targeting emerging adults attending college should evaluate students to try to identify those that could engage in alcohol abuse.

Furthermore, alcohol prevention and alcohol reduction programs on college campuses often place an emphasis on modifying knowledge, attitudes, and behaviors about alcohol use (DeJong & Langford, 2002), similarly to programs in the community. While these programs have been found effective, service providers often disregard developmental processes that may also contribute to alcohol use and alcohol-related consequences in emerging adults, including college students. Treatment should involve facilitating awareness of insecure attachment patterns.
that lead to risky behavior and promote healthy attachments. For example, parents who have an insecure attachment with their adolescent children are inclined to use adversarial disciplinary strategies to reduce antisocial behavior (Dishion & Patterson, 1997). Nonetheless, insecure attachment accompanied with adversary disciplinary strategies can lead to risk-taking behaviors such as alcohol use (Jones & Benda, 2004).

Evidently, modifications need to be made to the current college interventions to increase its effectiveness targeting alcohol use. By preventing and reducing drinking among college students, the consequences of alcohol use will also decrease. For example, past studies have reported that college students who engage in frequent drinking report absenteeism, falling behind in class, and receiving low grades on the assigned coursework and the overall course (Wechsler et al., 1998). College prevention programs and interventions that can prevent and reduce drinking will see a positively direct effect on college students on their academic and personal life. Emerging adults who are college students will be at a lower risk of experiencing academic consequences due to drinking and a reduction in college attrition could be obtained if provided with a successful intervention program. Additionally, identifying the risk and protective factors that have a greater influence in drinking motives and the use of protective behavioral strategies can help students reduce their engagement in risky behaviors that negatively impact their health.

Moreover, a focus on the satisfaction of basic psychological needs should be included in alcohol reduction programs targeting emerging adults. Research has shown that high autonomy is associated with a reduction in alcohol consumption (Hove, 2010). Having an autonomous orientation in college is associated with less alcohol consumption while controlled orientation is associated with greater alcohol consumption (Chawla et al., 2009). Additionally, relatedness to others influences drinking since college brings a need for relatedness that is often linked to
drinking (Grant et al., 2013). Therefore, when providing services to emerging adults attending college, the basic psychological needs should be emphasized. This can increase the possibility of a change in behaviors in drinking motives and use of protective behavioral strategies.

**Future Directions**

The findings of the present study suggest several opportunities for future research. First, the limitations of a cross-sectional study can be addressed by employing a longitudinal or experimental design. A longitudinal design will allow researchers to observe the factors of interest throughout time to identify changes in the relationship between the variables. This will allow the researchers to identify how developmental changes strengthen or weaken the relationship between variables. For instance, participants can be recruited at an early age, such as during primary education years, and followed throughout college, or their emerging adulthood to study the association of attachment styles and basic psychological needs on alcohol use and alcohol-related consequences. A longitudinal design will allow the use of a growth curve analysis statistical technique to determine similarities and differences among individuals over time (Frey, 2018).

Furthermore, conducting an experimental design will provide the researcher a high level of control in the variables of interest that allows to determine causal effect. That is, an experimental design will allow the researcher to manipulate variables, such as the satisfaction of basic psychological needs using a non-harmful method, to establish its causal relationship to alcohol use. For example, an experimental design can manipulate the satisfaction of autonomy and test its direct effect on alcohol use. Autonomy could be manipulated by probing participants to think about an occasion when they felt that their autonomy was not being met and vice versa. Participants can then be presented with alcohol-related vignettes to see how they would react to
the situation. Additionally, researchers can employ an intervention for alcohol use targeting emerging adults that address attachment styles and basic psychological needs. In both plausible experiments, comparisons between the control and experimental groups will allow the researchers to infer causal relationship of the factors.

Additional future directions include expanding the cross-sectional design to include a representative national sample of emerging adults. The current study was limited to the recruitment of participants that were available through an online recruitment website. Having a representative national sample of emerging adults will allow the generalizability of results to a larger extend. For instance, most of the participants recruited reported that they were attending college (62.01%). The college enrollment rate for 18 to 24 years old in 2019 was 41.00% (National Center for Education Statistics, 2021). The participants from the present study represent a higher percentage of college students than the general population. As observed in Table 3.30, non-college students reported lower levels of self-reliance, identity and drinking motives. Nonetheless, the current study reported higher levels of coping drinking motives among non-college students. Considering that social motives may be the determinant that most contributes to alcohol use among college students (Kuntsche et al., 2010), motives that contribute to alcohol use among non-college students need to be able to be generalized to a national sample of emerging adults.

The present study focused on studying the association of attachment theory and self-determination theory with proximal determinants of alcohol use in a sample that met the criteria of binge drinkers. Including a general sample of emerging adults who consume alcohol but do not meet the criteria of binge drinkers should be assessed in the future. Developmental factors that play a role in alcohol use should be studied in both general drinkers and binge drinkers. If
causal relationship between developmental factors and alcohol use is established, identifying the differences between general drinkers and binge drinkers can help determine factors that contribute to a person following one path, consuming alcohol in a safety manner, or the other, consuming alcohol in a risky manner.

Lastly, the present study aimed to assess the effect of the variables of interest in a Hispanic college population. The recruitment process at the predominantly Hispanic serving institution was affected by external factors and the participants representing this group was a relatively small sample. Efforts to recruit from predominantly Hispanic serving institutions should continue in the future. A growth in Hispanic college student population is occurring (Vaughan et al., 2015) with 22.7% of Hispanics accounting for all people enrolled in college (U.S. Census Bureau, 2017). Therefore, Hispanics need to be represented in alcohol research on college campuses.

To conclude, the present findings established important questions about the relationship of attachment theory, self-determination theory, and proximal determinants of alcohol use as well as alcohol use and alcohol-related consequences. Future research is needed to better understand the association between the proposed variables. Expanding the knowledge about developmental factors that contribute to alcohol use will have a positive impact in the alcohol research that will translate in the facilitation of interventions to emerging adults led by clinicians.


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Appendix A

Demographics

Instructions: Please read each question carefully and select the most accurate response.

1. How old are you? __________

2. What sex were you assigned at birth?
   a. Male
   b. Female
   c. Prefer not to answer

3. Your Gender Identity:
   NOTE: Cis Gender terms Cis Man and Cis Woman denote individuals whose gender identity corresponds with the sex assigned to them at birth.
   a. Cis Man
   b. Cis Woman
   c. Trans Man
   d. Trans Woman
   e. Another Identity __________
   f. Prefer not to answer

4. I am:
   a. Single (never married)
   b. Engaged
   c. Married
   d. Divorced
   e. Widow/Widower
   f. Living with significant other
   g. Separated
   h. Prefer not to answer

5. Please indicate which of the following categories best describes your race:
   a. White
   b. African American
   c. Asian American
6. Do you consider yourself Hispanic or Latino or a person of Spanish origin?
   a. Yes
   b. No
   c. DK/RF
   d. Prefer not to answer

7. Class Standing:
   a. Freshman
   b. Sophomore
   c. Junior
   d. Senior
   e. Prefer not to answer

8. Student Status:
   a. Part-time (1-11 credits)
   b. Full-time (12+ credits)
   c. Prefer not to answer

9. Where you are living this semester:
   a. Residence Halls/Dorm Room
   b. Fraternity/Sorority House
   c. Off-Campus Housing/Apartment/House
   d. Prefer not to answer

10. What is your work status?
    a. I do not work
    b. Working part-time
    c. Working full-time
    d. Prefer not to answer
Appendix B

Positive and Adverse Childhood Experiences Survey (PACES)

Before your 18th birthday:

1. Was there an adult in your family who took an interest in you in a positive way? Y N

2. Was there someone in your family that really seemed to understand the good things about you? Y N

3. Not including spanking did any adult in your home ever physically hurt you (by hitting, kicking, etc.)? Y N

4. Did anyone in your home often swear at you, insult you, put you down or humiliate you? Y N

5. Was there an adult outside the family who took an interest in you? Y N

6. Did anyone at least 5 years older than you sexually abuse you, including unwanted touch? Y N

7. Did your family look out for each other and support each other most of the time? Y N

8. Did you often or very often feel that no one in your family loved you or thought you were special? Y N

9. Were there groups you belonged to outside your family that made you feel good about yourself? Y N circle any that made you feel good: school club team, gang church other

10. Did you often or very often feel you didn’t have enough to eat, had to wear dirty clothes, or were left alone or with other young children without an adult in the house? Y N

11. Did any adults that lived with you use drugs or get drunk in front of you so much that they couldn’t care for your needs? Y N

12. Did you experience death of a parent, abandonment, or divorce? Y N

13. If hard things were happening in your life did you have positive ways to help yourself feel safe or better? Y N

14. Was there violence in your house such as hitting, throwing things, kicking, threatening with a weapon such as gun or knife? Y N

15. Did anyone in your home get arrested or go to jail/prison? Y N

16. Did your family have things they liked to do together? Y N
17. Was anyone in your home depressed, mentally ill, or suicidal? Y N

18. Was there someone in your home who gave you guidance or good advice? Y N

19. Was there someone at home who paid attention to how you were doing in school? Y N

20. Did you have physical activities that you regularly did? Y N

Positive: 1, 2, 5, 7, 9, 13, 16, 18, 19, 20
Negative: 3, 4, 6, 8, 10, 11, 12, 14, 15, 17
Appendix C

Psychosocial Maturity Inventory (PSMI)

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hard work is never fun.</td>
</tr>
<tr>
<td>2</td>
<td>I don't like to tell my ideas about God when I know others disagree with me.</td>
</tr>
<tr>
<td>3</td>
<td>I'm the sort of person who can't do anything really well.</td>
</tr>
<tr>
<td>4</td>
<td>If something more interesting comes along, I will usually stop any work I'm doing.</td>
</tr>
<tr>
<td>5</td>
<td>It's not very practical to decide what kind of job you want because that depends so much on other people.</td>
</tr>
<tr>
<td>6</td>
<td>I can't really say what my interests are.</td>
</tr>
<tr>
<td>7</td>
<td>If you haven't been chosen as the leader, you shouldn't suggest how things should be done.</td>
</tr>
<tr>
<td>8</td>
<td>I can't think of any kind of job that I would like a lot.</td>
</tr>
<tr>
<td>9</td>
<td>I find it hard to stick to anything that takes a long time to do.</td>
</tr>
<tr>
<td>10</td>
<td>In a group I prefer to let other people make the decisions.</td>
</tr>
<tr>
<td>11</td>
<td>My life is pretty empty.</td>
</tr>
<tr>
<td>12</td>
<td>I hate to admit it, but I give up on my work when things go wrong.</td>
</tr>
<tr>
<td>13</td>
<td>You can't be expected to make a success of yourself if you had a bad childhood.</td>
</tr>
<tr>
<td>14</td>
<td>I can't seem to keep people as friends for very long.</td>
</tr>
<tr>
<td>15</td>
<td>I often don't get my most important work done because I've spent too much time on other work.</td>
</tr>
<tr>
<td>16</td>
<td>Luck decides most things that happen to me.</td>
</tr>
<tr>
<td>17</td>
<td>I act like something I'm not a lot of the time.</td>
</tr>
<tr>
<td>18</td>
<td>I seldom get behind on my work.</td>
</tr>
<tr>
<td>19</td>
<td>The main reason that I'm not more successful is that I have bad luck.</td>
</tr>
<tr>
<td>20</td>
<td>I never know what I am going to do next.</td>
</tr>
<tr>
<td>21</td>
<td>I tend to go from one thing to another before finishing any one of them.</td>
</tr>
<tr>
<td>22</td>
<td>When things go well for me, it is usually not because of anything I myself actually did.</td>
</tr>
<tr>
<td>23</td>
<td>I change the way I feel and act so often that I sometimes wonder who the &quot;real&quot; me is.</td>
</tr>
<tr>
<td>24</td>
<td>I often don't finish work that I start.</td>
</tr>
<tr>
<td>25</td>
<td>I feel very uncomfortable if I disagree with what my friends think.</td>
</tr>
<tr>
<td>26</td>
<td>Nobody knows what I'm really like.</td>
</tr>
<tr>
<td>27</td>
<td>I often leave my homework unfinished if there are a lot of good TV shows on that evening.</td>
</tr>
<tr>
<td>28</td>
<td>It is best to agree with others, rather than say what you really think, if it will keep the peace.</td>
</tr>
<tr>
<td>29</td>
<td>I am not really accepted and liked.</td>
</tr>
<tr>
<td>30</td>
<td>No one should expect you to do work that you don't like.</td>
</tr>
</tbody>
</table>

Self-Reliance = 02, 05, 07, 10, 13, 16, 19, 22, 25, 28
Identity = 03, 06, 08, 11, 14, 17, 20, 23, 26, 29,
Work Orientation = 01, 04, 09, 12, 15, 18, 21, 24, 27, 30

**Note: All PSMI items are reverse coded except item 18**
Appendix D

Attachment Style Questionnaire-SF (ASQ-SF)

Please show how much you agree with each of the following items by rating them on this scale:

1=totally disagree; 2=strongly disagree; 3=disagree; 4=agree; 5=strongly agree; 6=totally agree

3. I feel confident that other people will be there when I need them.
4. I prefer to depend on myself rather than other people.
5. I prefer to keep to myself.
8. Achieving things (having goals and fulfilling them) is more important than building relationships.
9. Doing your best is more important than getting along with others.
10. If you've got a job to do, you should do it no matter who gets hurt (emotionally hurt).
11. It's important to me that others like me.
13. I find it hard to make a decision unless I know what other people think.
14. My relationships with people are generally superficial (shallow or phony)
15. Sometimes I think I am no good at all.
16. I find it hard to trust other people.
17. I find it difficult to depend on others.
18. I find that others are reluctant (hesitate) to get as close as I would like.
19. I find it relatively easy to get close to other people.
20. I find it easy to trust others.
21. I feel comfortable depending on other people.
22. I worry that others won't care about me as much I care about them.
23. I worry about people getting too close.
24. I worry that I won't measure up to other people.
25. I have mixed feelings about being close to others.
27. I wonder why people would want to be involved with me.
29. I worry a lot about my relationships.
30. I wonder how I would cope without someone to love me.
31. I feel confident about relating to others.
32. I often feel left out or alone.
33. I often worry that I do not really fit in with other people.
34. Other people have their own problems, so I don't bother them with mine.
37. If something is bothering me, others are generally aware and concerned.
38. I am confident that other people will like and respect me.

Scoring:
The 2 factors are (R = reverse scored):
Avoidance: 3R, 4, 5, 8, 9, 10, 14, 16, 17, 19R, 20R, 21R, 23, 25, 34, 37R.
Relationship Anxiety: 11, 13, 15, 18, 22, 24, 27, 29, 30, 31R, 32, 33, 38R.
Appendix E

Basic Psychological Need Satisfaction and Frustration Scale (BPNSNF)

Below, we ask you about the kind of experiences you actually have in your life. Please read each of the following items carefully. You can choose from 1 to 5 to indicate the degree to which the statement is true for you at this point in your life.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all true</td>
<td></td>
<td></td>
<td></td>
<td>Completely true</td>
</tr>
</tbody>
</table>

1. I feel a sense of choice and freedom in the things I undertake.
2. Most of the things I do feel like “I have to”.
3. I feel that the people I care about also care about me.
4. I feel excluded from the group I want to belong to.
5. I feel confident that I can do things well.
6. I have serious doubts about whether I can do things well.
7. I feel that my decisions reflect what I really want.
8. I feel forced to do many things I wouldn’t choose to do.
9. I feel connected with people who care for me, and for whom I care.
10. I feel that people who are important to me are cold and distant towards me.
11. I feel capable at what I do.
12. I feel disappointed with many of my performances.
13. I feel my choices express who I really am.
15. I feel close and connected with other people who are important to me.
16. I have the impression that people I spend time with dislike me.
17. I feel competent to achieve my goals.
18. I feel insecure about my abilities.
19. I feel I have been doing what really interests me.
20. My daily activities feel like a chain of obligations.
21. I experience a warm feeling with the people I spend time with.
22. I feel the relationships I have are just superficial.
23. I feel I can successfully complete difficult tasks.
24. I feel like a failure because of the mistakes I make.

Scoring information:

Autonomy satisfaction: items 1, 7, 13, 19
Autonomy frustration: items 2, 8, 14, 20
Relatedness satisfaction: items 3, 9, 15, 21
Relatedness frustration: items 4, 10, 16, 22
Competence satisfaction: items 5, 11, 17, 23
Competence frustration: items 6, 12, 18, 24
Appendix F

Drinking Motives Questionnaire-Revised (DMQ-R)

INSTRUCTIONS: Listed below are 20 reasons people might be inclined to drink alcoholic beverages. Using the five-point scale below, decide how frequently your own drinking is motivated by each of the reasons listed.

YOU DRINK…

1  2  3  4  5
Almost Some of Half of Most of Almost
Never/Never the time the time the time Always/Always

1. To forget your worries.
2. Because your friends pressure you to drink.
3. Because it helps you enjoy a party.
4. Because it helps you when you feel depressed or nervous.
5. To be sociable.
6. To cheer up when you are in a bad mood.
7. Because you like the feeling.
8. So that others won’t kid you about not drinking
9. Because it’s exciting.
10. To get high.
11. Because it makes social gatherings more fun.
12. To fit in with a group you like.
13. Because it gives you a pleasant feeling.
14. Because it improves parties and celebrations.
15. Because you feel more self-confident and sure of yourself.
16. To celebrate a special occasion with friends.
17. To forget about your problems.
18. Because it’s fun.
19. To be liked.
20. So you won’t feel left out.

Scoring information

Coping = mean.4(DMR1, DMR4, DMR6, DMR15, DMR17) * 5.
Conformity = mean.4(DMR2, DMR8, DMR12, DMR19, DMR20) * 5.
Appendix G

Protective Behavioral Strategies Scale-20 (PBSS-20)

Please indicate the degree to which you engage in the following behaviors when using alcohol or “partying.”

1 (Never) 2 (Rarely) 3 (Occasionally) 4 (Sometimes) 5 (Usually) 6 (Always)

1. Use a designated driver
2. Determine not to exceed a set number of drinks
5. Avoid drinking games
6. Leave the bar/party at a predetermined time
7. Make sure that you go home with a friend
8. Know where your drink has been at all times
9. Stop drinking at a predetermined time
12. Avoid mixing different types of alcohol
13. Drink slowly, rather than gulp or chug
14. Avoid trying to keep up or out-drink others
17. Avoid combining alcohol with marijuana
18. Avoid “pregaming” (i.e., drinking before going out)
19. Make sure you drink with people who can take care of you if you drink too much
20. Eat before or during drinking
Appendix H

Alcohol Use Disorders Identification Test (AUDIT)

Please circle the answer that is correct for you

1. How often do you have a drink containing alcohol?
   • Never
   • Monthly or less
   • 2-4 times a month
   • 2-3 times a week
   • 4 or more times a week

2. How many standard drinks containing alcohol do you have on a typical day when drinking?
   • 1 or 2
   • 3 or 4
   • 5 or 6
   • 7 to 9
   • 10 or more

3. How often do you have six or more drinks on one occasion?
   • Never
   • Less than monthly
   • Monthly
   • Weekly
   • Daily or almost daily

4. During the past year, how often have you found that you were not able to stop drinking once you had started?
   • Never
   • Less than monthly
   • Monthly
   • Weekly
   • Daily or almost daily

5. During the past year, how often have you failed to do what was normally expected of you because of drinking?
   • Never
   • Less than monthly
   • Monthly
   • Weekly
   • Daily or almost daily

6. During the past year, how often have you needed a drink in the morning to get yourself going after a heavy drinking session?
7. During the past year, how often have you had a feeling of guilt or remorse after drinking?
   - Never
   - Less than monthly
   - Monthly
   - Weekly
   - Daily or almost daily

8. During the past year, have you been unable to remember what happened the night before because you had been drinking?
   - Never
   - Less than monthly
   - Monthly
   - Weekly
   - Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?
   - No
   - Yes, but not in the past year
   - Yes, during the past year

10. Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested you cut down?
    - No
    - Yes, but not in the past year
    - Yes, during the past year

Scoring the AUDIT

Scores for each question range from 0 to 4, with the first response for each question (e.g., never) scoring 0, the second (e.g., less than monthly) scoring 1, the third (e.g., monthly) scoring 2, the fourth (e.g., weekly) scoring 3, and the last response (e.g., daily or almost daily) scoring 4. For questions 9 and 10, which only have three responses, the scoring is 0, 2 and 4 (from left to right).

A score of 8 or more is associated with harmful or hazardous drinking, a score of 13 or more in women, and 15 or more in men, is likely to indicate alcohol dependence.
Appendix I

Daily Drinking Questionnaire (DDQ)

When asked how much you drink in the following questions use this chart.

ONE STANDARD DRINK IS EQUAL TO:

**Standard American BEER** (3-5% alcohol) 12 oz. Can, Bottle or Glass

**Microbrew or European BEER** (8%-12% alcohol) 1/2 of a 12 oz. Can or Bottle

**WINE** (12 – 17% alcohol) 4 oz. Glass

**WINE Cooler** 10 oz. Bottle

**HARD LIQUOR** (80-proof, 40% alcohol) 1-1/2 oz. or One Standard Shot

**HARD LIQUOR** (100-proof, 50% alcohol) 1 oz.

**WINE: 1 Bottle**

25 oz. (12 – 17% alcohol) = 5 standard drinks

40 oz. (12 – 17% alcohol) = 8 standard drinks

**HARD LIQUOR: 1 Bottle**

12 oz. = 8 standard drinks

25 oz. = 17 standard drinks

40 oz. = 27 standard drinks

**INSTRUCTIONS FOR RECORDING DRINKING DURING A TYPICAL WEEK**

IN THE CALENDAR BELOW, PLEASE FILL-IN YOUR DRINKING RATE AND TIME DRINKING DURING A **TYPICAL WEEK** IN THE LAST 30 DAYS.

First, think of a *typical week* in the last 30 *days*. (Where did you live? What were your regular weekly activities? Where you working or going to school? Etc.) Try to remember as accurately as you can, *how much* and for *how long* you *typically drank* in a week during that one month period?
For each day of the week in the calendar below, fill in the **number of standard drinks typically consumed on that day** in the upper box and the **typical number of hours you drank** that day in the lower box.

<table>
<thead>
<tr>
<th>Day of Week</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Drinks</strong></td>
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<td><strong>Number of Hours Drinking</strong></td>
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</table>

**INSTRUCTIONS FOR RECORDING DRINKING FOR YOUR HEAVIEST DRINKING WEEK**

IN THE CALENDAR BELOW, PLEASE FILL-IN YOUR DRINKING RATE AND TIME DRINKING DURING YOUR **HEAVIEST DRINKING WEEK** IN THE LAST 30 DAYS.

First, think of your *heaviest drinking week* in the last 30 days. (Where did you live? What were your regular weekly activities? Where you working or going to school? Etc.) Try to remember as accurately as you can, *how much* and for *how long* did you drink during your *heaviest drinking week* in that one month period?

For each day of the week in the calendar below, fill in the **number of standard drinks consumed on that day** in the upper box and the **number of hours you drank** that day in the lower box.

<table>
<thead>
<tr>
<th>Day of Week</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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</tr>
</tbody>
</table>

1. **How often did you drink during the last month?** (check one)
   1. I did not drink at all.
   2. About once a month.
3. Two to three times a month.
4. Once or twice a week.
5. Three to four times a week.
6. Nearly every day.
7. Once a day or more.

2. **Think of a typical weekend evening** (Friday or Saturday) during the last *month*. How **much** did you drink on that evening? (check one)

<table>
<thead>
<tr>
<th>Drinks</th>
<th>1 drinks</th>
<th>2 drinks</th>
<th>3 drinks</th>
<th>4 drinks</th>
<th>5 drinks</th>
<th>6 drinks</th>
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<tbody>
<tr>
<td>1</td>
<td>9 drinks</td>
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<td>More than 30</td>
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</table>

3. **Think of the occasion** (any day of the week) **you drank the most** during the last *month*. How **much** did you drink? (check one)

<table>
<thead>
<tr>
<th>Drinks</th>
<th>1 drinks</th>
<th>2 drinks</th>
<th>3 drinks</th>
<th>4 drinks</th>
<th>5 drinks</th>
<th>6 drinks</th>
<th>7 drinks</th>
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<td>More than 30</td>
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</table>

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Appendix J

Brief-Young Adult Alcohol Consequences Questionnaire (B-YAACQ)

Below is a list of things that sometimes happen to people either during, or after they have been drinking alcohol. Next to each item below, please mark an “X” in either the YES or NO column to indicate whether that item describes something that has happened to you IN THE PAST MONTH.

In the past month...

1. While drinking, I have said or done embarrassing things.
2. I have had a hangover (headache, sick stomach) the morning after I had been drinking.
3. I have felt very sick to my stomach or thrown up after drinking.
4. I often have ended up drinking on nights when I had planned not to drink.
5. I have taken foolish risks when I have been drinking.
6. I have passed out from drinking.
7. I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high or drunk on the amount that used to get me high or drunk.
8. When drinking, I have done impulsive things I regretted later.
9. I’ve not been able to remember large stretches of time while drinking heavily.
10. I have driven a car when I knew I had too much to drink to drive safely.
11. I have not gone to work or missed classes at school because of drinking, a hangover, or illness caused by drinking.
12. My drinking has gotten me into sexual situations I later regretted.
13. I have often found it difficult to limit how much I drink.
14. I have become very rude, obnoxious, or insulting after drinking.
15. I have woken up in an unexpected place after heavy drinking.
16. I have felt badly about myself because of my drinking.
17. I have had less energy or felt tired because of my drinking.
18. The quality of my work or schoolwork has suffered because of my drinking.
19. I have spent too much time drinking.
20. I have neglected my obligations to family, work, or school because of drinking.
21. My drinking has created problems between myself and my boyfriend/girlfriend/spouse, parents, or other near relatives.
22. I have been overweight because of drinking.
23. My physical appearance has been harmed by my drinking.
24. I have felt like I needed a drink after I’d gotten up (that is, before breakfast).
Appendix K
Coronavirus Impact Scale

Rate how much the Coronavirus pandemic has changed your life in each of the following ways.

1. Routines:
   0. No change.
   1. Mild. Change in only one area (e.g. work, education, social life, hobbies, religious activities).
   2. Moderate. Change in two areas (e.g. work, education, social life, hobbies, religious activities).
   3. Severe. Change in three or more areas (e.g. work, education, social life, hobbies, religious activities).

2. Family Income/Employment:
   0. No change.
   1. Mild. Small change; able to meet all needs and pay bills.
   2. Moderate. Having to make cuts but able to meet basic needs and pay bills.
   3. Severe. Unable to meet basic needs and/or pay bills.

3. Food Access:
   0. No change.
   1. Mild. Enough food but difficulty getting to stores and/or finding needed items.
   2. Moderate. Occasionally without enough food and/or good quality (e.g., healthy) foods.
   3. Severe. Frequently without enough food and/or good quality (e.g., healthy) foods.

4. Medical health care access:
   0. No change.
1. Mild. Appointments moved to telehealth.

2. Moderate. Delays or cancellations in appointments and/or delays in getting prescriptions; changes have minimal impact on health.

3. Severe. Unable to access needed care resulting in moderate to severe impact on health.

5. Mental health treatment access:
   0. No change.
   1. Mild. Appointments moved to telehealth.
   2. Moderate. Delays or cancellations in appointments and/or delays in getting prescriptions; changes have minimal impact.
   3. Severe. Unable to access needed care resulting in severe risk and/or significant impact.

6. Access to extended family and non-family social supports:
   0. No change.
   1. Mild. Continued visits with social distancing and/or regular phone calls and/or televideo or social media contacts.
   2. Moderate. Loss of in person and remote contact with a few people, but not all supports.
   3. Severe. Loss of in person and remote contact with all supports.

7. Experiences of stress related to coronavirus pandemic:
   0. None.
   1. Mild. Occasional worries and/or minor stress-related symptoms (e.g., feel a little anxious, sad, and/or angry; mild/rare trouble sleeping).
   2. Moderate. Frequent worries and/or moderate stress-related symptoms (e.g., feel moderately anxious, sad, and/or angry; moderate/occasional trouble sleeping).
   3. Severe. Persistent worries and/or severe stress-related symptoms (e.g., feel extremely
anxious, sad, and/or angry; severe/frequent trouble sleeping).

8. Stress and discord in the family:

0. None.

1. Mild. Family members occasionally short-tempered with one another; no physical violence.

2. Moderate. Family members frequently short-tempered with one another; and/or children in the home getting in physical fights with one another.

3. Severe. Family members frequently short-tempered with one another and adults in the home throwing things at one another, and/or knocking over furniture, and/or hitting and/or harming one another.


0. None.

1. Mild. Symptoms effectively managed at home.


10. Number of immediate family members diagnosed with coronavirus: ___

Rate the symptoms of the person who was most sick:

1. Mild. Symptoms effectively managed at home.


4. Immediate family member died from coronavirus.

11. Number of extended family member(s) and/or close friends diagnosed with coronavirus: ___
Rate the symptoms of the person who was most sick:

1. Mild. Symptoms effectively managed at home.


4. Extended family member and/or close friend died of coronavirus.

12. Other. Please tell us about any other ways the coronavirus pandemic has impacted your life:
Vita

Claudia Lopez was born in El Paso, Texas. She graduated from Bel Air High School in El Paso, Texas in May 2011. She attended the University at Texas at El Paso where she received a Bachelor of Arts in Psychology in May 2015. Furthermore, she received a Master of Arts in Clinical Psychology at the University of Texas at El Paso in December 2018. During her academic program, she completed 300 hours of clinical internship in the El Paso Juvenile Probation Department. Additionally, she completed the required coursework to obtain LPC-eligibility. She continued her education and pursued a Doctor of Philosophy in Psychology with a concentration in Health at the University of Texas at El Paso. She received the Doctoral Excellence Fellowship throughout her academic program.

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