

2018

Social Isolation Predicting Problematic Alcohol Use in Emerging Adults: Examining the Unique Role of Existential Isolation

Geneva Carolyn Yawger
University of Vermont

Follow this and additional works at: <https://scholarworks.uvm.edu/graddis>

 Part of the [Psychology Commons](#)

Recommended Citation

Yawger, Geneva Carolyn, "Social Isolation Predicting Problematic Alcohol Use in Emerging Adults: Examining the Unique Role of Existential Isolation" (2018). *Graduate College Dissertations and Theses*. 852.
<https://scholarworks.uvm.edu/graddis/852>

This Thesis is brought to you for free and open access by the Dissertations and Theses at ScholarWorks @ UVM. It has been accepted for inclusion in Graduate College Dissertations and Theses by an authorized administrator of ScholarWorks @ UVM. For more information, please contact donna.omalley@uvm.edu.

SOCIAL ISOLATION PREDICTING PROBLEMATIC ALCOHOL USE IN
EMERGING ADULTS: EXAMINING THE UNIQUE ROLE OF EXISTENTIAL
ISOLATION

A Thesis Presented

by

Geneva C. Yawger

to

The Faculty of the Graduate College

of

The University of Vermont

In Partial Fulfillment of the Requirements
for the Degree of Master of Arts
Specializing in Psychology

May, 2018

Defense Date: January 10, 2018
Thesis Examination Committee:

Elizabeth C. Pinel, Ph.D., Advisor
Kathryn J. Fox, Ph.D., Chairperson
Carol Miller, Ph.D.
Cynthia J. Forehand, Ph.D., Dean of the Graduate College

ABSTRACT

Current rates of excessive alcohol use and abuse among young adults are recognized as a major problem by scholars across a wide variety of fields. Here, I take a social psychological approach to understanding *why* individuals drink to excess, examining the unique role that a specific form of social isolation called *existential isolation* (feeling alone in one's experiences of the world; Yalom, 1980; Pinel, Long, Murdoch, & Helm, 2017) may play in predicting alcohol use and abuse. The relationship between existential isolation and alcohol use is explored using both correlational and cross-lagged designs. Results indicate that existential isolation predicts alcohol use above and beyond a more traditional measure of social isolation, though not in the hypothesized direction (i.e. social isolation is associated with more alcohol use, whereas existential isolation is associated with less). Further, negative emotional symptoms (depression, anxiety, and stress) and racial identity emerged as significant moderators of this effect. Exploratory analyses considering a reversal of the hypothesized causal direction (i.e. alcohol use now predicting feelings of existential isolation) revealed a significant two-way interaction between current and lifetime alcohol use and a significant three-way interaction between current alcohol use, desire for existential connection, and motivations to use alcohol for social purposes. Implications of these general findings are discussed, including that 1) they identify a seemingly positive outcome of drinking that may play a role in perpetuating problematic alcohol use, and 2) conversely, they may illustrate a "dark side of sobriety." This research serves as a first step into distinguishing between aspects of social isolation in the realm of alcohol use and abuse. Future research is necessary in order to identify the mechanisms underlying this effect and inform the development of more effective alcohol-related interventions.

ACKNOWLEDGEMENTS

I am eternally grateful for the many people who have supported me throughout this process. First and foremost, I am thankful for my immeasurably helpful advisor, Dr. Elizabeth Pinel. I can't adequately express in words how much I appreciate the level of feedback you gave me along the way. My pride in this final product was worth agonizing over every single one of the roughly five million drafts still living in my documents folder. I could not have done this without you.

Similarly, I am so thankful for my other committee members. A million thanks to Dr. Carol Miller for your incredibly valuable input along the way; to Dr. Bernice Garnett for the same, though a last-minute emergency unfortunately kept you from serving as the official chairperson on my committee; and to Dr. Kathryn Fox who graciously stepped in to save the day. Additionally, I would like to thank Dr. Timothy Stickle and Dr. Keith Burt for their advice and statistical guidance.

Finally, I am thankful for my family and friends, whose unwavering love, support, and encouragement have been an irreplaceable resource for me throughout my journey. I love you all.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	ii
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
INTRODUCTION.....	1
On Alcohol Use in the United States.....	1
On the “Why” of Problematic Alcohol Use.....	6
Lessons from Biology and Personality Psychology.....	7
Lessons from Developmental Psychology.....	8
Lessons from Sociology.....	9
Lessons from Social Psychology.....	11
On the Unique Nature of Existential Isolation.....	14
On Why Existential Isolation May Uniquely Predict Alcohol Use.....	17
Social Lubricant Hypothesis.....	17
Pain-Numbing Hypothesis.....	18
On Potential Mediators and Moderators of the Hypothesized Relationship Between Existential Isolation and Alcohol Use.....	19

Motivations to Use Alcohol.....	20
Mental Health: Depression, Anxiety, and Stress.....	20
Self-Esteem.....	21
Self-Control.....	21
The Current Research.....	22
METHOD.....	23
Participants.....	23
Procedure.....	24
Existential Isolation.....	24
Interpersonal Isolation.....	25
Alcohol Use.....	26
Motivations for Alcohol Use.....	28
Mental Health.....	28
Self-Esteem.....	29
Self-Control.....	29
RESULTS.....	30
Preparing the Data for Analysis.....	30
Cross-Sectional Analyses.....	31

Exploratory Analyses.....	35
Cross-Lagged Analyses.....	41
DISCUSSION.....	45
REFERENCES.....	58
APPENDICES.....	71

LIST OF TABLES

Table	Page
Table 1: Bivariate Correlations Between Variables of Interest at Time 1.....	31
Table 2: Bivariate Correlations Between Variables of Interest at Time 2.....	32
Table 3: Conditional Effects of Existential Isolation on Alcohol Use (Separate Moderators: Race and Depression/Anxiety/Stress).....	33
Table 4: Conditional Effects of Alcohol Use on Existential Isolation (Separate Moderators: Race and Depression/Anxiety/Stress).....	36
Table 5: Conditional Effects of Alcohol Use on Existential Isolation (Moderator: Lifetime Alcohol Use).....	38
Table 6: Conditional Effects of “Alcohol Use X Desire for Existential Connection” Interaction on Existential Isolation (Moderator: Social Motivations to Drink).....	40
Table 7: Conditional Effects of Alcohol Use on Existential Isolation (Moderators: Desire for Existential Connection and Social Motivations to Drink).....	41

LIST OF FIGURES

Figure	Page
Figure 1: Race (White vs. non-White) moderating the relationship between existential isolation and alcohol use, controlling for interpersonal isolation.....	34
Figure 2: Negative emotional symptoms (depression, anxiety, and stress) moderating the relationship between existential isolation and alcohol use, controlling for interpersonal isolation.....	34
Figure 3: Lifetime alcohol use moderating the relationship between current alcohol use and existential isolation, controlling for age and interpersonal isolation.....	37
Figure 4: Three-way interaction predicting existential isolation: alcohol use, desire for existential connectedness, and motivations to drink for social purposes (controlling for interpersonal isolation).....	40
Figure 5: Model 1: baseline model, including only autoregressive and concurrent associations.....	44
Figure 6: Model 2: adding cross-lagged path to the baseline model, representing a causal direction from existential isolation at Time 1 to alcohol use at Time 2.....	44
Figure 7: Model 3: adding alternate cross-lagged path to the baseline model, representing a causal direction from alcohol use at Time 1 to existential isolation at Time 2.....	45

Introduction

One of the greatest – and most daunting – tasks faced by psychologists is to understand why people engage in individually and socially harmful activities on such a grand scale. One such significant societal issue in our country today is that of excessive alcohol use, especially where it concerns problematic levels of use and abuse in younger populations. Indeed, current rates of alcohol use among emerging adults (defined in this instance as ages 18 to 25; Arnett, 2000) are worryingly high; 57.1% surveyed reported being current drinkers, 38.4% binge drinkers, and 10.1% heavy drinkers (Substance Abuse and Mental Health Services Administration, 2017). Scholars from several fields have grappled with this problem, including sociologists (Bucholz & Robins, 1989; Peralta & Jauk, 2011), developmental psychologists (Duncan, Duncan, & Hyman, 1998; Duncan, Gau, Duncan, & Strycker, 2011), neuroscientists (Verhulst, Neale, & Kendler, 2015; Mancinelli, Vitali, & Ceccanti, 2009), and criminologists (Martin, Maxwell, White, & Zhang, 2004; Maldonado-Molina, Reingle, & Jennings, 2011). Each perspective has something valuable to offer to the search for understanding the mechanisms underlying alcohol use. Here, I approach the problem of alcohol abuse from a social psychological perspective, one that specifically seeks to understand the socially-motivated factors associated with substance use. Before detailing these factors and explaining how the current research will build upon them, however, I provide a brief overview of the preceding alcohol use literature.

On Alcohol Use in the United States

Of the substances most vulnerable to abuse – alcohol, tobacco, drugs – alcohol is overwhelmingly the most commonly used among Americans. Indeed, according to the

most recent National Survey on Drug Use and Health (Substance Abuse and Mental Health Services Administration, 2017), just over half of Americans (50.7%; 136.7 million) aged 12 or older reported being current drinkers of alcohol. Further, 5.6% (15.1 million) were classified with alcohol use disorder, defined as meeting DSM-IV criteria for alcohol abuse or dependence. This survey also found that the rates of excessive consumption are similarly high and widespread – binge drinking (defined as having five or more drinks on the same occasion on at least 1 day in the past 30 days) was reported by 65.3 million Americans aged 12 or older, and heavy drinking (defined as binge drinking on at least 5 of the past 30 days) was reported by 16.3 million people. Excessive consumption such as this can and does take a serious toll on an individual’s physical health, often resulting in serious damage to the heart, liver, and pancreas, which in turn can lead to serious conditions such as cardiomyopathy, stroke, and cirrhosis, as well as increased risk of mouth, esophagus, throat, liver, and breast cancer (National Institute on Alcohol Abuse and Alcoholism, 2010/2015). Excessive alcohol use also presents risks to users and the people around them in that alcohol lowers inhibitions and affects judgments and decision-making, often leading to more risk-taking behavior in a variety of realms such as unprotected sex (Kiene, Barta, Tennen, & Armeli, 2009; Fisher, Cook, & Kapiga, 2010) and driving under the influence (National Institute on Alcohol Abuse and Alcoholism, 2010/2015).

Although these general statistics, on their own, illustrate the harmful nature of the current state of alcohol use in the U.S. for individuals as well as for our nation as a whole, it becomes even more apparent when considering how widespread substance use is even among the younger U.S. population. According to the 2015 Monitoring the

Future Survey (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2016), alcohol use reaches its peak between the ages of 18 and 30: current alcohol use rises from 35% among 18-year-olds to its height of 75% among 29- and 30-year-olds; binge drinking reaches its most prevalent in 21- to 26-year-olds (all at 35%); and young adults, in particular, see a striking prevalence of extreme binge drinking, whether defined as drinking 10 or more drinks on one or more occasions in the prior two weeks (11.1% across the years 2005 to 2015) or as drinking 15 or more drinks on one or more occasions in the prior two weeks (4.2%).

These rates of use themselves are not the only troubling statistics regarding alcohol use among young adults in the U.S. These levels of alcohol use are harmful to young adults' psychological states, as evidenced by the fact that 10.7% of Americans aged 18 to 25 and 9.3% of those aged 26 to 29 met DSM-IV criteria for alcohol abuse or dependence in 2016 (Substance Abuse and Mental Health Association, 2017). Further, the same survey found that 13.5% of 21- to 25-year-olds reported driving under the influence of alcohol, as compared with 5.1% between the ages of 16 and 20 and 8.0% in those aged 26 or older. Risky behavior such as this has the potential for serious ramifications: as reported by the Department of Transportation (2015), these can range from criminal charges (in 2015, nearly 1.1 million drivers were arrested for driving under the influence) to death (over 10,000 people died in 2015 in alcohol-impaired driving crashes).

Importantly, alcohol use at a young age is especially harmful to the individual in the long run. Emerging adulthood and adolescence – the preceding and partially overlapping developmental stage commonly defined as encompassing anywhere from 11

to 20 (e.g., Colarusso, 1992) – together make up a period of major structural and functional changes to the brain, affecting a number of processes involved in planning and decision-making, memory, voluntary movement, impulse control, and speech production (Rubia, Overmeyer, Taylor, Brammer, Williams, Simmons, Andrews, & Bullmore, 2000). Human subjects research shows that alcohol use during this critical time of brain development is associated with significant impairments in such areas as memory, decision-making, and hippocampal volume (Office of Juvenile Justice and Delinquency Prevention, 2012; DeBellis, Clark, Beers, Soloff, Boring, Hall, Kersh, & Keshavan, 2000), and animal studies have provided experimental evidence that alcohol has a greater impact on adolescents than adults in such realms as memory impairments and brain damage (Pyapali, Turner, Wilson, & Swartzwelder, 1999; Crews, Braun, Hoplight, Switzer, & Knapp, 2000).

As recent government reports indicate, there is one specific subset of emerging adults that is especially at risk for unique and devastating consequences of alcohol use: college students. Among this population, we see an overwhelming prevalence of recorded alcohol-related consequences, including assault (696,000 students per year), sexual assault (97,000 students per year), and death (1,825 college students die from alcohol-related unintentional injuries per year; National Institute for Alcohol Abuse and Alcoholism, 2010/2015). As such, a focus on college students has dominated the literature on emerging adults' alcohol use and abuse. However, it is important to note that heavy drinking and related problems pervade young adults' lives regardless of college attendance (Jackson, Sher, & Park, 2005; White, Labouvie, & Papadaratsakis, 2005). In fact, though college students and nonstudents commonly exhibit a similar

quantity and frequency of drinking, research shows that college students mature out of drinking more quickly than nonstudents (White et al., 2005), suggesting that addressing problematic alcohol use among nonstudent emerging adults is also a crucial topic of investigation.

One reason why researchers have focused so overwhelmingly on college students in this body of literature, however, may be that this population is the easiest to reach with institutional-level intervention techniques. Government agencies and universities across the country have made concerted efforts to implement educational programs aimed at reducing the prevalence and impact of problematic alcohol use on individuals and society as a whole. Specifically, as outlined by the U.S. Department of Education (2008), many initiatives put in place in recent years by universities across the country combine traditional education programs with strategies for changing the physical, social, legal, and economic environments on college campuses and in surrounding communities. In fact, since 1999, the U.S. Department of Education has awarded approximately \$3.5 million to institutions of higher education in recognition of their programs. These programs – and those of other institutions across the nation – employ a number of effective strategies, including: forming partnerships with local communities to ensure that alcohol is not served to minors or to intoxicated students; monitoring fraternities to ensure compliance with alcohol policies and laws; and launching a media campaign to inform students about the actual amount of drinking that occurs on campus, since most students overestimate the number of their classmates who drink and the amount that they drink (U.S. Department of Education, 2008).

Given the significance of this problem, as well as the fact that it continues to persist despite such preventative strategies – and, of course, in the absence of such strategies in nonstudent emerging adults who do not have the benefits of campus health care centers or institutionally based alcohol education programs – a logical avenue of research is to ask *why* the problem exists and persists. Indeed, tackling a problem so large and widespread hinges on knowing what we are dealing with, which requires an empirical study of the “why” of alcohol use: why people drink at all, and why people drink too much and continue to drink in the face of possible or realized negative consequences.

On the “Why” of Problematic Alcohol Use

Scholars have broached the question of why people abuse alcohol from a multitude of perspectives. As stated above, I will employ a specific social psychological perspective. However, it is first important to provide a brief summary of the lessons we have learned through other fields and perspectives, as they have a great deal to teach us about the reasons why people abuse alcohol. I focus in this summary on lessons learned from biology, personality psychology, developmental psychology, sociology, and social psychology, as they constitute a broad range of perspectives and provide a good breadth of context for the current research while remaining within the scope of this paper¹.

¹ This summary is, of course, not a comprehensive review of all the work done in each of these areas. Rather, I provide here a brief overview of the most common and relevant contributions from these fields to acknowledge the important work that has already been done on the topic of alcohol use.

Throughout my description of these varied perspectives, I place special emphasis on how social factors are implicated even when they are not expressly studied – suggesting that a social psychological approach may have valuable insights to offer to the puzzle of alcohol abuse.

Lessons from biology and personality psychology. At the most basic level, an individual's alcohol consumption is just that – the *individual's* behavior. As such, one broad approach to understanding factors associated with alcohol use at a problematic level (whether simply inappropriate, potentially or actually harmful, and/or truly illegal) focuses on those unique to the individual, such as personality traits and biological responses to alcohol (National Institute on Alcohol Abuse and Alcoholism, 2002). One important factor falling under this umbrella is that of genetic predisposition; as numerous cross-sectional and longitudinal studies have found, utilizing both traditional and population-based samples, genetic factors play a major role in the development of alcoholism (Prescott & Kendler, 1999; Bohman, Cloninger, & von Knorring, 1987; Enoch & Goldman, 2001). Indeed, as an illustration of the large role genetics play, Prescott & Kendler (1999) found that genetic variation accounted for a staggering 48-58% of the variance in diagnosis of alcohol abuse and dependence in male twins. Certain personality traits are also related to increased alcohol consumption, including impulsivity, sensation-seeking, disinhibition, neuroticism, and emotionality (Sher, Bartholow, & Wood, 2000; Hopwood, Morey, Skodol, Stout, Yen, Ansell, Grilo, & McGlashan, 2007; Grau & Ortet, 1999). Specifically, impulsivity and sensation-seeking are two personality dimensions that are strongly positively correlated with greater frequency and quantity of alcohol use, and, as found by Grau & Ortet (1999), these two personality variables

combined accounted for 20% of the variance in frequency and 17% of the variance in quantity of alcohol use.

Importantly for the purposes of the current research, though genetic predisposition and personality traits are inherently individual factors rather than social ones, research in both sub-fields highlights the need to consider such individual factors in context.

Illustrating the complex interplay between multiple sets of factors, researchers have found that alcoholism and drug abuse may be predisposed to inherited behavioral temperaments, which, through interaction with the physical and social environment, shape the individual's personality development (Tarter, 1988). Specifically, the author details evidence linking certain heritable behavioral dispositions (along the dimensions of activity level, emotionality, and sociability) to alcoholism and substance-abuse vulnerability, but provides further evidence that many non-genetic factors intervene in how these dispositions promote the development of alcoholism or drug abuse, including parental rearing style, peer affiliation, learned habit patterns of coping, and cultural and social sanctions.

Lessons from developmental psychology. Different from the factors identified by biologists and personality psychologists, which primarily concern enduring individual differences, the reasons why people use and abuse alcohol as illuminated by developmental psychologists have centered around the effects of certain developmental stages or life transitions. In the study of emerging adults, this can manifest in many forms. A major one, where it concerns those emerging adults who are also college students, is the transition to college, which involves multiple adjustments like reexamination of one's identity, exploration of new social relationships, and changes in

living situations. These changes are often, as Schulenberg and Maggs (2002) outline, triggers for alcohol use and abuse – and, interestingly, these changes all implicate social factors, whether it be changes in social environment, development of different social identities, or formation of social relationships.

One specific area upon which developmental psychologists focus their efforts is that of cognitive and moral development in adolescents and emerging adults, which lead to such changes as the increased ability to think abstractly and view issues as relative rather than absolute (Kohlberg, 1963/2008; Inhelder & Piaget, 1958). These developments in turn lead some emerging adults to be skeptical of adult-imposed restrictions such as prohibition of drinking (Schulenberg & Maggs, 2002). Importantly, emerging adulthood is also a time when young people explore the possibilities of different philosophies, lifestyles, relationships, and behaviors in the pursuit of developing their own sense of identity (Erikson, 1959/1994; Torres, Jones, & Renn, 2009); this exploration, in itself, is normal and healthy, but it may involve experimentation with risky behaviors, including both underage alcohol use and alcohol abuse at any age. Indeed, sensation-seeking – above described as being a major predictor of substance use – is a prevalent trait among individuals at this developmental stage, increasing as young people develop from adolescents into emerging adults (Arnett, 2000).

Lessons from sociology. Sociologists address the problem of drinking by looking at the societal context in which the behavior occurs. Sociologists working on the “why” behind alcohol abuse regard college drinking as a culture, and one that is further defined by certain social relationships, such as gender, race, religion, and social class. Take, for example, the associations between gender and alcohol use that have been

revealed by researchers across the past couple decades. A sizable body of research has found that, where gender roles are most clearly divided, so too are men's and women's drinking patterns (e.g., Uy, Massoth, & Gottdiener, 2014). Specifically, research shows that men drink more than women on average (Grant, Dawson, Stinson, Chou, Dufour, & Pickering, 2004), and that this effect may arise, at least in part, from the fact that drinking is a prescriptive behavior associated with masculinity, wherein men who are able to consume large amounts of alcohol are considered "real drinkers," while those who cannot are stigmatized (de Visser & Smith, 2007; Peralta, 2007). Drinking also allows men to express their masculinity through competitive "war stories" of past drinking exploits and show off their stamina, self-control, non-conformity, and willingness to take risks (Peralta, 2007; Driessen, 1992; Gotoh, 1994; McDonald, 1994). Conversely, women's drinking has historically been restricted or concealed out of a fear of failing to uphold traditional domestic roles in the public eye (McLaughlin, 1991; Ikuesan, 1994; Warner, 1997).

Wilsnack, Vogeltanz, Wilsnack, and Harris (2000) theorized that, as gender roles shifted to allow women access to traditionally male roles and environments, differences in drinking behavior would diminish; however, recent research has not shown this convergence. The current drinking rate among males reported in a recent National Survey on Drug Use and Health (Substance Abuse and Mental Health Services Administration, 2017) was 57.1%, higher than the rate for females (47.5%). Further, the rate of binge drinking for males was higher than for females both in young adults aged 18 to 25 (44.4% males, 31.4% females) and in persons aged 26 or older (30.7% males, 14.7% females). However, recent studies also suggest that, though men may drink more

than women on average, women may face more devastating consequences, especially at younger ages. For example, Bouthoorn, van Hoof and van der Lely (2011) found that girls aged 13 and 14 years had significantly higher hospitalization prevalence due to alcohol intoxication than boys of the same age.

Lessons from social psychology. Social psychologists have brought to the table an examination of how individual factors interact with social factors to predict alcohol-related attitudes and behavior. Consider the research on socialization and social pressure. A vast body of literature has established that social influence variables are among the strongest predictors of alcohol use, especially among young people (Jacquith, 1981; Johnson, Marcos, & Bahr, 1987; Marcos, Bahr, & Johnson, 1986; Hawkins, Catalano, & Miller, 1992; Jacob & Leonard, 1994). Traditional theorizing focused on how social influence, by itself, directly predicts alcohol use; however, research in recent years has shown that the link between social influence and alcohol use is not so clear-cut. Researchers such as Reed and Rountree (1997) and Trucco, Colder, Bowker, and Wieczorek (2011) have found that, although social pressure is itself an exceptionally strong predictor of alcohol use, one important caveat to this effect is that it is often moderated by various individual difference factors, including social goals, capacity for rationalization, and how well one's need for affiliation has been met. Indeed, a sizable body of research has established that alcohol use is the product of the interaction between explicit social influence (i.e. peer pressure) and individual factors like genetics (Griffin, Cleveland, Schlomer, Vandenberg, & Feinberg, 2015; Guo, Elder, Cai, & Hamilton, 2009; Mrug & Windle, 2014), age (Schiavon, 2016), sex (Musher-Eizenman, Holub, & Arnett, 2003), and religious affiliation (Haber & Jacob, 2007). Extrapolating from these

findings, it is reasonable to conclude that, to the extent that social influence plays a significant role in alcohol use and abuse, factors that increase one's *susceptibility* to social influence should have a uniquely strong predictive effect on alcohol use.

Research shows that some people are, indeed, more vulnerable to social influence than others. A variety of factors predict vulnerability to social influence generally, including gender, attachment to friends, and the parent-child relationship (Lebedina-Manzoni & Ricijaš, 2013); emotional autonomy (Chan & Chan, 2013); locus of control (Spector, 1983); and individual values and social identity complexity (Orth & Kahle, 2008; Batra, Homer, & Kahle, 2001). In the specific realm of alcohol use, though, arguably many of the moderating factors arise from people's desire to connect with others.

The fundamental need to feel connected to and included by others – or, as articulated by Baumeister and Leary (1995), our *need to belong* – is especially implicated in social influence variables associated with drinking alcohol. Whether referencing “active” social influence variables (e.g., explicit invitations to drink) or “passive” social influence variables (e.g., perceptions of “normal” drinking behavior in one's social group; distinction made by Graham, Marks, & Hansen, 1991), both fall under the umbrella of *normative* social influence – that which leads us to comply or conform in order to be liked and accepted (Asch, 1956; Deutsch & Gerard, 1955). As social animals, we need acceptance and inclusion, and when that need for acceptance and inclusion is not met – as when we experience instances or feelings of social isolation – we can face serious repercussions. Indeed, research shows that being deprived of human contact for long periods of time is extremely stressful and traumatic (Schachter, 1959; Williams,

2001). Further, social isolation broadly construed has been shown to produce negative consequences across the board, from drops in well-being (Zadro, Williams, & Richardson, 2004) to increases in hostile cognitions (DeWall, Twenge, Gitter, & Baumeister, 2009) and aggression (Gaertner, Iuzzini, & O'Mara, 2008). Importantly, these findings on the negative effects of social isolation replicate in the realm of substance use; socially isolated individuals are more likely to abuse drugs (Horman, 1973/2009), use cigarettes (Ennett & Bauman, 1993; Niño, Cai, & Ignatow, 2016), be diagnosed with substance use disorder (Chou, Liang, & Sareen, 2011), and use alcohol, in the forms of both drunkenness (Niño, Cai, & Ignatow, 2016) and binge drinking (Korn & Maggs, 2004).

As far as substance use is concerned, why might these effects be? Why would more social isolation predict more alcohol use? We may find an answer in considering that the best and most natural response to feeling a lack of belonging, as experienced by socially isolated individuals, is to seek out acceptance by behaving in ways that are more appealing to others (Riva, Williams, Torstrick, & Montali, 2014). Researchers have identified such behaviors as working hard on a collective task (Williams & Sommer, 1997) and mimicking others' behaviors (Lakin & Chartrand, 2005) as instrumental to this pursuit. Of import here is one robust way of making oneself more appealing to others: complying with or conforming to social influence. Indeed, research shows that ostracism (i.e. other-imposed social isolation) increases social susceptibility across the board (e.g., Carter-Sowell, Chen, & Williams, 2008; Riva et al., 2014).

Although researchers have used a variety of measures to address the question of how social isolation relates to alcohol use, they all tend to focus on a specific type of

social isolation: *interpersonal* isolation. Such measures include: loneliness (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006); social network size, frequency of contact with others, and participation in social activities (Chou, Liang, & Sareen, 2011; Cornwell & Waite, 2009); and social support (Rotheram-Borus, Murphy, Swendeman, Chao, Chabon, Zhou, Birnbaum, & O'Hara, 1999). Though these are all accurate representations of a broadly construed definition of social isolation, recent empirical work teaches us that social isolation can take on at least two distinct forms (Pinel, Long, Murdoch, & Helm, 2017; Pinel, Long, Landau, Alexander, & Pyszczynski, 2006). There is good reason to believe that one specific form of social isolation, called *existential isolation*, may uniquely predict alcohol use and abuse, and I aim to study this in the current research. First, however, I will describe both interpersonal and existential isolation, providing my reasoning for: 1) why the previously utilized measures of social isolation tap into interpersonal isolation specifically, and 2) why existential isolation may uniquely predict alcohol use and abuse.

On the Unique Nature of Existential Isolation

Yalom (1980) asserts in **Existential Psychotherapy** that there are three primary forms of isolation: intrapersonal, interpersonal, and existential. Intrapersonal isolation refers to isolated aspects within one's own psyche, which can emerge in relatively common forms such as indecisiveness or in more extreme forms such as Dissociative Identity Disorder (American Psychiatric Association, 2013). Interpersonal isolation, on the other hand, refers to feeling alone with regard to one's relationships with others. This is traditionally conceptualized as the feelings stemming from complete physical isolation, as with a prisoner sentenced to solitary confinement or a lone hunter holed up in the

woods for days. However, interpersonal isolation can also result from a lack of direct social contact, even if the individual is navigating a public place. Consider the teenage outcast who sits alone in the crowded cafeteria, ignoring and ignored by the others around him. Interpersonal isolation may also result from feelings that one's existing relationships lack a sense of real substance, as with superficial friendships that do not foster feelings of having an adequate social support system (Baumeister & Leary, 1995; Pinel et al., 2017; Yalom, 1980). The previously described measures of social isolation utilized in the alcohol use literature (e.g., loneliness, social network size, social support) all appear to tap into this form of isolation, as they each revolve around one's relationships with others (or lack thereof).

Unique from both intrapersonal and interpersonal isolation, though often comorbid with the two, is existential isolation, defined as the feeling of being alone in one's experiences of the world. Existential isolation arises from the reality that there is and will always be an unbridgeable gulf between oneself and any other being (Pinel et al., 2006; Pinel et al., 2017; Yalom, 1980). This feeling of aloneness stems from the fact that, as human beings, our subjective experience is filtered through our own sensory organs and higher level cognitive processes. As such, although we may interact and bond with others in our daily lives, we are, at the end of the day, individual beings who can never truly know firsthand what another person senses, feels, or thinks. This feeling of being unable to truly understand or be understood by others leads us to feel isolated in a very specific way that has only recently received empirical attention (Pinel, Long, & Crimin, 2010; Pinel & Long, 2012; Pinel et al., 2017; Yawger & Pinel, 2016). We can be surrounded by our peers and still feel that we are alone; we can feel existentially isolated

even while we feel interpersonally connected. Further, Pinel and colleagues (2017) found that although the construct of existential isolation is often correlated with other measures of social isolation (including loneliness, belongingness needs, interpersonal reliance, and alienation), it can also be discriminated from them, supporting the perspective that existential isolation is a conceptually separate construct. This distinction is important to the current research because it implies that if there is a conceptual difference between existential isolation and other measures of social isolation, there may be a difference in their consequences as well.

Though the current study is the first to pit existential isolation against interpersonal isolation in such a concrete way, existing research does already point to the unique social consequences faced by existentially isolated individuals. Specifically, Pinel and colleagues (2006; 2010; 2012) have found that existentially isolated individuals react uniquely to instances in which they feel that they share the same subjective experience as another person (I-share; Pinel, Long, Landau, & Pyszczynski, 2004; Pinel et al., 2006) – a potent avenue for increasing feelings of existential connection. People tend to like subjectively similar others (I-sharers) more than objectively similar others (value-sharers; same-race others), and this effect is significantly stronger for individuals high in existential isolation (Pinel et al., 2006; Pinel & Long, 2012). Researchers have also found that high- and low- existentially isolated individuals react differentially to instances of I-sharing when conceptualized as a specific form of shared reality. Pinel, Long, and Crimin (2010) found that I-sharers were less likely to make subsequent efforts to share reality by conforming, attesting to I-sharing's function as an effective means of sharing reality; however, this effect was exclusive to those low in existential isolation.

Specifically, highly existentially isolated individuals continued to conform even after an I-sharing moment, implying that this singular experience was not enough to alleviate their feelings of isolation in this context. These findings together suggest that although existentially isolated individuals appear to be especially welcoming of moments in which they feel that their experience is shared by others, the effectiveness of this form of existential connection may depend on the context, the outcome, or the extent of the individual's feelings of isolation. A common thread, however, is that the existentially isolated tend to react uniquely and strongly to their social environment – a characteristic upon which I base my exploration into the unique relationship between existential isolation and alcohol use.

On Why Existential Isolation May Uniquely Predict Alcohol Use

Two reasons for why existential isolation would render people more susceptible to alcohol abuse stand out as particularly important. First, many people think of alcohol as a “social lubricant” (Critchlow, 1986; Monahan & Lannutti, 2000), and thus as a way to forge experiential bonds with others – an especially alluring prospect for existentially isolated individuals. Second, many people turn to alcohol as a form of self-medication for a range of psychiatric symptoms (Deakin, Levy, & Wells, 1987; Miller, Miller, Verhegge, Linville, & Pumariega, 2002; Carrigan & Randall, 2003), and existential isolation might uniquely inspire self-medication because of the psychological pain associated with it. I call the first hypothesis the *social lubricant hypothesis* and the second one the *pain-numbing hypothesis*, and I discuss both in turn.

Social lubricant hypothesis. I posit that alcohol is uniquely qualified to act as a tool of social lubrication, particularly in facilitating existential connection, because of its

effects on the subjective experience of those who consume it. Consider, as an illustration of this phenomenon, the first year college student who finds himself at a party, surrounded by intoxicated people. He may be surrounded by friends and thus fulfilled in the realm of interpersonal connection, but – being the only sober person in the room – he may at the same time feel utterly alone in the midst of drunken half-conversations and raucous laughter that he doesn't quite “get.” The social lubricant hypothesis builds on the unique experiential effects of alcohol, suggesting that he would experience a desire to drink (potentially at dangerous levels), if only with the mere hope of sharing experiences with others around him.

In other words, alcohol may prove especially alluring to the existentially isolated individual, insofar as consuming alcohol suggests one way to achieve the same state of consciousness as another (intoxicated) person. The idea that specific, existentially-connecting activities may be especially welcomed by or evoke especially strong responses in existentially isolated individuals is supported by the previously described research by Pinel and colleagues (2006), who found that participants high in existential isolation preferred partners who shared the same in-the-moment experiences as themselves (implying a sense of existential connection) to those who didn't – even when this existential connection stood in opposition to traditional dimensions of similarity.

Pain-numbing hypothesis. Feelings of existential isolation may also predict alcohol use to the extent that those feelings stem from the pain of being with others but feeling excluded – a uniquely painful experience, and one that is not easily alleviated. Consistent with this claim, existential isolation correlates positively with mental health outcomes like depression and anxiety (Costello & Long, 2014). Additionally, Yalom

(1980) describes various instances in which his clients reveal that they suffer from, in addition to (or perhaps partly because of) such conditions as depression and panic attacks, chronic and debilitating feelings of existential isolation. Alcohol may look to someone suffering in such a way as a means of numbing psychological pain, and that person may seek alcohol to help them cope with the discomfort associated with an unmet need for existential connection. This *pain-numbing hypothesis* builds upon work showing that people use alcohol as a buffer against negative experiences generally (e.g., Mohr, Armeli, Tennen, Temple, Todd, Clark, & Carney, 2005), and alcohol use disorders are highly prevalent in individuals with depression and/or anxiety (Burns & Teesson, 2002; De Graaf, Bijl, Smit, Vollebergh, & Spijker, 2002; Hasin, Stinson, Ogburn, & Grant, 2007).

Importantly, these are not mutually exclusive mechanisms; it is entirely possible that an individual may be motivated to numb the pain of isolation and, at the same time, be motivated to seek out existential connection. As such, one goal of the current research was to investigate the support for each of these hypotheses and not to pit them against one another. Another related goal was to investigate the individual factors that may mediate or moderate the effect of existential isolation on alcohol use.

On Potential Mediators and Moderators of the Hypothesized Relationship Between Existential Isolation and Alcohol Use

An important theme throughout the research on the “why” of alcohol use in young adults is that even strong and direct observed effects, whether they be biologically, developmentally, or socially based, may at least partially depend on and/or work through various individual difference factors (e.g., Sher, Bartholow, & Wood, 2000; Arnett, 2000;

Griffin, Cleveland, Schlomer, Vandenberg, & Feinberg, 2015; Orth & Kahle, 2008). A discussion of several such possible factors in the current context follows.

Motivations to use alcohol. Individuals' motivations to use alcohol generally fall into one of a series of categories, including physical effects (e.g., "To help me fall asleep"), reducing negative affect (e.g., "To help me feel better when I'm down or depressed"), and social cohesion (e.g., "To help me enjoy the company of my friends"; Boys, Marsden, Griffiths, Fountain, Stillwell, & Strang, 1999; Newcomb, Chou, Bentler, & Huba, 1988). The latter two of these are most important for the current research, as I posit that these dimensions map onto the two hypotheses I described regarding the mechanisms through which existential isolation works to predict alcohol use: 1) that alcohol serves as a tool to numb the pain, and 2) that alcohol is used as a social lubricant, with the goal of facilitating existential connection. As such, it is possible that one or both of these motivational categories may mediate the relationship between existential isolation and alcohol use.

Mental health: depression, anxiety, and stress. Insofar as certain mental health variables are associated with alcohol use (Regier, Farmer, Rae, Locke, Keith, Judd, & Goodwin, 1990; Grant & Harford, 1995; Jane-Llopis & Matytsina, 2006; Armstrong & Costello, 2002), individuals' levels of depression, anxiety, and stress may moderate the relationship between existential isolation and alcohol use. In line with the pain-numbing hypothesis of why existentially isolated individuals may turn to alcohol, the relationship might be stronger for those who also exhibit significant levels of these mental health variables because these people represent a higher baseline of psychological pain. In other words, high levels of existential isolation in combination with high levels of depression,

anxiety, and/or stress may more strongly predict more problematic alcohol use because such individuals may have a stronger need to *numb the pain* of their compounded negative states.

Self-esteem. Another potential moderator is individual self-esteem. According to my theorizing, any effect of existential isolation – regardless of which mechanism underlies it – would depend on whether the individual’s self-needs are threatened to the point that he or she is pushed to seek out such solutions. A high sense of global self-esteem, then, might buffer this threat and thus lead to a weaker association between existential isolation and alcohol use. This hypothesis arises from the large body of research supporting the idea that self-esteem serves a threat-buffering function; specifically, Terror Management Theory (TMT; e.g., Greenberg, Solomon, & Pyszczynski, 1997) holds that self-esteem serves as a buffer against anxiety (Greenberg, Solomon, Pyszczynski, Rosenblatt, Burling, Lyon, Simon, & Pinel, 1992; Greenberg, Pyszczynski, Solomon, Pinel, Simon, & Jordan, 1993).

Self-control. A final moderator to consider is self-control, derived from existing research showing that lower trait levels of self-control are associated with more alcohol use/abuse (Cook, Young, Taylor, & Bedford, 1998), and that it moderates social influence effects from peers (Robinson, Jones, Christiansen, & Field, 2015) to mass media (Wills, Gibbons, Sargent, Gerrard, Lee, & Dal Cin, 2010). The reasoning here is that, because the urge to use alcohol to cope with a lack of social connection or to facilitate such connection is not an adaptive strategy, a greater sense of self-control may weaken the expected relationship. Those with high levels of self-control may be more

likely to resist social pressure or to hold out for a more adaptive coping mechanism, whereas those with low levels may be more susceptible to in-the-moment pressures.

In addition to these proposed moderators, I also tested whether race or gender would moderate my expected effect. Further, I included two exploratory measures to test as potential moderators: lifetime drinking tendencies and desire for existential connectedness.

The Current Research

The current research was designed to investigate whether there is indeed a unique relationship between existential isolation and alcohol use, as well as whether this relationship is significantly mediated or moderated by theoretically relevant individual difference factors. I approached this investigation using both a cross-sectional and a cross-lagged methodological design. Specifically, I collected participants' self-report data on alcohol use, existential and interpersonal isolation, and the potential mediators and moderators described above, at two time points separated by four to six weeks. This methodology allowed me to examine both concurrent associations between my variables of interest (making up the cross-sectional component) and associations across time (making up the cross-lagged component).

My primary hypothesis was that existential isolation would predict alcohol use while controlling for interpersonal isolation, demonstrating a unique effect above and beyond the effect of interpersonal isolation. In the case of the cross-lagged component, support for this hypothesis would also demonstrate a unique effect across time and thus provide evidence consistent with a causal interpretation of the data.

My secondary hypothesis concerned mediation and moderation of the expected relationship between existential isolation and alcohol use. I expected that motivations to use alcohol would mediate this relationship, insofar as motivations corresponding to coping with negative affect map onto the pain-numbing hypothesis and/or motivations corresponding to social cohesion map onto the social lubricant hypothesis. Further, I expected that depression/anxiety/stress, self-esteem, and self-control would moderate the effect such that more depression/anxiety/stress, lower self-esteem, and less self-control would all strengthen the relationship between existential isolation and alcohol use.

Method

Participants

I initially recruited 413 U.S.-residing participants through Amazon's Mechanical Turk (MTurk). Of these, I deleted the data from 10 participants who completed less than half of the survey and one who conveyed a lack of effort through a combination of disrespectful/off-topic open-ended responses and an apparent lack of attention (e.g., selected all 1's for a scale that included reverse-scored items). I also filtered out participants following two criteria: 1) those who reported never having drunk alcohol (35 participants) because I was interested here in alcohol use as a continuous outcome among drinkers, rather than a dichotomous "yes I have/no I haven't" (which hinges upon many other factors and is not relevant to the current research question), and 2) those who reported at the end of the study a true age of 31 or older (15 participants), as I was interested here in alcohol use among emerging adults. This left me with a final sample size of 352, of which 49.7% identified as male, 48.3% as female, 1.1% as gender fluid or non-binary, and three who did not identify their gender. The majority of this sample was

non-Hispanic (89.8%) and White or European-American (79.3% versus 9.4% Black or African-American, 6.5% Asian or Asian-American, and 4.8% all other racial identities). Ages ranged from 18 to 30, with a mean of 25.92 ($SD = 2.96$). Workers were compensated \$1.80 total for their participation: \$0.80 for the first survey and \$1.00 for the second.

Of my final first-wave sample of 352 MTurk workers, only 230 completed the second survey. Of these, as with the original sample, I deleted the data of 10 participants who either completed less than half of the survey or conveyed a complete lack of effort, and I filtered out 14 non-drinkers and 22 participants who reported an age of 31 or older. My final sample size for the second wave was 185, with roughly the same breakdown of demographics as the full sample. Because this second-wave sample was so much diminished from the first wave, I used this sub-set only for the cross-lagged analyses and the full sample for all other analyses.

Procedure

I administered an online survey to participants through the Qualtrics survey software, at two time points about five (4-6) weeks apart. This survey included measures of existential isolation, interpersonal isolation, alcohol use, motivations for alcohol use, mental health, self-esteem, and self-control, as well as several related exploratory measures. I describe each measure in turn (see Appendices A through G).

Existential Isolation. To measure existential isolation, I utilized the Existential Isolation Scale (EIS; Pinel et al., 2017), consisting of two sub-scales: one that measures the extent to which participants feel alone in their experiences (Existential Isolation; EI) and a second that measures the extent to which participants want to feel that they share

experiences with others (Desire for Existential Connectedness; DEC). These two 6-item sub-scales (here exhibiting Cronbach's alphas of .878 and .791, respectively), scored on a scale of 1 (strongly disagree) to 7 (strongly agree), ask participants to rate the extent to which they agree with a series of statements, including "People usually do not understand my experiences" (EI) and "I want other people to feel the way I do" (DEC). Higher scores represent higher levels of each construct.

Interpersonal Isolation. I used the Social Support Questionnaire—Short Form (SSQSR; Sarason, Sarason, Shearin, & Pierce, 1987)² to measure interpersonal isolation.

² Though I originally collected multiple measures of interpersonal isolation – including the Need to Belong Scale (Leary, Kelly, Cottrell, & Schreindorfer, 2013) and the UCLA Loneliness Scale (Russell, 1996) – I used the SSQSR here because it represented the most straightforward and distinct measure of interpersonal isolation. In contrast, the Need to Belong Scale taps into yearning for rather than actual feelings of social connection (e.g., "I want other people to accept me"), and the UCLA Loneliness Scale contains a few items that conceptually overlap with the construct of existential isolation, threatening its distinctness (e.g., "How often do you feel that you are 'in tune' with the people around you?"). Further, I chose to use the SSQS sub-scale exclusively because it more clearly measures feelings of isolation rather than a simple record of social network size (as with the SSQN sub-scale). Though the other scales constitute important aspects of social isolation, and future research would benefit from the formation of a latent construct and subsequent structural equation modeling analyses, this was beyond the scope of the current study.

This scale measures two aspects of social support: number of people participants identify as supportive of them in various realms (SSQN sub-scale), and how satisfied they are with the level of support they have (SSQS sub-scale). The short form consists of 12 items, representing six two-part questions, first gauging number and second gauging satisfaction with their support (e.g., “Whom can you really count on to be dependable when you need help? How satisfied are you with the overall support you have in this area?,” “Who accepts you totally, including both your worst and your best points? How satisfied are you with the overall support you have in this area?”) Participants respond to the first part of each question by listing people by their initials and their relationship to the participant, and to the second part of each question by indicating how satisfied they are with the overall support on a 6-point Likert scale from 1 (very dissatisfied) to 6 (very satisfied). I used here the Satisfaction (SSQS) subscale, which displayed a Cronbach’s alpha of .912. Satisfaction scores were reversed to represent a lack of satisfaction with one’s levels of social support (i.e. social isolation), for ease of interpretation.

Alcohol Use. To measure the extent of participants’ past/current alcohol use, I used a questionnaire adapted from the 2017 National Survey on Drug Use and Health (Center for Behavioral Health Statistics and Quality, 2016). Items taken from this survey include whether the participant has ever drunk alcohol (“Have you ever, even once, had a drink of any type of alcoholic beverage?”), frequency of drinking over the past 12 months and 30 days (“On how many days in the past 12 months/30 days did you drink one or more drinks of an alcoholic beverage?”), quantity of drinking over the past 30 days (“On the days that you drank during the past 30 days, how many drinks did you usually have each day?”), and binge drinking over the past 12 months/30 days (“During the past 12

months/30 days, on how many days did you have five or more drinks on the same occasion?”). I added questions gauging lifetime binge drinking (“How many times in your life have you had five or more drinks on the same occasion?”) as well as drunkenness over the past 30 days and the individual’s lifetime (“How many times in the past 30 days/your lifetime have you been drunk?”). All responses were on a free response scale for those items that asked about a number of times or drinks and on a sliding scale from zero to the maximum for those items that asked about a number of days. For ease of analysis, the individual items in this scale were collapsed into three categories: lifetime drinking (alpha = .844), past-year drinking (alpha = .806), and past-month drinking (alpha = .802); higher scores represent higher levels of alcohol use across each time span. To create composites for each, I first created z-scores for each individual item and then took the means of the z-scored items as they corresponded to each category (lifetime, past-year, past-month).

I also originally included a separate measure of problematic alcohol use, aimed at gauging how often participants have experienced problematic situations when they were drinking alcohol or as a direct result of drinking alcohol. However, for my analyses, I opted to use the past-month drinking composite as the relevant measure of alcohol use. My reasoning for using the composite of the “past 30 days” alcohol use items was twofold. First, I was already more interested in “current” alcohol use (as opposed to past alcohol use), commonly defined as alcohol use over the previous 30 days. Second, I ran all analyses with all three quantity/frequency composites as well as the problematic alcohol use measure and found a similar trend: any observed effects were strongest with past-month drinking and diminished in size and statistical significance across past-year

drinking, lifetime drinking, and problematic alcohol use. Given this pattern, and given that people are less accurate in reporting their activities as they are asked to recall further and further back in time, I deemed it most appropriate to use the composite of the “past 30 days” items as my primary measure of alcohol use.

Motivations for Alcohol Use. To measure participants’ motivations for using alcohol, and thus to assess both the pain-numbing and social lubrication hypotheses, I used the Functions for Substance Use Scale (Boys et al., 1999). This 18-item scale asks participants to rate the extent to which they have ever used alcohol for any of a series of reasons, on a 5-point Likert scale from 0 (never) to 4 (always). To address the pain-numbing hypothesis, I used the *changing mood* motivations sub-scale (encompassing the following motivations: “to make yourself feel better when down or depressed,” “to help you stop worrying about a problem,” “to help you to relax,” “to help you feel elated or euphoric,” and “to just get really intoxicated”; alpha = .852). To address the social lubricant hypothesis, I used the *social purposes* motivations sub-scale (encompassing the following motivations: “to help you enjoy the company of your friends,” “to help you feel more confident or more able to talk to people in a social situation,” “to help you lose your inhibitions,” and “to help you keep going on a night out with friends” ; alpha = .831). Higher scores on each of these sub-scales represent stronger motivations to use alcohol to change one’s mood or for social purposes, respectively.

Mental Health. To measure mental health variables, I used the short-form version of the Depression Anxiety Stress Scales (DASS-21; Henry & Crawford, 2005). This 21-item scale, abbreviated from the original 42-item scale (DASS; Lovibond & Lovibond, 1995), measures depression, anxiety, and stress. Participants rate the extent to

which items such as “I found it hard to wind down” or “I felt that I had nothing to look forward to” applied to them over the past month, on a 4-point Likert scale from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time).

Though the DASS is typically broken into its subscales, I used here a total composite of all 21 items to approximate a general measure of mental health/negative emotional symptoms. As indicated by the authors, this is an acceptable alternative. Further, I had no theoretical reason to expect one mental health dimension to be more relevant than any other in the current investigation. Finally, when I conducted analyses on all three subscales, I observed similar results, again attesting to the appropriateness of collapsing all three sub-scales into one composite. These items demonstrated an overall Cronbach’s alpha of .957, higher scores representing more negative emotional symptoms.

Self-Esteem. To measure self-esteem, I used the Self Liking and Competence Scale (SLC; Tafarodi & Swann, 1995). This 20-item scale, measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), asks participants to rate their level of agreement with items such as “I feel comfortable about myself,” “I am a capable person,” and “I am not very competent” (reverse-scored). Higher scores on this scale represent higher levels of self-liking and self-competence, dimensions of global self-esteem. Cronbach’s alphas were .953 for global self-esteem, .934 for self-liking, and .901 for self-competence.

Self-Control. I used the Self-Control Scale (Tangney, Baumeister, & Boone, 2004), a 36-item scale that measures the level of self-control the subject demonstrates in his or her daily life. Participants rate the extent to which, on a 5-point Likert scale from 1 (not at all) to 5 (very much), they agree with items such as, “I am good at resisting

temptation” and “I blurt out whatever is on my mind.” Items like the latter are reverse-coded, so that high scores indicate more self-control. This scale demonstrated a Cronbach’s alpha of .901.

Following these measures, participants completed a set of demographic questions and were prompted to return 4 to 6 weeks later for the follow-up survey. Participants were contacted by email to complete the second survey, which was presented exactly as it was the first time.

Results

Preparing the Data for Analysis

Before running any statistical tests, I considered the distribution of my alcohol use frequency/quantity data. As suspected, even after Winsorizing extreme outliers on each item (Yale & Forsythe, 1976), they were kurtotic ($kurtosis = 3.22$, $SE = 0.26$) and positively skewed ($skewness = 1.78$, $SE = 0.13$). To address this non-normality, I tried two methods of transforming my past-month alcohol use variable: logarithmic (log) and square root transformations (Hoyle, 1973). Both transformations resolved the kurtosis value ($kurtosis_{sqrt} = -0.04$, $SE = 0.26$; $kurtosis_{log} = -0.49$, $SE = 0.26$); neither fully resolved the positive skew ($skewness_{sqrt} = 0.70$, $SE = 0.13$; $skewness_{log} = 0.54$, $SE = 0.13$), but I chose to utilize the log transformed variable going forward as it approached normality more so than did the square root transformed variable. I should note that I also used bootstrapping methods, but because the results did not differ from those conducted on the log transformed data, because the two data-analytic approaches are considered relatively equal in their handling of non-normality (e.g., Guan, Yusoff, Zinal, & Yun,

2012), and for ease of my further analyses, I used the transformed alcohol use variable rather than bootstrapping in my final, reported results.

Cross-Sectional Analyses

I began my data analyses by producing bivariate correlations between all of my a priori variables of interest (see Tables 1 & 2). Notably, interpersonal and existential isolation were, as expected, significantly correlated both at Time 1 ($r = .262, p < .001$) and Time 2 ($r = .332, p < .001$); however, these were only moderate correlations, attesting to the distinctness of these two constructs. As the pattern of correlations held across both time points, all subsequent analyses for the cross-sectional component were calculated using only the Time 1 data (that with the largest sample size, ensuring the greatest statistical power).

Table 1

Bivariate Correlations Between Variables of Interest at Time 1

	Interpersonal Isolation	Alcohol Use	Self-Control	Self-Esteem	Depression, Anxiety, Stress	Pain-Numbing Motives	Social Lubricant Motives
Existential Isolation	.262***	-.161**	-.307***	-.406***	.321***	.031	-.005
Interpersonal Isolation		.099 [†]	-.334***	-.440***	.324***	.182***	.101 [†]
Alcohol Use			-.227***	-.016	.122*	.457***	.335***
Self-Control				.590***	-.570***	-.394***	-.272***
Self-Esteem					-.691***	-.265***	-.124*
Depression, Anxiety, Stress						.411***	.243***
Pain-Numbing Motives							.718***

Note. [†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

Bivariate Correlations Between Variables of Interest at Time 2

	Interpersonal Isolation	Alcohol Use	Self-Control	Self-Esteem	Depression, Anxiety, Stress	Pain-Numbing Motives	Social Lubricant Motives
Existential Isolation	.332***	-.185*	-.348***	-.503***	.429***	.029	-.037
Interpersonal Isolation		.154*	-.366***	-.440***	.425***	.204***	.141 [†]
Alcohol Use			-.187*	-.013	.156*	.470***	.359***
Self-Control				.586***	-.577***	-.349***	-.294***
Self-Esteem					-.652***	-.224***	-.109
Depression, Anxiety, Stress						.459***	.303***
Pain-Numbing Motives							.769***

Note. [†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

To test my primary hypothesis regarding the unique relationship between existential isolation and alcohol use, I then ran a simultaneous multiple regression analysis, regressing current alcohol use on both interpersonal and existential isolation. This overall regression model was statistically significant, $F(2, 347) = 8.68, p < .001, R^2 = .048$, indicating that, together, both forms of social isolation significantly predict alcohol use. Further, each predictor had a statistically significant effect on alcohol use. As expected, higher interpersonal isolation was associated with more alcohol use, $\beta = .152, t(349) = 2.79, p = .005$; however, contrary to my hypothesis, higher existential isolation was associated with less alcohol use, $\beta = -.202, t(349) = -3.72, p < .001$. I will return to this surprising direction of effect, but importantly, these results show that existential isolation is indeed uniquely related to alcohol use above and beyond interpersonal isolation.

I next turned to my proposed moderators and mediators, all tested while controlling for interpersonal isolation. Neither gender (male vs. female) nor self-esteem nor self-control significantly moderated the effect of existential isolation on alcohol use (all $ps > .397$). However, two variables did emerge as significant moderators: race (White vs. non-White), $F(1, 345) = 5.50, p = .020, \Delta R^2 = .015$, and depression/anxiety stress, $F(1, 345) = 6.17, p = .014, \Delta R^2 = .016$. To decompose these interactions, I examined both the conditional effects and plots of the simple slopes. First, I found that the negative relationship between existential isolation and alcohol use was stronger for non-White participants than for White participants, as evidenced by a weaker slope for Whites (see Figure 1 and Table 3). Similarly, I found that the association between existential isolation and alcohol use was also stronger for participants with higher levels of negative emotional symptoms, as seen in a weaker slope for those participants with low levels of negative emotional symptoms (see Figure 2 and Table 3).

Table 3

Conditional Effects of Existential Isolation on Alcohol Use (Separate Moderators: Race and Depression/Anxiety/Stress)

	Effect	SE	t	p	95% CI
White	-0.030	0.012	-2.512	.013	[-0.054, -0.007]
Non-White	-0.097	0.026	-3.694	< .001	[-0.148, -0.045]
Low DAS	-0.029	0.014	-2.027	.043	[-0.056, -0.001]
Average DAS	-0.054	0.011	-4.736	< .001	[-0.076, -0.032]
High DAS	-0.079	0.016	-4.846	< .001	[-0.111, -0.047]

Note. Controlling for interpersonal isolation.

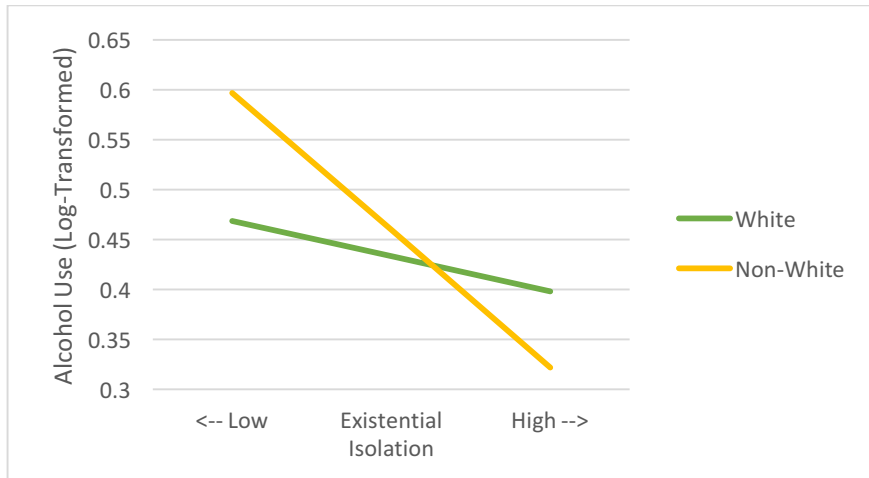


Figure 1. Race (White vs. non-White) moderating the relationship between existential isolation and alcohol use, controlling for interpersonal isolation.

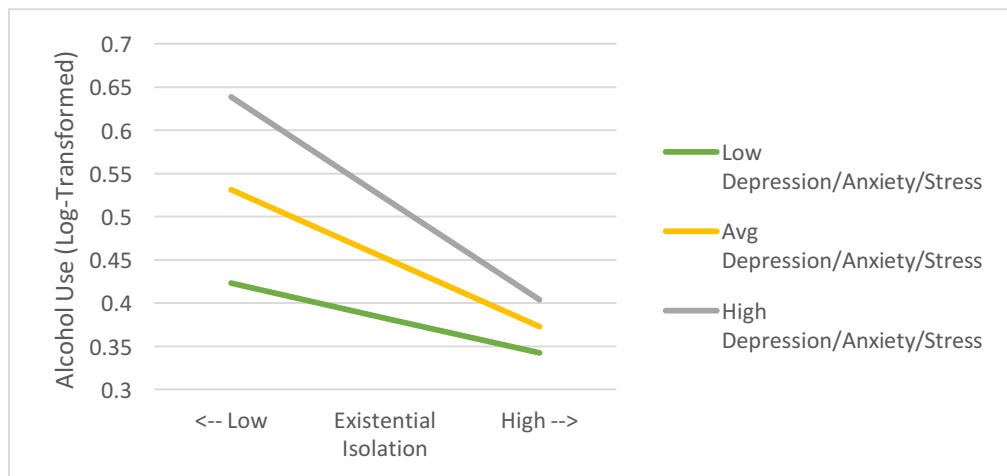


Figure 2. Negative emotional symptoms (depression, anxiety, and stress) moderating the relationship between existential isolation and alcohol use, controlling for interpersonal isolation.

Mediation analyses indicated that the relationship between existential isolation and alcohol use was not significantly mediated by changing-mood motivations to drink (representing the pain-numbing hypothesis; indirect effect = -0.002, bootstrapped 95% CI: [-0.012, 0.009]) or social-purposes motivations (representing the social lubricant hypothesis; indirect effect = -0.002, bootstrapped 95% CI: [-0.010, 0.005]).

Exploratory analyses. At first blush, the most prominent finding here – that higher existential isolation is associated with *less* alcohol use – seems opposite to what I hypothesized. However, my overarching hypothesis that feelings of existential isolation would lead to increased alcohol use was predicated on the idea that people high in existential isolation would consume alcohol so as to reduce their existential isolation. If their reasoning is correct – that alcohol use would reduce their existential isolation – then this explains why alcohol use predicts lower feelings of existential isolation. The exploratory analyses presented in this section consider this reversed direction of causality – that rather than existential isolation serving as a precursor to alcohol use, alcohol use serves as a pathway to reducing feelings of existential isolation.

First, I ran the same moderation analyses described earlier, but this time with current alcohol use as my predictor and existential isolation as my outcome. Neither gender nor self-esteem nor self-control significantly moderated the relationship between alcohol use and existential isolation (all $ps > .204$). Further, when considering this reversed direction of causality, the moderating roles played by both race ($F(1, 345) = 2.70, p = .101$) and depression/anxiety/stress ($F(1, 345) = 2.41, p = .121$) dropped to non-significance. That said, examination of the conditional effects revealed that the patterns held, such that the relationship between alcohol use and existential isolation was

relatively stronger among both non-White participants and those who experience more negative emotional symptoms (see Table 4).³

Table 4

Conditional Effects of Alcohol Use on Existential Isolation (Separate Moderators: Race and Depression/Anxiety/Stress)

	Effect	SE	<i>t</i>	<i>p</i>	95% CI
White	-0.713	0.282	-2.529	.012	[-1.268, -0.159]
Non-White	-1.710	0.537	-3.182	.002	[-2.766, -0.653]
Low DAS	-0.639	0.362	-1.767	.078	[-1.351, 0.073]
Avg DAS	-1.023	0.242	-4.227	< .001	[-1.498, -0.547]
High DAS	-1.406	0.329	-4.278	< .001	[-2.052, -0.760]

Note. Controlling for interpersonal isolation.

I next considered potential moderators that would be specifically relevant to the “alcohol use as a pathway to reducing existential isolation” hypothesis. The first was alcohol tolerance, commonly defined as the reduced behavioral response to a dose of alcohol after repeated administrations. To the extent that alcohol reduces feelings of existential isolation because it is an effective coping mechanism, it stands to reason that this effect would be buffered by one’s insensitivity to alcohol’s effects, generally. Though I did not specifically measure alcohol tolerance in the current dataset, I did have

³ My planned mediation analyses for the original “existential isolation as a precursor to alcohol use” hypothesis did not logically translate to this causal direction, so I do not include them here.

a proxy: history of alcohol use. An individual with an extensive history of drinking throughout their lifetime – and who is still a current drinker – may likely exhibit a higher level of alcohol tolerance than an individual with a relatively limited history. As such, I tested whether lifetime alcohol use moderated the relationship between alcohol use and existential isolation (while controlling for age); it did, $\Delta R^2 = .014$, $\Delta F(1, 340) = 5.41$, $p = .019$. Examination of the conditional effects and a plot of the simple slopes showed that this interaction manifested as expected: though the negative relationship between alcohol use and existential isolation held across the sample, this relationship was significantly weaker among those reporting higher levels of alcohol consumption over their lifetime, even while statistically controlling for age – suggesting that tolerance effects may play a role (see Figure 3 and Table 5).

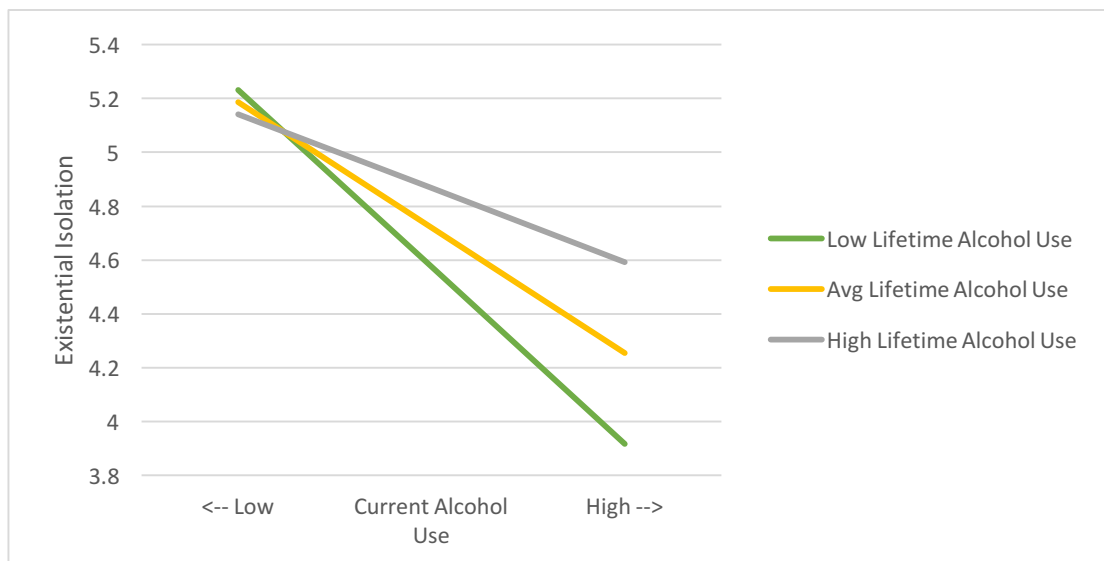


Figure 3. Lifetime alcohol use moderating the relationship between current alcohol use and existential isolation, controlling for age and interpersonal isolation.

Table 5

Conditional Effects of Alcohol Use on Existential Isolation (Moderator: Lifetime Alcohol Use)

	Effect	SE	<i>t</i>	<i>p</i>	95% CI
Low Lifetime Alcohol Use	-2.021	0.478	-4.226	< .001	[-2.961, -1.080]
Avg Lifetime Alcohol Use	-1.433	0.331	-4.329	< .001	[-2.085, -0.782]
High Lifetime Alcohol Use	-0.846	0.339	-2.494	.013	[-1.513, -0.179]

Note. Controlling for age and interpersonal isolation.

I next identified one’s desire for existential connection as a potential moderator of the relationship between alcohol use and existential isolation. I theorized that the extent to which alcohol can influence one’s feelings of isolation should, at least in part, depend on one’s *desire for connection*. However, a crucial caveat is that this dependency is likely to itself depend on the individual’s view of drinking as an effective means of connecting. In other words, one’s desire for existential connection may moderate the relationship between alcohol use and feelings of existential isolation, but only insofar as alcohol consumption represents to them an existentially connecting activity. Therefore, I next ran a three-way interaction between these three predictor variables, using the “social purposes” motivations to drink sub-scale as a proxy for one’s beliefs that consuming alcohol will facilitate connection. None of the individual two-way interactions emerged as significant: neither between alcohol use and desire for existential connection ($t = -0.84$, $p = .400$) nor between alcohol use and social motivations to drink ($t = 1.57$, $p = .117$) nor between desire for existential connection and social motivations to drink ($t = 0.187$, $p =$

.852). However, the 3-way interaction did, $F(1, 341) = 4.57, p = .033, \Delta R^2 = .011$.

Examination of the conditional effects and the simple slope plots showed that desire for existential connection significantly moderated the relationship between alcohol use and existential isolation only for those who expressed strong motivations to drink for social facilitation purposes (see Figure 4 and Tables 6 & 7). In other words, alcohol use does differentially relate to existential isolation based on one's desire for existential connection (such that those high in desire see a stronger negative relationship between alcohol use and feelings of existential isolation, whereas those low in desire see no significant relationship), but this difference is exclusive to those who also view alcohol as an effective means of facilitating social connection (see Table 6). This finding is important because it suggests that those who have a strong desire for existential connectedness and who view alcohol as an effective means of fulfilling that desire are especially likely to experience a notable decrease in feelings of existential isolation when they drink. In contrast, those who view alcohol as an effective means of connecting but who don't have a strong desire to connect are not likely to experience any reduction in existential isolation as a result of drinking.

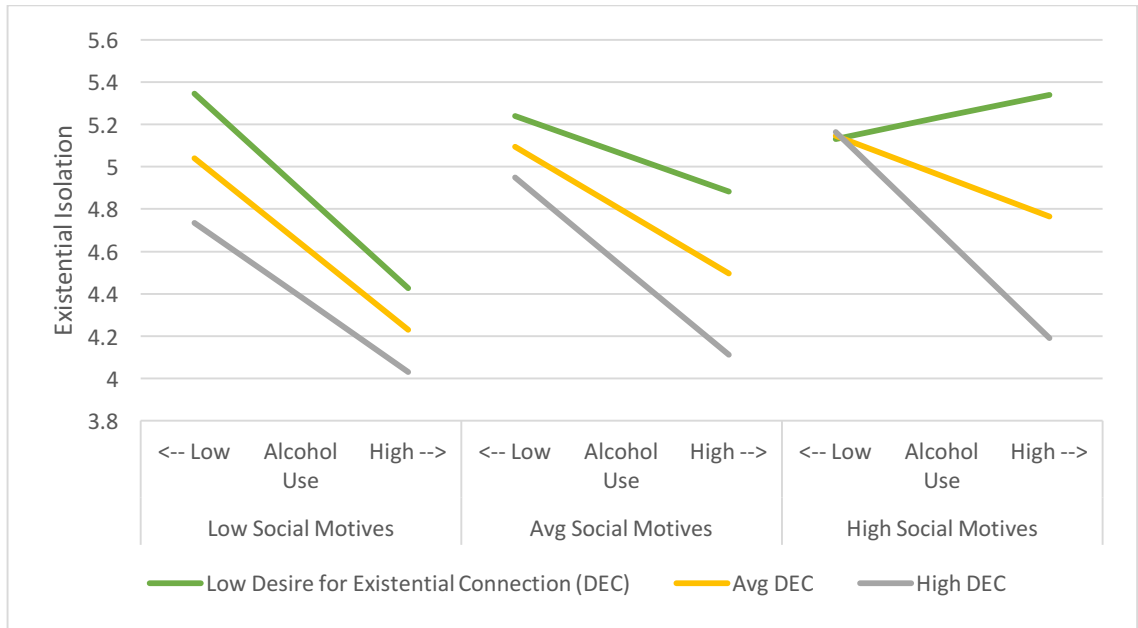


Figure 4. Three-way interaction predicting existential isolation: current alcohol use, desire for existential connectedness, and motivations to drink for social purposes (controlling for interpersonal isolation).

Table 6

Conditional Effects of “Alcohol Use X Desire for Existential Connection” Interaction on Existential Isolation (Moderator: Social Motivations to Drink)

	Effect	SE	<i>t</i>	<i>p</i>	95% CI
Low Social Motives	0.222	0.254	0.873	.383	[-0.278, -0.721]
Avg Social Motives	-0.156	0.185	-0.842	.400	[-0.520, 0.208]
High Social Motives	-0.533	0.258	-2.071	.039	[-1.040, -0.027]

Note. Controlling for interpersonal isolation.

Table 7

Conditional Effects of Alcohol Use on Existential Isolation (Moderators: Desire for Existential Connection and Social Motivations to Drink)

		Effect	SE	<i>t</i>	<i>p</i>	95% CI
Low Social Motives	Low DEC	-1.726	0.519	-3.328	.001	[-2.746, -0.706]
	Avg DEC	-1.411	0.404	-3.490	.001	[-2.206, -0.616]
	High DEC	-1.096	0.564	-1.941	.053	[-2.206, 0.015]
Avg Social Motives	Low DEC	-0.790	0.380	-2.081	.038	[-1.537, -0.043]
	Avg DEC	-1.011	0.269	-3.755	< .001	[-1.541, -0.482]
	High DEC	-1.233	0.373	-3.304	.001	[-1.967, -0.499]
High Social Motives	Low DEC	0.146	0.544	0.269	.788	[-0.923, 1.216]
	Avg DEC	-0.612	0.333	-1.839	.067	[-1.267, 0.043]
	High DEC	-1.370	0.440	-3.111	.002	[-2.237, -0.504]

Note. Controlling for interpersonal isolation.

Cross-Lagged Analyses

I have provided preliminary support for a causal interpretation of the relationship between existential isolation and alcohol use above, but the cross-sectional nature of this study prevents a conclusion of true causality. However, when longitudinal data are available, researchers can use the temporal order of the variables in a cross-lagged path analysis infer a causal relationship between variables (Kenny, 1975; Shingles, 1985; Reed & Verran, 1988; Cacioppo, Hawkley, & Thisted, 2010). The theory behind cross-lagged path analysis holds that in order to infer a causal relationship between the proposed predictor and outcome, one must first account for both autoregressive associations (relationships between the same variable measured at different times) and

concurrent or synchronous associations (relationships between different variables measured at the same time; Kenny, 1975). Then and only then can any cross-lagged paths (those between different variables measured at different times) be included in a modified model, to be tested against the “baseline” (consisting of purely the autoregressive and concurrent paths) to determine whether the addition of the cross-lagged path(s) contribute significantly to model fit, i.e. imply causality over and above these other sources of variance. A further crucial requirement in order to draw successful causal inferences is to control for potential sources of spuriousness, including confounding factors and measurement errors of observed variables.

Here, I utilized a cross-lagged path analysis design to test the fit of three alternative models aimed at investigating the potential causal relationship between existential isolation and alcohol use. To address the problem of confounding factors, I controlled for the most obvious: interpersonal isolation. I was not able to control for all possibilities, however, and so the conclusions I draw from this set of analyses are taken to be supportive of a causal relationship, but not directly indicative of one. The first of my three models was a baseline as described above (see Figure 4). The second and third tested the different unidirectional relationships: Model 2 including a path from existential isolation at Time 1 to alcohol use at Time 2 (consistent with the “existential isolation as a precursor to alcohol use” hypothesis), and Model 3 including a path from alcohol use at Time 1 to existential isolation at Time 2 (consistent with the “alcohol use as a pathway to reducing feelings of existential isolation” hypothesis; see Figures 5 and 6).

Chi-square difference tests revealed that neither of the two unidirectional cross-lagged path models approximated significantly better fit to the data than the baseline

model (Model 2: $\Delta\chi^2(1) = 0.007, p = .933$; Model 3: $\Delta\chi^2(1) = 2.689, p = .101$). Although non-significant, it may be useful to consider the pattern that emerged. Model 2's causal path (representing the "alcohol use as a pathway to reducing feelings of existential connection" hypothesis) yielded a marginally significant coefficient ($\beta = -0.081, p = .100$), whereas Model 3's causal path (representing the "existential isolation as a precursor to alcohol use" hypothesis) yielded a non-significant coefficient ($\beta = -0.004, p = .932$). Further, though the two alternative models are not nested and so cannot be directly compared using the standard chi-square difference test, examination of absolute fit statistics revealed that Model 2 consistently approximated better fit to the data than Model 3 (Model 2: RMSEA = .107, CFI = .981, TLI = .955, SRMR = .055; Model 3: RMSEA = .127, CFI = .973, TLI = .936, SRMR = .059)⁴. These combined results point to the possible existential isolation-reducing effects of alcohol consumption.

⁴ The four fit indices presented here are the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual index (SRMR). According to Hu and Bentler (1999), CFI and TLI cutoffs for adequate and good fit are .90 and .95, respectively; acceptable RMSEA values are thought to lie between .05 and .08, and SRMR values under .08.

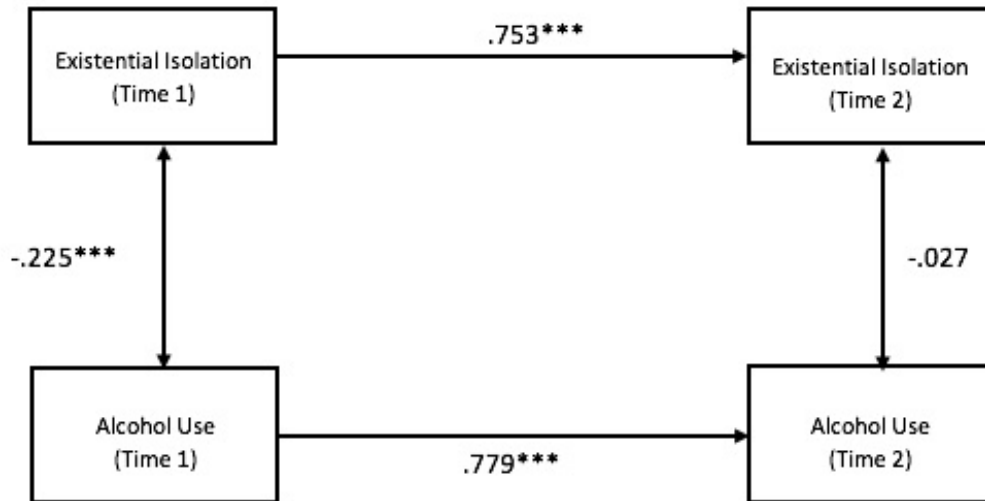


Figure 5. Model 1: baseline model, including only autoregressive and concurrent associations (standardized coefficients; $p = .10$ † .05 * .01 ** .001 ***).

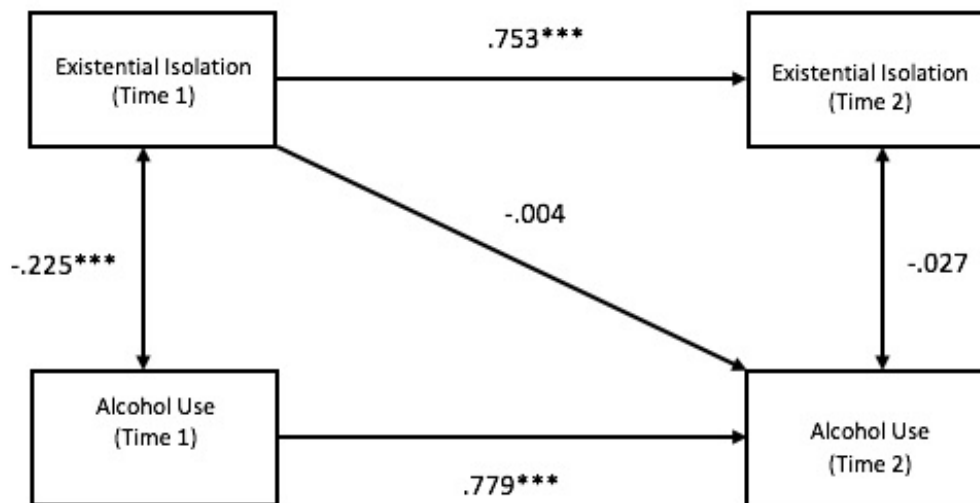


Figure 6. Model 2: adding cross-lagged path to the baseline model, representing a causal direction from existential isolation at Time 1 to alcohol use at Time 2 (standardized coefficients; $p = .10$ † .05 * .01 ** .001 ***).

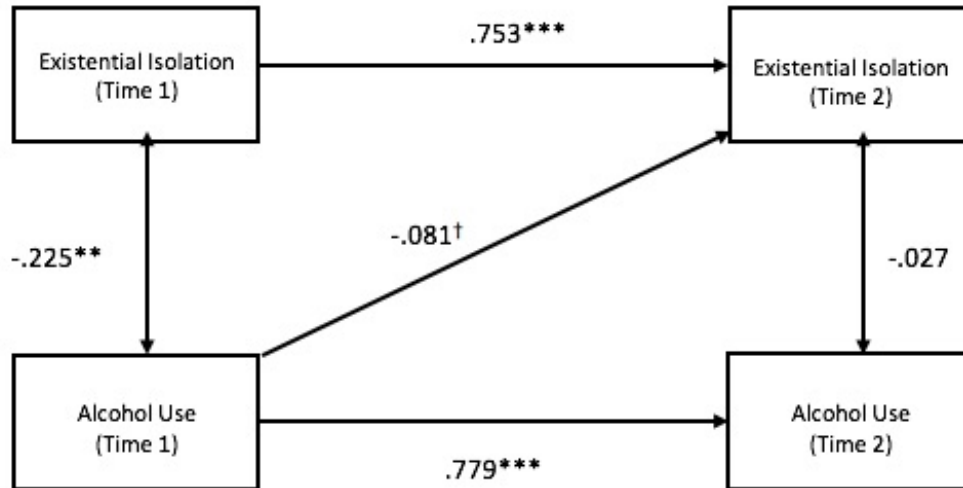


Figure 7. Model 3: adding alternate cross-lagged path to the baseline model, representing a causal direction from alcohol use at Time 1 to existential isolation at Time 2 (standardized coefficients; $p = .10$ † .05 * .01 ** .001 ***).

Discussion

The present study utilized both correlational and cross-lagged designs to investigate the relationship between existential isolation and current (past 30 days) alcohol use. I found support for my primary hypothesis – that the two would be related above and beyond the effects of interpersonal isolation – illustrating the uniqueness of existential isolation. However, this effect was in an unexpected direction. I had originally hypothesized that greater feelings of existential isolation would lead to more alcohol use, likely as a means of coping with those feelings. Contrary to this hypothesis, I found that greater feelings of existential isolation were associated with *less* alcohol use. One likely explanation for this seemingly contradictory effect, as I described and tested above, is that instead of finding support for the “existential isolation as a precursor to

alcohol use” hypothesis, I may have found support for the complementary hypothesis that alcohol use is a pathway to reducing feelings of existential isolation. To elaborate, my original hypothesis held that alcohol may be especially alluring to the existentially isolated individual because – as a consequence of its effects on the subjective experience of those who consume it – it may be a uniquely effective tool for reducing such feelings of isolation. If, in fact, this reasoning was correct, and alcohol use is a successful coping strategy for the existentially isolated, it follows that increased alcohol use should predict decreased feelings of existential isolation.

One factor to take into account here is that the cross-lagged analyses I conducted revealed that there was, in fact, no significant cross-lagged path between existential isolation and alcohol use in either direction, above and beyond the variance explained by the autoregressive and concurrent associations between each of the variables. On a surface level, my above theorizing would appear to be negated by these findings. However, though the comparison between the baseline model and the cross-lagged model was non-significant at the .05 level, a pattern did emerge such that the model including a path from alcohol use at Time 1 to existential isolation at Time 2 (consistent with the “alcohol use as a pathway to reducing feelings of existential isolation” hypothesis) approximated better fit to the data than the model including the opposite causal path (consistent with the “existential isolation as a precursor to alcohol use” hypothesis), as evidenced by a marginally significant cross-lagged path ($p = .100$) versus a non-significant one ($p = .932$) as well as slightly improved absolute fit statistics. Considering the high attrition rate and relatively small final sample size for these analyses, this

analysis may have been underpowered, and this pattern may emerge as significant in a replication with an increased sample size.

An additional conclusion to be drawn from my non-significant cross-lagged path analyses is that some other variable(s), outside of interpersonal isolation, is/are at work in explaining the relationship between existential isolation and alcohol use. Returning my focus to the “existential isolation as a precursor to alcohol use” hypothesis, a likely combination of variables to consider is how people tend to respond to feelings of existential isolation (or more, broadly, unmet self-needs) along with what purpose alcohol serves them. Individual tendencies toward proactive or reactive coping strategies, for example, may be important to consider in future research. The coping literature commonly defines reactive coping as an effort to deal with a past or present stressor or to compensate for harm or loss, and proactive coping as an effort to build up resources with the goal of working towards personal growth or overcoming challenges (Schwarzer & Taubert, 2002). In the context of my research question, drinking to numb the pain would be classified as a reactive coping strategy (meaning that the individual is simply dealing with the symptoms of existential isolation), whereas drinking to facilitate social connection would be considered a proactive one (meaning that the individual is working to reduce or eliminate existential isolation at the source). As such, these tendencies may emerge as strong predictors of alcohol use when also measuring the extent to which participants see or use alcohol as a social lubricant versus a pain-numbing device.

I attempted to approximate this latter variable – the extent to which people view alcohol as a tool toward one or both of these ends – by measuring motivations for alcohol

use. However, upon reflection, there were a couple of notable limitations here. First, the individual items in the relevant sub-scales may not all map onto my exact conceptualization of facilitating connection or numbing the pain of a lack of belonging. For example, one item in the *social purposes* sub-scale is “to help you ‘keep going’ on a night out with friends”; though no one would argue that this does not, in fact, tap into a socially relevant latent construct, it also does not truly reference a search for connection as would be ideal here. Further, none of the *social purposes* motivations appear to tap into a specific sense of existential connection, as opposed to interpersonal connection. As such, future research may benefit from developing and utilizing a more specialized scale that narrows in on more relevant motivations. It may also be fruitful, with such a revised measure of motivations to use alcohol, to look at it not only as two continuous scales, but also at: 1) the difference between the two (i.e. how much more/less participants endorse one category over the other), or 2) a simple dichotomous split representing whether participants endorse one more than the other. This strategy would not be useful with the current measure, having identified specific item-content issues, but may prove especially illuminating in future research by providing a view of the effect from multiple varying angles.

Future research may also delve further into moderators of the relationship between existential isolation and alcohol use. In the current study, I examined a number of possible moderators as they related to both causal interpretations of this relationship. First, I found that both race and negative emotional symptoms significantly moderated the effect of existential isolation on alcohol use in consideration of the “existential isolation as a precursor to alcohol use” hypothesis, such that non-White participants and

those with more depression/anxiety/stress saw a stronger negative association. Further, though these interactions dropped to non-significance when testing the opposite causal interpretation – or the “alcohol use as a pathway to reducing feelings of existential isolation” hypothesis – the pattern remained. I thus interpret these moderation effects in the context of this latter hypothesis, as it is the most intuitive; however, it is worthy of noting that my interpretations of these moderation effects may be faulty in light of the drop to non-significance when running the analyses with alcohol use as the predictor and existential isolation as the outcome. My next steps in this line of research will thus include replicating these results, investigating whether this drop was anomalous to this sample or whether there truly is a distinction such that race and negative emotional symptoms only moderate the effect in one causal direction.

However, to interpret these effects as makes the most sense in the meantime, it is easy to see how one’s level of negative emotional symptoms may emerge as a significant moderator in the context of the “alcohol use as a pathway to reducing feelings of existential isolation” hypothesis. To the extent that people report high levels of depression, anxiety, and stress – which we know from previous research (Costello & Long, 2014) and the current data (see Table 1) to correlate positively with existential isolation – an effective coping mechanism should work better. The coping mechanism here, alcohol use, should thus reduce both these negative emotional symptoms (a finding which I do observe when regressing depression/anxiety/stress on alcohol use, $\beta = .122$, $t(350) = 2.30$, $p = .022$) and the proposed underlying cause: a lack of belonging at the existential level.

Perhaps more interesting, though, is the moderation effect I found in race. Before discussing this effect, I would first acknowledge that I tested this using a dichotomous race variable (White/non-White). Ideally, I would not want to collapse across racial identities in this way, as I lose important variability between groups; however, I needed to run the analyses this way because of the small number of participants reporting a non-White racial identity and the need for sufficient statistical power. That being said, this finding indicates that, though there is a negative relationship between existential isolation and alcohol use in general, non-White participants experience a much stronger effect. In other words, according to the “alcohol as a pathway to reducing feelings of existential isolation” hypothesis, alcohol acts as a better coping mechanism for reducing non-White participants’ feelings of existential isolation than for White participants’. There are a couple of possible explanations for this effect. The first concerns the above moderator: negative emotional symptoms. Research shows that racial minorities, as stigmatized group members, often face heightened levels of psychological distress (e.g., Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003; U.S. Department of Health and Human Services, 2001; Conner, Copeland, Grote, Koeske, Rosen, Reynolds, & Brown, 2010). It is possible that this effect arose not because of the White/non-White distinction itself, but in fact because non-White participants reported higher levels of depression, anxiety, and stress. To test this, I ran an independent samples t-test between the two groups and found no significant difference in negative emotional symptoms, $t(350) = 0.26, p = .797$. Having ruled out this possibility, I considered an alternative explanation to be that this moderation effect may have been driven by significant group differences in either

reported existential isolation or alcohol use; however, these tests were also non-significant, $ps = .911$ and $.665$, respectively.

Further study and theorizing is necessary in order to determine why this effect was observed in the current study. One additional idea that may shed light on these findings is that of *cultural fit*. Research shows that a sense of fit with the predominate culture is necessary for healthy psychological adjustment, whether this in terms of emotions (De Leersnyder, Mesquita, Kim, Eom, & Choi, 2014), self-construal (Levine, Miyamoto, Markus, Rigotti, Boylan, Park, Kitayama, Karasawa, Kawakami, Coe, Love, & Ryff, 2016), or personality (Ward & Chang, 1997). For racial minorities in particular – those who represent a quite visible and potent misfit to the prevailing culture of White America – a lack of cultural fit is associated with lower academic achievement (Cerezo & Chang, 2012), lower psychological well-being both within higher education (Gloria, Castellanos, Scull, & Villegas, 2009) and globally (Gloria, Castellanos, & Orozco, 2005), and, relevantly, greater alcohol use severity (Cano, Vaughan, Dios, Castro, Roncancio, & Ojeda, 2015). Considering individuals' perceived cultural fit may be a valuable step in future research, as a perceived lack of fit may in fact go hand-in-hand with greater feelings of existential isolation. Perhaps, then, those who experience high levels of both existential isolation and cultural misfit are especially affected by methods of reducing them. Future research should test this idea, as well as actively recruit participants from racial minority groups in order to study the overarching question using an expanded race variable, rather than reducing it down to White vs. non-White. These investigations are exceedingly important, as they could shed some meaningful light on the experiences of stigmatized individuals.

In my exploratory analyses specific to the “alcohol use as a pathway to reducing feelings of existential isolation” hypothesis, I first found a significant interaction between current alcohol use and lifetime alcohol use, such that the effect of current alcohol use on existential isolation is weaker (i.e. consistent with a lesser reduction in existential isolation) for those reporting higher levels of lifetime alcohol use. This was consistent with my exploratory hypothesis that those individuals with a higher tolerance, as indexed by a more extensive history of drinking, would be less sensitive to alcohol’s effects across the board – including its potential to reduce existential isolation. These findings could be incredibly important in consideration of young people. Though this moderation effect held while controlling for age, many people first experience alcohol when they are young, especially around adolescence (Substance Abuse and Mental Health Services Administration, 2017). This means that they are likely to represent this low end of the lifetime drinking spectrum. Additionally, emerging adults are often uniquely affected by circumstances (life transitions, social pressures, etc.) that make them more vulnerable to feelings of existential isolation and thus, perhaps, more welcoming of ways to alleviate such feelings. Consider the young woman who may experience a uniquely strong effect of alcohol use in reducing her feelings of existential isolation. She rejoices, whether consciously or unconsciously, to have found an effective method of coping with this unique state of discontent. However, as she drinks more and more and becomes ever more reliant on the alcohol, the effects diminish. This fits with a larger literature detailing the problems that may arise when relying on “quick fixes” rather than long-term, more productive solutions. Previous research as already identified substance use as one such “quick fix” coping strategy, as it may be effective in reducing negative affect

and/or increasing positive affect but is maladaptive in the long term (Shiffman, 1982; Wills & Shiffman, 1985).

Looking at existential isolation as the dependent variable, I also found a significant three-way interaction between alcohol use, desire for existential connection, and socially based motivations to drink. I had predicted that one's desire for existential connection would moderate the relationship between alcohol use and existential isolation, but that this moderating effect would emerge only in those who also viewed alcohol as a means of achieving that connection; and indeed it did. In other words, employing the causal interpretation of the relationship between alcohol use and existential isolation, alcohol's ability to reduce feelings of existential isolation does appear to depend on one's desire for existential connection (such that those high in desire see a significant reduction in existential isolation, whereas those low in desire see no reduction). However, this dependency is exclusive to those who also view alcohol as a way to facilitate existential connection. As noted above, this finding suggests that, for those who do not view alcohol primarily as a social lubricant (i.e. those who report low or average social motivations to use alcohol), the negative association between alcohol use and existential isolation holds steady regardless of desire for existential connection. In contrast, those who view alcohol as an effective means of connecting but who do not have a strong desire to connect are not likely to experience any existential isolation-reducing effects of alcohol. Finally, and perhaps most importantly, these findings suggest that those who have a strong desire for existential connectedness and who also view alcohol as an effective means of fulfilling that desire may be particularly at risk for abusing alcohol, as it appears that alcohol may have especially strong existential isolation-reducing effects for those who desire those

effects the most. In other words, these individuals' strong responses may render them especially vulnerable to the deceptively positive effects of alcohol use.

A weakness of this study was that I did not include a measure of perceptions of social pressures to drink. According to theory, one major contributor to why existential isolation would predict more alcohol use is *social influence*. Conformity to social pressures is one powerful way to garner liking, acceptance, and a sense of meaningful connection, so – to the extent that drinking represents a social desirable behavior – those who might be more likely to seek out those outcomes (i.e. the existentially isolated) may be more willing to drink. Of course, as discussed, this also likely depends on how people tend to react to such feelings – whether in a proactive way, more pointedly seeking out connection, or in a reactive way, escaping through substance use. However, the multifaceted nature of these factors, along with the strong possibility that they are not mutually exclusive, suggests that specifically testing participants' perceptions of social pressures in future research will provide a clearer picture of the overall phenomenon.

Future research could expand upon the current study in a number of other useful ways. One of the most important of these is to expand from a correlational paradigm to an experimental one, in which feelings of existential isolation are manipulated and alcohol use afterward is measured (to return to my original hypothesis, or the “before” half of the relationship between these variables). I would also expand this research by conducting a truly longitudinal study, tracking existential isolation and alcohol use over a longer period of time. Measuring my variables at two time points, though an adequate introductory step to investigating causality, is not sufficient to make any concrete conclusions about the direction of causality or the effect of existential isolation over time.

Finally, it will be important to explore this relationship among college students, specifically. I utilized the current sample for convenience, to gather a more diverse set of participants, and because I hypothesized that this effect would be generalizable to the larger developmental group of emerging adults. Perhaps, though, it would be fruitful to narrow in on a more specific population to truly locate my predicted effect, especially because college students represent a very specialized sect of young adults: those who are not only adjusting to the world at large, but also to the college environment where they are faced with unique pressures and perhaps unique feelings of isolation.

One of the major contributions this research makes to the literature is identifying and beginning to dissect previously unstudied factors associated with the “why” of alcohol use and how such factors may not only draw people to alcohol but also keep them dependent on it. If, in fact, future research that more conclusively tests my revised theory of causality finds support for the “alcohol use as a pathway to reducing feelings of existential isolation” hypothesis, this could inform the development of interventions and education programs put into place to reduce problematic alcohol use among emerging adults. Specifically, concretely identifying reduced existential isolation as one consequential by-product of drinking would open up the possibility of creating empirically supported interventions aimed at reducing existential isolation in alternative, safer ways.

Another (complementary) interpretation of my findings is that those who do not drink are more likely to report higher levels of existential isolation. Taken this way, this research may in fact reveal a *dark side of sobriety*. In other words, though non-drinkers will not face the long-term consequences associated with tolerance effects that may occur

for drinkers, they also may not be afforded the easy short-term relief that alcohol – as a tool to reduce feelings of existential isolation – provides. Non-drinkers, then, are placed at a disadvantage if they do not have readily accessible alternatives for reducing such feelings at their disposal. As such, putting aside the maladaptive long-term effects of alcohol consumption and focusing instead on the momentary positive effects, non-drinkers (i.e. those without the option of using alcohol as a “quick fix” or for whom alcohol consumption would carry especially devastating consequences, as with recovering alcoholics or pregnant women) may suffer in the short-term relative to drinkers. Of course, this is not to say that alcohol use should be considered an adaptive coping strategy; however, for those who are particularly vulnerable to feelings of existential isolation, these findings suggest that sobriety may in fact represent a relative disadvantage in certain contexts. Future research would benefit from a focus on illuminating this possible interpretation, examining the circumstances under which this may or may not hold true, and building a body of evidence to inform the development of relevant interventions.

The current study was designed, first and foremost, to investigate the differential effects of two previously undistinguished aspects of social isolation on alcohol use. Beyond this primary goal – which was achieved – this study was the first of its kind, intended to be a first step in breaking down the unique relationship between existential isolation and alcohol use. Though my hypotheses regarding the directionality of this effect and some possible mediators and moderators were not supported, I did instead find support for some exploratory hypotheses regarding a reversed direction of causality and identify potential avenues of research for future studies. I plan to continue this line of

research with a series of studies examining experimental and longitudinal direct effects, as well as how these effects might work through or depend on a revised list of possible mediators and moderators. The results of this study will greatly inform the development of future research in this area and likely prove to be a valuable first step on this journey.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Armstrong, T. D., & Costello, E. J. (2002). Community studies on adolescent substance use, abuse, or dependence and psychiatric comorbidity. *Journal of Consulting and Clinical Psychology, 70*(6), 1224-1239.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*, 469-480.
- Asch, S. E. (1956). Studies of independence and conformity: I. A minority of one against a unanimous majority. *Psychological Monographs: General and Applied, 70*(9), 1-70.
- Batra, R., Homer, P. M., & Kahle, L. R. (2001). Values, susceptibility to normative influence, and attribute importance weights: A nomological analysis. *Journal of Consumer Psychology, 11*(2), 115-128.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497-529.
- Bohman, M., Cloninger, R., & von Knorring, A.-L. (1987). The genetics of alcoholisms and related disorders. *Journal of Psychiatric Research, 21*(4), 447-452.
- Bouthoorn, S. H., van Hoof, J. J., & van der Lely, N. (2011). Adolescent alcohol intoxication in Dutch hospital centers of pediatrics: Characteristics and gender differences. *European Journal of Pediatrics, 170*, 1023-1030.
- Boys, A., Marsden, J., Griffiths, P., Fountain, J., Stillwell, G., & Strang, J. (1999). Substance use among young people: The relationship between perceived functions and intentions. *Addiction, 94*(7), 1043-1050.
- Bucholz, K. K., & Robins, L. N. (1989). Sociological research on alcohol use, problems, and policy. *Annual Review of Sociology, 15*, 163-186.
- Burns, L., & Teesson, M. (2002). Alcohol use disorders comorbid with anxiety, depression, and drug use disorders: Findings from the Australian National Survey of Mental Health and Well Being. *Drug and Alcohol Dependence, 68*, 299-307.
- Cacioppo, J. T., Hawkey, L. C., & Thisted, R. A. (2010). Perceived social isolation makes me sad: 5-year cross-lagged analyses of loneliness and depressive symptomatology in the Chicago Health, Aging, and Social Relations Study. *Psychology and Aging, 25*(2), 453-463.

- Cacioppo, J.T., Hughes, M.E., Waite, L.J., Hawkley, L.C., & Thisted, R.A. (2006). Loneliness as a specific risk factor for depressive symptoms: Cross-sectional and longitudinal analyses. *Psychology and Aging, 21*(1), 140-151.
- Cano, M. A., Vaughan, E. L., de Dios, M. A., Castro, Y., Roncancio, A. M., & Ojeda, L. (2015). Alcohol use severity among Hispanic emerging adults in higher education: Understanding the effect of cultural congruity. *Substance Use & Misuse, 50*, 1412-1420.
- Carrigan, M. H., & Randall, C. L. (2003). Self-medication in social phobia: A review of the alcohol literature. *Addictive Behaviors, 28*(2), 269-284.
- Carter-Sowell, A. R., Chen, Z., & Williams, K. D. (2008). Ostracism increases social susceptibility. *Social Influence, 3*(3), 143-153.
- Center for Behavioral Health Statistics and Quality. (2016). 2017 National Survey on Drug Use and Health (NSDUH): CAI Specifications for Programming (English Version). Substance Abuse and Mental Health Services Administration, Rockville, MD.
- Cerezo, A., & Chang, T. (2013). Latina/o achievement at predominantly White universities: The importance of culture and ethnic community. *Journal of Hispanic Higher Education, 12*(1), 72-85.
- Chan, S. M., & Chan, K. (2013). Adolescents' susceptibility to peer pressure: Relations to parent-adolescent relationship and adolescents' emotional autonomy from parents. *Youth & Society, 45*(2), 286-302.
- Chou, K.L., Liang, K., & Sareen, J. (2011). The association between social isolation and DSM-IV mood, anxiety, and substance use disorders: Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry, 72*(11), 1468-1476.
- Colarusso, C. A. (1992). *Child and adult development: A psychoanalytic introduction for clinicians*. New York: Plenum Press.
- Conner, K. O., Copeland, V. C., Grote, N. K., Noeske, G., Rosen, D., Reynolds, C. F., & Brown, C. (2010). Mental health treatment seeking among older adults with depression: The impact of stigma and race. *American Journal of Geriatric Psychiatry, 18*(6), 531-543.
- Cook, M., Young, A., Taylor, D., & Bedford, A. P. (1998). Personality correlates of alcohol consumption. *Personality and Individual Differences, 24*(5), 641-647.

- Cornwell, E. Y., & Waite, L. J. (2009). Social disconnectedness, perceived isolation, and health among older adults. *Journal of Health and Social Behavior*, *50*(1), 31-48.
- Crews, F. T., Braun, C. J., Hoplight, B., Switzer, R. C., & Knapp, D. J. (2000). Binge ethanol consumption causes differential brain damage in young adolescent rats compared with adult rats. *Alcoholism: Clinical and Experimental Research*, *24*(11), 1712-1723.
- Critchlow, B. (1986). The powers of John Barleycorn: Beliefs about the effects of alcohol on social behavior. *American Psychologist*, *41*, 751-764.
- Deakin, E. Y., Levy, J. C., & Wells, V. (1987). Adolescent depression, alcohol and drug abuse. *American Journal of Public Health*, *77*(2), 178-182.
- DeBellis, M.D., Clark, D.B., Beers, S.R., Soloff, P.H., Boring, A.M., Hall, J., Kersh, A., & Keshavan, M.S. (2000). Hippocampal volume in adolescent-onset alcohol use disorders. *American Journal of Psychiatry*, *157*(5), 737-744.
- De Graaf, R., Bijl, R. V., Smit, F., Vollebergh, W. A., & Spijker, J. (2002). Risk factors for 12-month comorbidity of mood, anxiety, and substance use disorders: Findings from the Netherlands Mental Health Survey and Incidence Study. *American Journal of Psychiatry*, *159*, 620-629.
- Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *Journal of Abnormal and Social Psychology*, *51*(3), 629-636.
- De LeerSnyder, J., Mesquita, B., Kim, H., Eom, K., & Choi, H. (2014). Emotional fit with culture: A predictor of individual differences in relational well-being. *Emotion*, *14*(2), 241-245.
- de Visser, R. O., & Smith, J. A. (2007). Alcohol consumption and masculine identity among young men. *Psychology and Health*, *22*, 595-614.
- DeWall, C. N., Twenge, J. M., Gitter, S. A., & Baumeister, R. F. (2009). It's the thought that counts: The role of hostile cognition in shaping aggressive responses to social exclusion. *Journal of Personality and Social Psychology*, *96*, 45-59.
- Driessen, H. (1992). Drinking on masculinity: Alcohol and gender in Andalusia. In D. Gefou-Madianou (Ed.), *Alcohol, Gender, and Culture* (pp. 71-79). London: Routledge.
- Duncan, S. C., Duncan, T. E., & Hyman, H. (1998). Progressions of alcohol, cigarette, and marijuana use in adolescence. *Journal of Behavioral Medicine*, *21*(4), 375-388.

- Duncan, S. C., Gau, J. M., Duncan, T. E., & Strycker, L. A. (2011). Development and correlates of alcohol use from ages 13-20. *Journal of Drug Education, 41*(3), 235.
- Ennett, S. T., & Bauman, K. E. (1993). Peer group structure and adolescent cigarette smoking: A social network analysis. *Journal of Health and Social Behavior, 34*(3), 226-236.
- Enoch, M.-A. & Goldman, D. (2001). The genetics of alcoholism and alcohol abuse. *Current Psychiatry Reports, 3*(2), 144-151.
- Erikson, E. H. (1959/1994). *Identity and the life cycle*. New York: W. W. Norton & Company.
- Fisher, J. C., Cook, P. A., & Kapiga, S. H. (2010). Alcohol use before sex and HIV risk: Situational characteristics of protected and unprotected encounters among high-risk African women. *Sexually Transmitted Diseases, 37*, 571-578.
- Gaertner, L., Iuzzini, J., & O'Mara, E. M. (2008). When rejection by one fosters aggression against many: Multiple-victim aggression as a consequence of social rejection and perceived groupness. *Journal of Experimental Social Psychology, 44*, 958-970.
- Gloria, A. M., Castellanos, J., & Orozco, V. (2005). Perceived educational barriers, cultural fit, coping responses, and psychological well-being of Latina undergraduates. *Hispanic Journal of Behavioral Sciences, 27*(2), 161-183.
- Gloria, A. M., Castellanos, J., Scull, N. C., & Villegas, F. J. (2009). Psychological coping and well-being of male Latino undergraduates. *Hispanic Journal of Behavioral Sciences, 31*(3), 317-339.
- Gotoh, M. (1994). Alcohol dependence of women in Japan, *Addiction, 89*, 953-954.
- Graham, J. W., Marks, G., & Hansen, W. B. (1991). Social influence processes affecting adolescent substance use. *Journal of Applied Psychology, 76*(2), 291-298.
- Grant, B. F., Dawson, D. A., Stinson, F. S., Chou, S. P., Dufour, M. C., & Pickering, R. P. (2004). The 12-month prevalence and trends in DSM-IV alcohol abuse and dependence: United States, 1991-1992 and 2001-2002. *Drug and Alcohol Dependence, 74*, 223-234.
- Grant, B. F., & Harford, T. C. (1995). Comorbidity between DSM-IV alcohol use disorders and major depression: Results of a national survey. *Drug and Alcohol Dependence, 39*(3), 197-206.

- Grau, E., & Ortet, G. (1999). Personality traits and alcohol consumption in a sample of non-alcoholic women. *Personality and Individual Differences, 27*(6), 1057-1066.
- Greenberg, J., Pyszczynski, T., Solomon, S., Pinel, E., Simon, L., & Jordan, K. (1993). Effects of self-esteem on vulnerability-denying defensive distortions: Further evidence of an anxiety-buffering function of self-esteem. *Journal of Experimental Social Psychology, 29*(3), 229-251.
- Greenberg, J., Solomon, S., & Pyszczynski, T. (1997). Terror management theory of self-esteem and cultural worldviews: Empirical assessments and conceptual refinements. *Advances in Experimental Social Psychology, 29*, 61-139.
- Greenberg, J., Solomon, S., Pyszczynski, T., Rosenblatt, A., Burling, J., Lyon, D., Simon, L., & Pinel, E. (1992). Why do people need self-esteem? Converging evidence that self-esteem serves an anxiety-buffering function. *Journal of Personality and Social Psychology, 63*(6), 913-922.
- Griffin, A. M., Cleveland, H. H., Schlomer, G. L., Vandenberg, D. J., & Feinberg, M. E. (2015). *Journal of Youth and Adolescence, 44*, 1841-1853.
- Guan, N. C., Yusoff, M. S. B., Zainal, N. Z., & Yun, L. W. (2012). Analysis of two independent samples with non-normality using non-parametric method, data transformation and bootstrapping method. *International Medical Journal, 19*(3), 218-220.
- Guo, G., Elder, G. H., Cai, T., & Hamilton, N. (2009). Gene-environment interactions: Peers' alcohol use moderates genetic contribution to adolescent drinking behavior. *Social Science Research, 38*(1), 213-224.
- Haber, J. R., & Jacob, T. (2007). Alcoholism risk moderation by a socio-religious dimension. *Journal of Studies on Alcohol, 68*(6), 912-922.
- Hasin, D. S., Stinson, F. S., Ogburn, E., & Grant, B. F. (2007). Prevalence, correlates, disability, and comorbidity of DSM-IV alcohol abuse and dependence in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of General Psychiatry, 64*, 830-842.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin, 112*(1), 64-105.
- Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 44*(2), 227-239.

- Hopwood, C. J., Morey, L. C., Skodol, A. E., Stout, R. L., Yen, S., Ansell, E. B., Grilo, C. M., & McGlashan, T. H. (2007). Five-factor model personality traits associated with alcohol-related diagnoses in a clinical sample. *Journal of Studies on Alcohol*, 68(3), 455-460.
- Horman, R. E. (1973/2009). Alienation and student drug use. *International Journal of the Addictions*, 8(2), 325-331.
- Hoyle, M. H. (1973). Transformations: An introduction and bibliography. *International Statistics Review*, 41(2), 203-223.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structural analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55.
- Ikuesan, B. A. (1994). Drinking problems and the position of women in Nigeria. *Addiction*, 89(8), 941-944.
- Inhelder, B., & Piaget, J. (1958). The growth of logical thinking from childhood to adolescence. New York: Basic Books.
- Jackson, K. M., Sher, K. J., & Park, A. (2005). Drinking among college students: Consumption and consequences. In M. Galanter (Ed.), *Recent Developments in Alcoholism, Vol. 17: Alcohol Problems in Adolescents and Young Adults* (pp. 85-117). New York: Springer.
- Jacob, T., & Leonard, K. (1994). Family and peer influences in the development of adolescent alcohol abuse. In R. Zucker, G. Boyd, & J. Howard (Eds.), *The Development of Alcohol Problems: Exploring the Biopsychosocial Matrix of Risk* (pp. 123-155). NIAAA Research Monograph No. 26, NIH Publication No. 94-3495, Rockville, MD: Department of Health and Human Services.
- Jacquith, S. M. (1981). Adolescent marijuana and alcohol use: An empirical test of differential association theory. *Criminology*, 19, 271-280.
- Jane-Llopis, E., & Matytsina, I. (2006). Mental health and alcohol, drugs, and tobacco: A review of the comorbidity between mental disorders and the use of alcohol, tobacco, and illicit drugs. *Drug and Alcohol Review*, 25(6), 515-536.
- Johnson, R.E., Marcos, A.C., & Bahr, S.J. (1987). The role of peers in the complex etiology of adolescent drug use. *Criminology*, 25, 323-340.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E. & Miech, R. A. (2016). Monitoring the Future national survey results on drug use, 1975–2015: Volume 2, College students and adults ages 19–55. Ann Arbor: Institute for Social

- Research, The University of Michigan.
- Kiene, S.M., Barta, W.D., Tennen, H., & Armeli, S. (2009). Alcohol, helping young adults to have unprotected sex with casual partners: Findings from a daily diary study of alcohol use and sexual behavior. *Journal of Adolescent Health, 44*, 73-80.
- Kohlberg, L. (1963/2008). The development of children's orientations toward a moral order: I. Sequence in the development of moral thought. *Human Development, 51*(1), 8-20.
- Korn, M. E., Maggs, J. L. (2004). Why drink less? Diffidence, self-presentation styles, and alcohol use among university students. *Journal of Youth and Adolescence, 33*(3), 201-211.
- Lakin, J. L., & Chartrand, T. L. (2005). Exclusion and nonconscious behavioral mimicry. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 279-296). New York: Psychology Press.
- Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2012). Construct validity of the need to belong scale: Mapping the nomological network. *Journal of Personality Assessment, 95*(6), 610-624.
- Lebedina-Manzoni, M., & Ricijaš, N. (2013). Characteristics of youth regarding susceptibility to peer pressure. *Kriminologija & Socijalna Integracija, 21*(1), 39-48.
- Levine, C. S., Miyamoto, Y., Markus, H. R., Rigotti, A., Boylan, J. M., Park, J., Kitayama, S., Karasawa, M., Kawakami, N., Coe, C. L., Love, G. D., & Ryff, C. D. (2016). Culture and healthy eating: The role of independence and interdependence in the United States and Japan. *Personality and Social Psychology Bulletin, 42*(10), 1335-1348.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*(3), 335-343.
- Maldonado-Molina, M. M., Reingle, J. M., & Jennings, W. G. (2011). Does alcohol use predict violent behaviors? The relationship between alcohol use and violence in a nationally representative longitudinal sample. *Youth Violence and Juvenile Justice, 9*(2), 99-111.
- Mancinelli, R., Vitali, M., & Ceccanti, M. (2009). Women, alcohol, and the environment: An update and perspectives in neuroscience. *Functional Neurology, 24*(2), 77-81.

- Marcos, A.C., Bahr, S.J., & Johnson, R.E. (1986). Test of a bonding/association theory of adolescent drug use. *Social Forces*, 65, 135-161.
- Martin, S. E., Maxwell, C. D., White, H. R., & Zhang, Y. (2004). Trends in alcohol use, cocaine use, and crime: 1989-1998. *Journal of Drug Issues*, 34(2), 333-360.
- McDonald, M. (1994). Drinking and social identity in the west of France. In McDonald, M. (Ed.), *Gender, Drink and Drugs* (pp. 99-124). Providence, RI: Berg.
- McLaughlin, P. M. (1991). Inebriate reformatories in Scotland: an institutional history. In S. Barrows & R. Room (Eds.), *Drinking: Behavior and Belief in Modern History* (pp. 287-314). Berkeley: University of California Press.
- Miller, B. E., Miller, M. N., Verhegge, R., Linville, H. H., & Pumariega, A. J. (2002). Alcohol misuse among college athletes: Self-medication for psychiatric symptoms? *Journal of Drug Education*, 32(1), 41-52.
- Mohr, C. D., Armeli, S., Tennen, H., Temple, M., Todd, M., Clark, J., & Carney, M. A. (2005). Moving beyond the keg party: A daily process study of college student drinking. *Psychology of Addictive Behaviors*, 19(4), 392-403.
- Monahan, J. L., & Lannutti, P. J. (2000). Alcohol as social lubricant: Alcohol myopia theory, social self-esteem, and social interaction. *Human Communication Research*, 26(2), 175-202.
- Mrug, S., & Windle, M. (2014). DRD4 and susceptibility to peer influence on alcohol use from adolescence to adulthood. *Drug and Alcohol Dependence*, 145, 168-173.
- Musher-Eizenman, D. R., Holub, S. C., & Arnett, M. (2003). Attitude and peer influences on adolescent substance use: The moderating effect of age, sex, and substance. *Journal of Drug Education*, 33(1), 1-23.
- National Institute on Alcohol Abuse and Alcoholism. (2010/2015). *College Drinking* [Fact sheet]. Retrieved from <http://www.collegedrinkingprevention.gov/media/collegedrinkingFactSheet.pdf>.
- National Institute on Alcohol Abuse and Alcoholism, National Advisory Council on Alcohol Abuse and Alcoholism, Task Force on College Drinking. (2002). *High-risk drinking in college: What we know and what we need to learn: Final report of the Panel on Contexts and Consequences*. Bethesda, MD: Author.
- Newcomb, M. D., Chou, C., Bentler, P. M., & Huba, G. J. (1988). Cognitive motivations for drug use among adolescents: Longitudinal tests of gender differences and predictors of change in drug use. *Journal of Counseling Psychology*, 35(4), 426-438.

- Niño, M. D., Cai, T., & Ignatow, G. (2016). Social isolation, drunkenness, and cigarette use among adolescents. *Addictive Behaviors, 53*, 94-100.
- Office of Juvenile Justice and Delinquency Prevention. (2012). *Effects and Consequences of Underage Drinking*, Publication No. NCJ 237145. Washington, DC: U.S. Department of Justice.
- Orth, U. R., & Kahle, L. R. (2008). Intrapersonal variation in consumer susceptibility to normative influence: Toward a better understanding of brand choice decisions. *Journal of Social Psychology, 148*(4), 423-447.
- Peralta, R. L. (2007). College alcohol use and the embodiment of hegemonic masculinity among European American men. *Sex Roles, 56*, 741-756.
- Peralta, R. L., & Jauk, D. (2011). A brief feminist review and critique of the sociology of alcohol-use and substance-abuse treatment approaches. *Sociology Compass, 5*(10), 882-897.
- Pinel, E. C., & Long, A. E. (2012). When I's meet: Sharing subjective experience with someone from the outgroup. *Personality and Social Psychology Bulletin, 38*(3), 296-307.
- Pinel, E. C., Long, A. E., & Crimin, L. A. (2010). I-sharing and a classic conformity paradigm. *Social Cognition, 28*(3), 277-289.
- Pinel, E. C., Long, A. E., Landau, M. J., & Pyszczynski, T. (2004). I-sharing, the problem of existential isolation, and their implications for interpersonal and intergroup phenomena. In J. Greenberg, S. L. Koole, L. Sander, & T. Pyszczynski (Eds.), *Handbook of Experimental Existential Psychology* (pp. 352-368). New York: Guilford.
- Pinel, E. C., Long, A. E., Landau, M. J., Alexander, K., & Pyszczynski, T. (2006). Seeing I to I: A pathway to interpersonal connectedness. *Journal of Personality and Social Psychology, 90*(2), 243-257.
- Pinel, E. C., Long, A. E., Murdoch, E. Q., & Helm, P. (2017). A prisoner of one's own mind: Identifying and understanding existential isolation. *Personality and Individual Differences, 105*, 54-63.
- Prescott, C.A., & Kendler, M.D. (1999). Genetic and environmental contributions to alcohol abuse and dependence in a population-based sample of male twins. *Am J Psychiatry, 156*, 34-40.

- Pyapali, G. K., Turner, D. A., Wilson, W. A., & Swartzwelder, H. S. (1999). Age and dose-dependent effects of ethanol on the induction of hippocampal long-term potentiation. *Alcohol, 19*(2), 107-111.
- Reed, M.D., & Rountree, P.W. (1997). Peer pressure and adolescent substance use. *Journal of Quantitative Criminology, 13*(2), 143-180.
- Regier, D. A., Farmer, M. E., Rae, D. S., Locke, B. Z., Keith, S., J., Judd, L. L., & Goodwin, F. K. (1990). Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiologic Catchment Area (ECA) study. *Journal of the American Medical Association, 264*(19), 2511-2518.
- Riva, P., Williams, K. D., Torstrick, A. M., & Montali, L. (2014). Orders to shoot (a camera): Effects of ostracism on obedience. *Journal of Social Psychology, 154*, 208-216.
- Robinson, E., Jones, A., Christiansen, P., & Field, M. (2015). Drinking like everyone else: Trait self-control moderates the association between peer and personal heavy episodic drinking. *Substance Use & Misuse, 50*(5), 590-597.
- Rotheram-Borus, M. J., Murphy, D. A., Swendeman, D., Chao, B., Chabon, B., Zhou, S., Birnbaum, J., & O'Hara, P. (1999). Substance use and its relationship to depression, anxiety, and isolation among youth living with HIV. *International Journal of Behavioral Medicine, 6*(4), 293-311.
- Rubia, K., Overmeyer, S., Taylor, E., Brammer, M., Williams, S.C.R., Simmons, A., Andrews, C., & Bullmore, E.T. (2000). Functional frontalization with age: Mapping neurodevelopmental trajectories with MRI. *Neuroscience Biobehavioral Review, 24*(1), 13-19.
- Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment, 66*(1), 20-40.
- Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships, 4*(4), 497-510.
- Schachter, S. (1959). *The psychology of affiliation*. Stanford, CA: Stanford University Press.
- Schiavon, S. (2016). The moderating effect of age on peer and parent social influences on adolescent substance use (Doctoral dissertation). Retrieved from PsycINFO. (Order No. 10137434).

- Schulenberg, J. E., & Maggs, J. L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol, Supplement 14*, 54-70.
- Schwarzer, R., & Taubert, S. (2002). Tenacious goal pursuits and striving toward personal growth: Proactive coping. In E. Frydenberg (Ed.), *Beyond coping: Meeting goals, visions, and challenges* (pp. 19-35). London: Oxford University Press.
- Sellers, R. M., Caldwell, C. H., Schmeelk-Cone, K. H., & Zimmerman, M. A. (2003). Racial identity, racial discrimination, perceived stress, and psychological distress among African American young adults. *Journal of Health and Social Behavior, 43*, 302-317.
- Sher, K. J., Bartholow, B. D., & Wood, M. D. (2000). Personality and substance use disorders: A prospective study. *Journal of Consulting and Clinical Psychology, 68*(5), 818-829.
- Shiffman, S. (1982). Relapse following smoking cessation: A situational analysis. *Journal of Consulting and Clinical Psychology, 50*, 71-86.
- Spector, P. E. (1983). Locus of control and social influence susceptibility: Are externals normative or informational conformers? *Journal of Psychology, 115*, 199-201.
- Substance Abuse and Mental Health Services Administration. (2017). Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration.
- Tarter, R. E. (1988). Are there inherited behavioral traits that predispose to substance use? *Journal of Consulting and Clinical Psychology, 56*(2), 189-196.
- Torres, V., Jones, S. R., & Renn, K. A. (2009). Identity development theories in student affairs: Origins, current status, and new approaches. *Journal of College Student Development, 50*(6), 577-596.
- Trucco, E.M., Colder, C.R., Bowker, J.C., & Wieczorek, W.F. (2011). Interpersonal goals and susceptibility to peer influence: Risk factors for intentions to initiate substance use during early adolescence. *Journal of Early Adolescence, 31*(4), 526-547.
- Tafarodi, R. W., & Swann, W. B., Jr. (1995). Self-liking and self-competence as dimensions of global self-esteem: Initial validation of a measure. *Journal of Personality Assessment, 65*, 322-342.

- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72*(2), 271-324.
- U.S. Department of Education. (2008). *Alcohol and Other Drug Prevention on College Campuses: Model Programs*. Retrieved from: <http://www.alcoholeducationproject.org/DOEModelPrograms2008.pdf>.
- U.S. Department of Health and Human Services. (2001). Mental health: Culture, race, and ethnicity, a supplement to Mental health: A report of the Surgeon General. Rockville, MD: Department of Health and Human Services, Public Health Service, Office of the Surgeon General.
- U.S. Department of Transportation. (2015). Traffic safety facts 2014 data: Alcohol-impaired driving. Washington, DC: National Highway Traffic Safety Administration.
- Uy, P. J., Massoth, N. A., & Gottdiener, W. H. (2014). Rethinking male drinking: Traditional masculine ideologies, gender-role conflict, and drinking motives. *Psychology of Men and Masculinity, 15*(2), 121-128.
- Verhulst, B., Neale, M. C., & Kendler, K. S. (2015). The heritability of alcohol use disorders: a meta-analysis of twin and adoption studies. *Psychological Medicine, 45*(5), 1061-1072.
- Ward, C., & Chang, W. C. (1997). "Cultural fit": A new perspective on personality and sojourner adjustment. *International Journal of Intercultural Relations, 21*(4), 525-533.
- Warner, J. (1997). Shifting categories of the social harms associated with alcohol: Examples from late medieval and early modern England. *American Journal of Public Health, 87*(11), 1788-1797.
- White, H. R., Labouvie, E. W., & Padaratsakis, V. Changes in substance use during the transition to adulthood: A comparison of college students and their noncollege age peers. *Journal of Drug Issues, 35*, 281-306.
- Williams, K. D. (2001). *Ostracism: The power of silence*. New York: Guilford Press.
- Williams, K. D., & Sommer, K. L. (1997). Social ostracism by coworkers: Does rejection lead to loafing or compensation? *Personality and Social Psychology Bulletin, 23*(7), 693-706.
- Wills, T. A., Gibbons, F. X., Sargent, J. D., Gerrard, M., Lee, H. R., & Dal Cin, S. (2010). Good self-control mediates the effect of mass media on adolescent tobacco

- and alcohol use: Tests with studies of children and adolescents. *Health Psychology*, 29, 539-549.
- Wills, T. A., & Shiffman, S. (1985). Coping and substance abuse: A conceptual framework. In S. Shiffman & T. A. Wills (Eds.), *Coping and Substance Use* (pp. 3-24). Orlando: Academic Press.
- Wilsnack, R. W., Vogeltanz, N. D., Wilsnack, S. C., & Harris, T. R. (2000). Gender differences in alcohol consumption and adverse drinking consequences: cross-cultural patterns. *Addiction*, 95(2), 251-265.
- Yule, C., & Forsythe, A. B. (1976). Winsorized regression. *Technometrics*, 18(3), 291-300.
- Yalom, I. D. (1980). *Existential Psychotherapy*. United States of America: Basic Books.
- Yawger, G.C. & Pinel, E.C. (2016, January). *Existential Isolation, Basic Need Satisfaction, and Prejudice*. Poster presentation at the 2016 Society for Personality and Social Psychology Annual Convention, San Diego, CA.
- Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology*, 40, 560-567.

Appendix A

Existential Isolation & Desire for Existential Connectedness (Existential Isolation Scale;

Pinel et al., 2017)

1. I usually feel like people share my outlook on life.*
2. I often have the same reactions to things that other people around me do.*
3. People around me tend to react to things in the same way I do.*
4. I regularly seek out people who think about things in the same way that I do.
5. People do not often share my perspective.
6. If I could choose to spend time only with people who understand me, I would.
7. I want other people to feel the way I do.
8. I want to find signs that other people share my experience of the world around me.
9. Other people usually do not understand my experiences.
10. I want to be with people who share my outlook on life.
11. People often have the same “take” or perspective on things I do.*
12. It is important to me to feel like other people experience the world in the same way I do.

* reverse-scored

Note: items 1, 2, 3, 5, 9, and 11 comprise the Existential Isolation sub-scale; items 4, 6, 7, 8, 10, and 12 comprise the Desire for Existential Connectedness sub-scale.

Appendix B

Interpersonal Isolation (Social Support Questionnaire – Short Form; Sarason, Sarason, Shearin, & Pierce, 1987)

- 1) Whom can you really count on to be dependable when you need help?
- 2) How satisfied are you with the overall support you have in this area?
- 3) Whom can you really count on to help you feel more relaxed when you are under pressure or tense?
- 4) How satisfied are you with the overall support you have in this area?
- 5) Who accepts you totally, including both your worst and your best points?
- 6) How satisfied are you with the overall support you have in this area?
- 7) Whom can you really count on to care about you, regardless of what is happening to you?
- 8) How satisfied are you with the overall support you have in this area?
- 9) Whom can you really count on to help you feel better when you are feeling generally down-in-the-dumps?
- 10) How satisfied are you with the overall support you have in this area?
- 11) Whom can you count on to console you when you are very upset?
- 12) How satisfied are you with the overall support you have in this area?

Appendix C

Alcohol Use (adapted from 2017 National Survey on Drug Use and Health; Center for Behavioral Health Statistics and Quality, 2016)

- 1) Have you **ever**, even once, had a drink of any type of alcoholic beverage? Please do not include times when you only had a sip or two from a drink.
- 2) Approximately how many times in your life have you had five or more drinks on the same occasion?
- 3) During the past 12 months, on how many days did you drink one or more drinks of an alcoholic beverage?
- 4) During the past 30 days, on how many days did you drink one or more drinks of an alcoholic beverage?
- 5) On the days that you drank over the past 30 days, how many drinks did you usually have each day?
- 6) How many times in your lifetime have you been drunk?
- 7) How many times over the past 30 days have you been drunk?
- 8) During the past 12 months, on how many days did you have five or more drinks on the same occasion?
- 9) During the past 30 days, on how many days did you have five or more drinks on the same occasion?

Appendix D

Motivations for Alcohol Use (Functions for Substance Use Scale; Boys, Marsden,
Griffiths, Fountain, Stillwell, & Strang, 1999)

Have you ever used alcohol to...

- ...make yourself feel better when down or depressed?
- ...help you stop worrying about a problem?
- ...help you to relax?
- ...help you feel elated or euphoric?
- ...just get really intoxicated?
- ...enhance feelings when having sex?
- ...help you to stay awake?
- ...help you to sleep?
- ...help you enjoy the company of your friends?
- ...help you feel more confident or more able to talk to people in a social situation?
- ...help you lose your inhibitions?
- ...help you keep going on a night out with friends?
- ...enhance an activity such as listening to music or playing a game or sport?
- ...help make something you were doing less boring?
- ...improve the effects of other substances?
- ...help ease the after effects of other substances?

Appendix E

Mental Health (Depression, Anxiety, and Stress Scales; Lovibond & Lovibond, 1995)

- 1) I found it hard to wind down
- 2) I was aware of dryness of mouth
- 3) I couldn't seem to experience any positive feeling at all
- 4) I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)
- 5) I found it difficult to work up the initiative to do things
- 6) I tended to over-react to situations
- 7) I experienced trembling (e.g., in the hands)
- 8) I felt that I was using a lot of nervous energy
- 9) I was worried about situations in which I might panic and make a fool of myself
- 10) I felt that I had nothing to look forward to
- 11) I found myself getting agitated
- 12) I found it difficult to relax
- 13) I felt down-hearted and blue
- 14) I was intolerant of anything that kept me from getting on with what I was doing
- 15) I felt I was close to panic
- 16) I was unable to become enthusiastic about anything
- 17) I felt I wasn't worth much as a person
- 18) I felt that I was rather touchy
- 19) I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)

20) I felt scared without any good reason

21) I felt that life was meaningless

Appendix F

Self-Esteem (Self-Liking and Competence Scale; Tatarodi & Swann, 1995)

- 1) Owing to my capabilities, I have much potential.
- 2) I feel comfortable about myself.
- 3) I don't succeed at much.*
- 4) I have done well in life so far.
- 5) I perform very well at a number of things.
- 6) It is often unpleasant for me to think about myself.*
- 7) I tend to devalue myself.*
- 8) I focus on my strengths.
- 9) I feel worthless at times.*
- 10) I am a capable person.
- 11) I do not have much to be proud of.*
- 12) I'm secure in my sense of self-worth.
- 13) I like myself.
- 14) I do not have enough respect for myself.*
- 15) I am talented.
- 16) I feel good about who I am.
- 17) I am not very competent.*
- 18) I have a negative attitude toward myself.*
- 19) I deal poorly with challenges.*
- 20) I perform inadequately in many important situations.*

* reverse-scored

Appendix G

Self-Control (Self-Control Scale; Tangney, Baumeister, & Boone, 2004)

- 1) I am good at resisting temptation.
- 2) I have a hard time breaking habits.*
- 3) I am lazy.*
- 4) I say inappropriate things.*
- 5) I never allow myself to lose control.
- 6) I do certain things that are bad for me, if they are fun.*
- 7) People can count on me to keep on schedule.
- 8) Getting up in the morning is hard for me.*
- 9) I have trouble saying no.*
- 10) I change my mind fairly often.*
- 11) I blurt out whatever is on my mind.*
- 12) People would describe me as impulsive.*
- 13) I refuse things that are bad for me.
- 14) I spend too much money.*
- 15) I keep everything neat.
- 16) I am self-indulgent at times.*
- 17) I wish I had more self-discipline.*
- 18) I am reliable.
- 19) I get carried away by my feelings.*
- 20) I do many things on the spur of the moment.*
- 21) I don't keep secrets very well.*

- 22) People would say that I have iron self-discipline.
- 23) I have worked or studied all night at the last minute.*
- 24) I'm not easily discouraged.
- 25) I'd be better off if I stopped to think before acting.*
- 26) I engage in healthy practices.
- 27) I eat healthy foods.
- 28) Pleasure and fun sometimes keep me from getting work done.*
- 29) I have trouble concentrating.*
- 30) I am able to work effectively toward long-term goals.
- 31) Sometimes I can't stop myself from doing something, even if I know it is
wrong.*
- 32) I often act without thinking through all the alternatives.*
- 33) I lose my temper too easily.*
- 34) I often interrupt people.*
- 35) I sometimes drink or use drugs to excess.*
- 36) I am always on time.

* reverse-scored