Abstract

Problem alcohol use continues to be a growing concern on university campuses and alcohol related problem behaviors (i.e. aggression) continue to rise each year. The current study explored the relationships between self-reported psychopathic personality traits, problem alcohol use, alcohol related aggression, and implicit cognitions regarding both alcohol and violent behavior among two hundred and thirty males and females enrolled in a large Southern university. A moderated mediation model was examined and data indicated that problem drinking mediated the relationship between secondary psychopathic traits and alcohol related aggression. As such, problem alcohol use appears to be one pathway leading from prevalence of certain personality attributes and alcohol related aggression. Implications for prevention, treatment, and future directions are discussed.

Index Words: Psychopathic personality traits, problem drinking, alcohol related aggression, implicit cognitions
PSYCHOPATHIC TRAITS, PROBLEM DRINKING, AND IMPLICIT COGNITIONS AS PREDICTORS OF ALCOHOL RELATED AGGRESSION AMONG COLLEGE STUDENTS

by

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DEDICATION

This work is dedicated to my mom and dad, whose support, love, and endless encouragement helped me make it through many, many years of school. You never questioned my dreams and always let me know that I could do anything that I wanted to do. From crying about graduate level physics homework to celebrating my accomplishments along the way, I can never thank you enough for everything you have done for me. To my brother, Brandon, for keeping me grounded and still being in disbelief that “I’m a doctor!” Love you flake.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>ACKNOWLEDGEMENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>v</td>
</tr>
</tbody>
</table>

## CHAPTER

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Review of the Literature</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Method</td>
<td>34</td>
</tr>
<tr>
<td>4</td>
<td>Results</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>Discussion</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td><strong>References</strong></td>
<td>76</td>
</tr>
<tr>
<td></td>
<td><strong>Informed Consent</strong></td>
<td>91</td>
</tr>
<tr>
<td></td>
<td><strong>Demographic Questionnaire</strong></td>
<td>93</td>
</tr>
<tr>
<td></td>
<td><strong>Levenson Self-Report Psychopathy Scale</strong></td>
<td>96</td>
</tr>
<tr>
<td></td>
<td><strong>Alcohol Use Disorders Identification Test</strong></td>
<td>99</td>
</tr>
<tr>
<td></td>
<td><strong>Alcohol Related Aggression Questionnaire</strong></td>
<td>100</td>
</tr>
<tr>
<td></td>
<td><strong>Debriefing Form</strong></td>
<td>103</td>
</tr>
</tbody>
</table>
List of Tables

Table 1: Sample Demographics..................................................................................................................43
Table 2: Generational Characteristics.........................................................................................................44
Table 3: Occupation of Participant and History of Psychological Services.................................................45
Table 4: Mother’s Occupation and Education.............................................................................................46
Table 5: Father’s Occupation and Education...............................................................................................47
Table 6: Partner’s Education and Occupation..............................................................................................48
Table 7: Correlations Coefficients for Study Constructs................................................................................57
Table 8: Means and Standard Deviations of Study Constructs.......................................................................58
Table 9: Paired Samples Statistics for Implicit Alcohol and Violence Cognitions Good/Bad.......................59
Table 10: Paired Samples Test for Pair 1 and Pair 2 (Good/Bad).................................................................60
Table 11: Paired Samples Statistics for Implicit Alcohol and Violence Cognitions Safe/Dangerous.............62
Table 12: Paired Samples Test for Pair 1 and Pair 2 (Safe/Dangerous).........................................................64
Table 13: Direct and Interaction Effects for MODMED Models of Alcohol Aggression...........................65
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Moderated Mediation Model</td>
<td>9</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Go/No-Go Association Task Graph Good/Bad</td>
<td>61</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Go/No-Go Association Task Graph Safe/Dangerous</td>
<td>63</td>
</tr>
</tbody>
</table>
Introduction

The societal impact, financial burden, and personal consequences of perpetrating or being a victim of aggressive and violent behavior are undeniable and have long been acknowledged as increasingly problematic in our society. Aggression can take many forms, including physical or verbal assault, damage to property, homicide, domestic violence, rape, and a myriad of other negative behaviors. Moreover, engaging in such acts can lead to significant repercussions such as legal problems or even subsequent incarceration. According to the U.S. Bureau of Justice Statistics (BJS) 7,225,800 people at years end in 2009 were on probation, in jail or prison, or on parole. This equates to 1 in every 32 adults in the U.S. resident population. These figures are alarming and an investigation into the predictors of what may predispose individuals to engage in aggressive behavior is an area of interest for researchers within the professions of psychology, sociology, and criminology to name a few.

The construct of aggression is multifaceted and extant literature has suggested that biological, psychological, and environmental antecedents have an influence on one's propensity to engage in such behavior. From a theoretical perspective, models of aggression such as the General Aggression Model (GAM; Anderson & Bushman, 2002) propose that aggressive behavior occurs as a result of both situational and individual factors. Despite a plethora of evidence that suggests multiple pathways by which aggressive behavior can occur, the association between alcohol use and aggression makes logical sense, is supported by arrest records, yet can benefit from additional theoretical and empirical clarity that helps to explain what factors may lead an individual to become violent after consuming alcohol. The purpose of
the current study is to investigate the relationship between personality traits, implicit cognitions regarding alcohol use and interpersonal violence, and problem alcohol use as predictors of alcohol related aggression. More importantly, it seeks to elucidate these factors within a college sample, a population known for its heavy and somewhat problematic drinking patterns. The overarching aim of this study was to test a model between variables of interest in order to lead to an increased understanding of which individuals under what circumstances may be at an increased risk of behaving aggressively. In the future, we may be able to then target these variables in prevention, intervention, and treatment strategies.

The extent of the alcohol-violence association is vast. Roizen (1997) found that in an analysis of convicted offenders, 86 percent of those found guilty of homicide, 37 percent of those found guilty of assault, 60 percent of sexual offenders, 57 percent of men and 27 percent of women involved in marital violence, and 13 percent of those convicted of child abuse were under the influence of alcohol at the time of their crime. Thirty-one percent of stranger victimizations where the victim could determine the absence or presence of alcohol were perceived to be alcohol-related, and two-thirds of victims who suffered violence by an intimate partner reported that alcohol use had been a factor (U.S. Bureau of Justice Statistics, 1998). Overall, it is estimated that around three million violent crimes occur every year in which the victim perceives the perpetrator to have been drinking at the time of the offense. In a community-based study, Pernanen (1991) indicated that nearly 42 percent of violent crimes reported to the authorities involved alcohol and 51 percent of the victims believed that the perpetrator of the act had been drinking. The presence of the significant implication of alcohol use on aggression has been formulated into a construct identified as alcohol-related aggression.

College students, in particular, are frequent drinkers. Eighty three percent of university
students consume alcohol (Johnston, O'Malley, Bachman, Schulenberg & NIDA, 2009) and their monthly, annual, and lifetime alcohol consumption remains higher in comparison to their non-university peers (Johnston et al., 2009). Young adults are especially vulnerable to heavy and/or binge drinking (Hingson, Berson, & Dowley, 1997). Research shows that an estimated 41% of 18-25 year olds engage in binge drinking behaviors (i.e., consuming five or more drinks on one occasion) while an additional 14.5% would be classified as heavy drinkers (i.e., drinking five or more drinks on the same occasion on 5 or more days in one month; NSDUH, 2008). This trend is clearly concerning.

Research findings have demonstrated an association between alcohol use and aggression in college student samples (Wells, Mihic, Tremblay, Graham, & Demers, 2008; Wells, Speechley, Koval, & Graham, 2007) including both women (Fisher, Cullen, & Turner, 2000) and men (Ullman, Karabatsos, & Koss, 1999). In addition, the alcohol-aggression relationship appears to be present across numerous types of aggression, including physical, verbal, as well as sexual aggression. Self-report measures have shown that rates of aggression in all three domains have been found to be significantly higher on days when participants drank heavily (Parks, Hsieh, Bradizza, & Romosz, 2008).

Not only does alcohol use as a situational factor play a role in the development of aggressive tendencies, but previous research has also shown a significant relationship between a propensity for alcohol-related aggression and certain personality factors. According to the General Aggression Model (GAM), individual antecedents including personality traits, gender, beliefs, attitudes, values, and long term goals can all be characterized as “person factors” and indicate certain characteristics that an individual lends to a certain situation (Anderson & Bushman, 2002). It has been argued that alcohol increases aggressive tendencies not for
everyone, but only for those who exhibit a condition to engage in such behavior (Collins, 1988; Pernanen, 1991). For example, the likelihood of individuals to aggress after consumption of alcohol is increased in those with low levels of empathy (Giancola, 2003), high levels of anger (Parrott & Zeichner, 2002), low ability to control anger (Parrott & Giancola, 2004), and those who have a history of heavy episodic drinking (Parrott & Giancola, 2006). Clearly, personality plays an important role in the determination of whether a given individual will exhibit aggressive behavior (Baron, 1977). Moreover, facets of personality are extremely important to consider, given the notion that traits are largely assumed to maintain stability over one's lifespan (McCrae et al., 2000; Frick et al., 2003; Obradovic et al., 2007).

A particular personality construct, psychopathy, has been found to be a precursor of aggressive behavior (Hart & Hare, 1997) within criminal and psychiatric samples (Swogger, Walsh, Houston, Cashman-Brown, & Conner, 2010; Edens, Poythress, Lilienfield, Patrick & Test, 2008; Skeem & Mulvey, 2001). These are, of course, populations in which aggression may be more prominent overall (Hare, 2003; Vitacco et al., 2005). The construct of psychopathy can be viewed as dimensional (Edens, Marcus, Lilienfield, & Poythress, 2006) and certain characteristics inherent in individuals demonstrating psychopathic traits include: living an unstable and impulsive lifestyle, having a propensity to violate social norms, exhibiting a lack of empathy, guilt, or remorse, and displaying a tendency to behave irresponsibility (Hare, 2006). Only recently have researchers begun to explore the presence of psychopathic personality traits within the general population (Neumann & Hare, 2008; Hare & Neumann, 2008) as well as the relationship between these traits and aggression within community samples (Warren & Clarbour, 2009). In addition to the relationship between psychopathy and aggression, researchers have also established a positive association between psychopathy and alcohol-related problems in
offenders (Fritz, Wiklund, Koposov, af Klinteberg, & Ruchkin 2008). Further, the relationship between substance use disorders has been found to be correlated with specific elements of psychopathy including both impulsivity as well as irresponsibility (Walsh, Allen, & Kosson, 2007). While much research regarding psychopathy has been conducted in criminal and psychiatric samples, recently, self-report measures of psychopathic traits have been developed and validated in non-offender populations (Lilienfield & Fowler, 2006).

While identification of underlying personality factors are important in elucidating the processes of alcohol-related aggression, cognitive factors and attitudes are important to identify as well. Much extant literature has focused on investigation into attitudes and cognitions by way of self-report explicit measures. Explicit attitudes or cognitions are enabled through conscious awareness with the control of the individual, whereas in contrast, implicit attitudes manifest as actions or judgments that are under the control of automatically activated evaluation, without the individual's awareness of the causation (Greenwald & Banaji, 1995). While explicit assessment measures are used often in research and show adequate psychometric properties, they lack the ability to measure constructs that are potentially damaging to an one's character. As people have a general tendency to want to be viewed favorably by others, they may respond in ways (e.g. underreporting or over-reporting symptoms) that may result in an inaccurate representation of their own beliefs or attitudes. The benefits of implicit measures lie in the assumptions that they (a) provide access to unconscious, mental representations not accessible to introspection or self-report, (b) there is less social desirability associated with one's responses, and (c) they assess highly stable representations and associations. Multiple studies have demonstrated that specific attitudes can be processed unintentionally (Fazio, 2001). Furthermore, in many instances, individuals may not be aware of motives that drive their particular behaviors (Nisbett & Wilson,
1977). As such, implicit cognitions can be linked to behavior, with or without an individual’s conscious awareness of those thoughts.

The Go/No-go Association Task (GNAT; Nosek & Banaji, 2001) is an implicit measure with the unique capacity to capture the evaluation of a single target (e.g., violent behavior) relative to contrasting attributes (e.g., good vs. bad; safe vs. dangerous). During this task, participants are instructed to respond when presented with stimuli that belong to the target or evaluative category (referred to as signal) and are to inhibit a response to all other stimuli (referred to as noise). The logic behind the GNAT is that the stronger the association between the target and evaluative attribute, the more readily participants can distinguish signal from noise when the two concepts are paired such that they match associations in memory (e.g., violence-bad) than when they are contradictory (e.g., violence-good). By way of an implicit measure, targets can be quickly classified because “nearly everything [can be] pre-consciously classified as good or bad” (Bargh, 1994, pp.19). To date there is no published article utilizing the GNAT as an assessment of implicit aggression related cognitions.

Problem alcohol use may play a role in the relationship between personality traits (e.g. psychopathy) and aggression. Moreover, implicit cognitions and attitudes, even unbeknownst to the individual may be potential pathways moderating the relationship between personality and problem alcohol use as well as the relationship between problem alcohol use and alcohol related aggression. For example, those who view interpersonal violence as being “good” as opposed to “bad” may be at an increased risk to perpetrate, as well as those who hold implicit attitudes that alcohol is “safe” rather than “dangerous”. To date, no studies have examined these two constructs as predictors of alcohol related aggression in a college sample. The utilization of novel research methodologies in order to elucidate the processes by which personality attributes and
attitudes influence alcohol related aggression is an area that has not yet been pursued. Understanding the nature of these associations is essential.

**General Hypotheses**

The current study examines rates of problem alcohol use, psychopathic personality traits, implicit cognitions associated with alcohol and violent behavior, and alcohol-related aggression within college students in a large Southern university. The hypotheses are as follows:

**AIM 1:** To test a moderated mediation model (see Figure 1) of the relationship between psychopathic personality traits and alcohol related aggression.

**H1:** Problem alcohol use will mediate the relationship between psychopathic personality traits and alcohol related aggression.

- **H1a:** More specifically, there will be a significant linear relationship between psychopathic personality traits and problem alcohol use.
- **H1b:** There will be a significant linear relationship between psychopathic personality traits and alcohol related aggression.
- **H1c:** There will be a significant linear relationship between problem alcohol use and alcohol related aggression.
- **H1d:** The relationship between psychopathic traits and alcohol related aggression will become significantly smaller when the mediator variable, problem alcohol use, is added to the model.

**H2:** Implicit attitudes associated with interpersonal violence and alcoholic beverages will moderate the proposed mediation model.

- **H2a:** More specifically, implicit cognitions associated with viewing interpersonal violence as “good” will moderate the relationship between problem alcohol use and
alcohol related aggression, that is, problem drinking will be more predictive of alcohol related aggression when an individual views interpersonal violence as being implicitly “good” as opposed to “bad”.

H2b. Implicit cognitions associated with viewing alcohol as “good” will moderate the relationship between psychopathic personality traits and problem alcohol use, that is, having psychopathic traits will be more predictive of problem drinking when an individual views alcohol as being implicitly “good” as opposed to “bad”.

H3: Implicit cognitions associated with the perceived safety of interpersonal violence and alcoholic drinks will moderate the proposed mediation model.

H3a: More specifically, implicit cognitions associated with viewing interpersonal violence as “safe” will moderate the relationship between problem alcohol use and alcohol related aggression, that is, problem drinking will be more predictive of alcohol related aggression when an individual views interpersonal violence as being implicitly “safe” as opposed to dangerous.

H3b: Implicit cognitions associated with viewing alcohol as “safe” will moderate the relationship between problem alcohol use and alcohol related aggression, that is, having psychopathic traits will be more predictive of problem drinking behavior when an individual views alcohol as being implicitly “safe” as opposed to “dangerous”.
Figure 1

Moderated Mediation Model
Review of the Literature

Aggression

The formulation of perhaps the earliest definition of aggression can be attributed to Dollard and colleagues (1939) who first attempted to conceptualize the construct as a behavior whose intent is always to cause injury, and whose antecedent is always internalized frustration. Years later, Buss (1961) defined aggression as a response that delivers a noxious stimulus to another, and Bandura (1973) further added to the formulation of aggression as a behavior resulting in an injury, either physical or psychological. After decades of research the construct of aggression is currently conceptualized as multifaceted and is now best understood as a behavior specifically directed toward another individual carried out with the proximate (immediate) intent to cause harm to the target. The target in turn, is motivated to avoid the behavior (Bushman & Anderson, 2002, Bushman & Anderson 2001, Baron & Richardson 1994, Berkowitz 1993, Green, 2001).

Aggression can take many forms including physical, sexual, and verbal methods, and has typically been characterized as falling into two categories, (1) instrumental or proactive, and (2) hostile or reactive aggression. While instrumental aggression has been referred to as “cold”, premeditated, calculated, and motivated by a distal goal (e.g. to obtain money), hostile aggression has been referred to as “hot”, impulsive, unplanned, fueled by anger, born out of a motivation to inflict pain and hurt, and occurs in response to an interpreted provocation (Bushman & Anderson, 2001; Anderson & Bushman, 2002; Berkowitz 1993; Geen, 2001). While much research has attempted to dichotomize aggression into these two main forms, this
separation inevitably leads to both conceptual and empirical issues (Anderson & Huesmann, 2003). For example, there seems to be overlap within these constructs and an act that may seem instrumental and planned could very much have a hostile and affective component. Consistently using aggression to obtain money or power can become habit, is used outside of conscious awareness, and could in turn be characterized as impulsive. (Bargh & Pietromonaco, 1982). Moreover, it is rare that any act of aggression and violence can be considered one or the other with extreme clarity. Because of this overlap, it was recommended by Anderson and Huesmann (2003) that this dichotomous categorization be eliminated. Future research involving aggression can benefit instead by conceptualizing the behavior as occurring within a continuum.

Similar to aggression, violent behavior is best described as physical force that has extreme harm as its goal (Anderson & Bushman, 2002). The difference between these terms lies within the use of physical force, that is, while violence encompasses purely physical form, aggression includes verbal forms of hostile behavior as well. In essence, all violence is aggression, but some instances of aggression may not be violent (Anderson & Bushman, 2002). For the purposes of the current study, however, aggression and violence are used interchangeably.

Many generalist theories of aggression have been proposed in an attempt to both explain and guide research. Cognitive Neoassociation Theory (Berkowitz, 1989) posits that aggression stems from aversive events such as frustration and discomfort. These aversive events produce a negative affective state which manifest in the form of thoughts, memories, and physiological responses. These responses in turn stimulate feelings of anger or fear and can either inhibit or increase a person's risk of becoming aggressive. Berkowitz explains aggression as a combination of both cognitive and physiological responses to cues encountered during any given event.
Another theory that attempts to explain aggression is Social Learning Theory (Bandura, 1983) which asserts that aggression is a learned behavior, produced through an individual's own experiences or from observation, and learned through modeling and imitation of others engaged in aggressive acts. Social Learning Theory proposes that aggression can be acquired through both biological factors as well as observation, incentives, and instruction by others. Once aggressive behavior has been learned, the behavior is regulated by external reward and punishment, vicarious reinforcement, and self-regulatory mechanisms. According to Bandura, humans are not born with the innate knowledge to behave aggressively, but instead learn to do so.

A third general theory of aggression (Huesmann, 1988) assumes that the development of aggressive behavior occurs early on in our lives as a function of aggressive scripts. Huesmann termed his explanation Script Theory and proposed that certain cognitive “scripts” are shaped through early development, are stored in our memory, and in turn guide our behavior throughout our lives. Specifically, “a script suggests what events are to happen in the environment, how the person should behave in response to these events, and what the likely outcome of those behaviors [will] be” (p.15). Huesmann asserts that we enter social interactions in a preexisting affective state comprised of both physiological and cognitive elements, both of which are largely shaped by our past reinforcements. For example, a person exposed to much chronic frustration will likely enter any interaction in a predisposed highly aroused state. Because emotional states do not dissipate with ease, one could find themself in a heightened emotional state even when the current situation does not warrant such emotion. In these circumstances, emotions influence cues we attend to and also cause inattention to important cues, thus potentially leading to interpretation of an event as hostile, even if it is not.
Aggressive scripts are acquired in childhood, guide our behavior throughout adulthood, and are quite resistant to change.

Another theory of aggressive behavior, Excitation Transfer Theory (Zillman, 1983), suggests that excitatory responses occur in response to certain events, and if two arousal producing events occur within a short period of time, the arousal incurred as a result of the first event may be mistakenly attributed to the second event. This theory is similar to Script Theory in that if an excitatory response to an event provokes an angered response, this angered response can take a considerable amount of time to attenuate. This emotional response can cause individuals to be in a heightened state of arousal, ready to aggress even after the provoking event has taken place.

A final well known theory of aggression is Social Interaction Theory (Tedeschi & Felson, 1994), which explains aggression as a type of coercion used to influence and assert power over another person. Using this theory, aggression is explained as a coercive action to obtain something from a victim such as information, money, revenge, or to promote oneself as competent, smart, or tough (Anderson & Bushman, 2002). The perpetrator of the aggressive act engages in a decision making process where the goals of coercive action are formulated. The individual then weighs the costs and benefits of engaging in such behavior, and subsequently assesses the probability of obtaining the desired outcome. Based on these circumstances, the perpetrator purposely chooses their behavior.

Many of the aforementioned theories have a great deal in common. For example, Script Theory and Social Learning Theory emphasize past reinforcements on the development of aggression. Cognitive Neoassociation Theory and Script Theory stress the importance of cognition in aggression. In addition, Excitation Transfer Theory and Script Theory focus on
situational and environmental antecedents as provoking aggression. Furthermore, these two theories emphasize the misattribution of emotion and the ability to attend to inhibitory cues. Recognizing the amount of overlap between these theories, Anderson and Bushman (2002) proposed the General Aggression Model, (GAM; 2002) a comprehensive and integrative framework that condenses elements of the five previously mentioned general theories of aggression and seeks to explain any act of aggressive behavior as a function of both situational (e.g. drugs, alcohol, incentives, frustration) and person factors (e.g. personality traits, gender, attitudes). In particular, the General Aggression Model places emphasis “on the person in the situation” (Anderson & Bushman, 2002, p.34). Situational and personological input variables have an effect on the outcome of an individual’s behavior thorough aspects of cognition (e.g. hostile thoughts), mood (e.g. negative affect), and physiological arousal state (e.g. heart rate). These knowledge structures (i.e. cognition, mood, and affect) inevitably influence a person's interpretation of a situation on an unconscious level largely beyond a person's control. They also help to appraise the situation, reappraise the situation if needed (consciously), and define a subsequent behavioral response (Anderson & Bushman, 2002).

Of utmost importance in the General Aggression Model is the recognition of the simultaneous impact of both person factors and situational inputs (Anderson & Huesmann, 2003), as both factors combined have an influence on not only aggression, but all types of social behavior. In essence, person factors can be thought of as all of the variables that an individual brings to a certain situation and include aspects of personhood such as individual attitudes, beliefs, and behavioral tendencies. Situational factors include variables such as frustration, provocation, or being under the influence of a substance such as drugs or alcohol. Ultimately, while person factors represent an inherent propensity to aggress, situational factors can either
inhibit or increase an individual's likelihood to aggress (Anderson & Huesmann, 2003). Because GAM asserts that aggressive behavior is a result of many complicated and interwoven factors, it can explain individual differences regarding why some people aggress while others do not. For this reason, it provides an especially relevant framework to examine the variables of interest in the current study.

The impact of one particular situational variable, alcohol use, has been consistently demonstrated as a precursor of aggressive behavior. In a comprehensive review of the extant literature, Chermack and Giancola (1997) provided an integrated conceptualization of specific precursors of alcohol related aggression within four differing domains. These domains include: (1) developmental influences (distal), (2) alcohol related influences (proximal), (3) individual differences (proximal), and (4) contextual influences (proximal). It is of importance to note that the current study focuses on the two domains of alcohol related aggression explained by both (1) alcohol related influences (problem drinking) and (2) individual differences (psychopathic traits and implicit cognitions) in an attempt to elucidate the underlying mechanisms of the alcohol aggression relationship. While it appears that a strong relationship exists between alcohol and aggression, drinking does not cause aggression, as not every person who drinks invariably becomes aggressive. It is this hypothesis that should continue to propel researchers into understanding the complexities behind why some people aggress after consuming alcohol, while others do not. Knowledge of these factors are crucial in the understanding of various risk factors that may either increase or decrease risk of perpetrating, as it is unlikely that any one factor is the main contributor to the alcohol-aggression relationship.

Effects of Problem Drinking

Researchers have proposed many theories attempting to elucidate underlying processes
specifically related to the effects of alcohol on aggression. For example, the Disinhibition Hypothesis (Graham, 1980) asserts that alcohol directly affects psychological processes by “disinhibiting” the brain, leading individuals to have decreased control over their behavior, and subsequently, an increased likelihood of becoming aggressive. The major flaw of this theory seems to be in the notion that not everyone who drinks invariably becomes violent; only those who display a predisposition to do so will exhibit such an effect. The Expectancy Model (MacAndrew & Edgarton, 1969) in contrast, posits that it is not the direct properties of alcohol that disinhibit appropriate behavior, but the simple expectation that one has consumed alcohol and that this consumption of alcohol will inevitably lead to aggression. This theory can explain individual differences in beliefs about alcohol’s properties, that is, depending on certain belief systems, alcohol can be viewed as either potentially inhibitory of aggression, or in contrast, expressive of aggressive tendencies.

Elements relevant to the current study may be understood in terms of Giancola's (2000) framework of alcohol related aggression as a result of an overall deficit in the capacity for executive functioning. That is, low executive functioning is hypothesized to elicit aggression by inhibiting regulation of behavior. This includes the capacity for rational decision making when faced with a provoking situation. Executive functioning, a higher order cognitive construct, becomes disrupted after alcohol consumption, and may very well be devastated when problematic drinking patterns emerge. Similar to Giancola's (2000) proposed theory, the Alcohol Myopia Hypothesis (Steele & Joseph, 1990) explains alcohol's impact on aggression as a result of disrupted information processing. More specifically, consumption of alcohol creates a “myopic” effect on an individual's level of attention. This results in a reduced capacity to attend to important cues in the environment. Furthermore, this narrowed effect causes attention to the
most salient aspects of a situation while neglecting other less salient, but possibly inhibitory cues. Steele and Joseph's Myopia Theory provides an especially compelling framework for the current study. In instances where alcohol consumption is not only prevalent, but problematic (i.e. higher frequency and quantity of use) these inhibitory cues that may prevent aggression may be even less salient and less recognizable to a person. This poses the question: might certain individual vulnerabilities or characteristics influence even more inattention to inhibitory cues? Certainly, those with traits such as impulsivity, shallow affect, egocentricity and lack of empathy for others, even in a sober state, seem at least somewhat more likely to emit an aggressive response in situations that are provocative or hostile (or what one might view as such).

*Psychopathy*

Psychopathy, a well-known personality construct, is a constellation of personality characteristics including glibness, superficial charm, and restricted emotional responsiveness among other traits. The psychopath was first conceptualized by Cleckley in *The Mask of Sanity* (1941) in which he attributed psychopathy to an underlying major emotional deficit after case study analysis of both males and females who exhibited consistent aversive traits. Since Cleckley's seminal work, the construct has been rigorously studied and today, psychopathy is best described as “a pattern of interpersonal, affective, and behavioral characteristics, including egocentricity; deception; manipulation; irresponsibility; impulsiveness; stimulation-seeking; poor behavioral control; shallow affect; a lack of empathy, guilt or remorse; and a range of unethical and antisocial behaviors” (Neumann & Hare, 2008, p. 893). This manifestation of traits has been associated with a number of variables including the risk for criminality (Hemphill et al., 1998a), however, a psychopath is “not necessarily criminal” (Neumann & Hare, 2008, p. 893).

The construct of psychopathy has much in common with the psychiatric diagnosis of
Antisocial Personality Disorder (APA, 2002). The difference however, lies in the notion that while APD focuses mainly on expression of outward behavior, psychopathy includes not only behavior, but internal motivation and characterological processes as well (Crocker et al., 2005). Research has demonstrated that the construct of psychopathy can be conceptualized into two main facets or factors, first introduced by Hare (1991). The first factor includes behaviors manifested as “aggressive narcissism” and includes callousness, lack of empathy, egocentricity, and manipulative use of others. The second factor includes dimensions of a socially deviant lifestyle and includes impulsivity, irresponsibility, and proneness to boredom. In addition, the construct of psychopathy has historically been hypothesized as a categorical construct, however recent trends have suggested psychopathy to be more dimensional (Edens et al., 2006).

Psychopaths, as they are commonly portrayed, tend to immediately bring to mind chilling, violent and dangerous individuals, but this is not always the case. Hare (1993) asserts, psychopaths can be found “in business, the home, the professions, the military, the arts, the entertainment industry, the news media, academe, and the blue-collar world” (p. 57). Hall and Benning (2006) noted that noncriminal psychopaths are exceedingly important to study, given the notion that while they may not always commit illegal acts, they may engage in true violation of social norms and continually violate the rights of others. They term this sort of individual as the “successful” psychopath, and research has yet to explain whether these individuals simply have a less “extreme” psychopathic personality than criminal psychopaths or whether they are simply able to represent their personality characteristics in more adaptive ways. Successful or subclinical psychopathy can be characterized by high levels of egocentricity, charm, and even irresponsibility and impulsivity, but these individuals do not demonstrate their traits in extremely damaging ways. They are not incarcerated or convicted for serious crimes, and to most people,
they seem to be able to function relatively normally (Cleckly, 1941).

The most widely used metric to assess psychopathy in criminal and forensic samples is the Psychopathy Checklist-Revised (PCL-R; Hare, 2003), an instrument used by professionals to gauge psychopathic traits and assess risk for recidivism and risk for future social deviance. Using this measure, qualified assessors are able to classify the individual using a rating system (i.e. 0, 1, or 2) in twenty different domains based on a review of case history and a structured interview. The PCL-R is designed to assess populations such as offenders, psychiatric patients, those with forensic commitments, and those awaiting trial (Hare, 2003).

Due to the overwhelming majority of psychopaths to be involved with criminality in some way, these individuals are most often confined to prisons or hospitals, providing somewhat of a sample of convenience for examination into the construct. Thus, historically much of what we know regarding psychopathic traits is limited to these samples, a problematic issue for a few reasons. First, research findings in samples of offenders are unable to be generalized to a community population, much less a college student demographic. In addition, understanding the differences between successful psychopaths (i.e. college students) in the general population and unsuccessful psychopaths (i.e. incarcerated offenders) is needed because psychopaths within the general population may very well outnumber those within institutional settings. Even psychopathic individuals who are adaptive and continue to function in society at large may be a danger to themselves and their surrounding community. In addition, focusing less on the association between psychopathy and criminality and more on the core construct of psychopathy and other associated features within a general population can help to determine whether psychopathy is truly pathological when criminal deviance (i.e. breaking the law) is absent.

With regard to emotion and cognition, psychopaths demonstrate a profound emotional
detachment from others, as well as an inability to experience deep emotion (Hare, 2003). The Violence Inhibition Mechanism Model (VIM; Blair, 1995) suggests that those with psychopathic traits lack what we would deem a “normal response” to distress cues from others. According to VIM, “when activated by non-verbal communications of distress (i.e. sad facial expression, the sight and sound of tears), [we would normally] initiate a withdrawal response (Blair, 1995, p.3). Most of us find these displays of fear and sadness as aversive. This leads us to demonstrate an inhibition of actions that may cause even more distress to those exhibiting these emotions.

Psychopaths, however, exhibit an underlying deficiency in this regard. One of the core features of their personality (e.g. emotional detachment) seems to directly effect their ability to respond appropriately to these cues of sadness and fear demonstrated by others. This theory has propelled researchers in conducting studies measuring responses to highly emotional stimuli in both control subjects as well as those high in psychopathic traits. Psychopathic samples have repeatedly demonstrated an impaired startle reflex to aversive stimuli (e.g. Levenston, Patrick, Bradley, & Lang, 2000) and college students with high levels of psychopathic traits have exhibited smaller heart rate reactivity when viewing aversive slides as well as aversive movies (Osumi, Shimazaki, Imai, Sugiura, & Ohira, 2007). This finding is particularly salient to the current study. If psychopaths exhibit an impaired and reduced negative response to unsettling stimuli, they may very well exhibit positive implicit cognitions associated with constructs like violence. In sum, identification of both risk and protective factors influencing alcohol related aggression among college students with psychopathic traits is important, as relatively little is known about these mechanisms.

*Psychopathy and Aggression*

Research has uncovered a link between psychopathic traits and aggressive behavior in
adult offenders (Hare & Jutai, 1983), forensic inpatients (Vitacco et al., 2009) adolescents and children (Frick, Boden, & Barry, 2000), and civil psychiatric patients (Skeem & Mulvey, 2001). More specifically, offenders with psychopathic traits have been charged with violent crimes (i.e. assault, battery) roughly around twice as often as offenders without psychopathic traits (Hare & Jutai, 1983). While much of the research between psychopathy and aggression has focused on adults, studies on adolescents and children have proposed that callous-unemotional traits can be found early on in childhood and may be a predictor of aggression later on (Frick & Ellis, 1999). Within a civil psychiatric population sample, Skeem and Mulvey (2001) found that though the base rate of psychopathy within the population was relatively low, high psychopathy scores were still a strong predictor of violent behavior.

Based on the characteristics of psychopathic individuals, it has yet to be determined whether their callous and unemotional traits predict more instrumental aggression, or in contrast, whether their poor behavior controls predict more reactive aggression. Extant literature has demonstrated a link between both. Within a forensic inpatient population, traits of psychopathy predicted instrumental, but not reactive aggression (Vitacco et al., 2009). In addition, while most of the research on aggressive behavior focuses on direct aggression (e.g. proactive, goal-directed), (Cornell et al., 1996), research has also indicated that within a non-criminal sample, those with higher psychopathy scores were found to engage in more indirect aggression (e.g. manipulation) (Warren & Clarbour, 2009). Not only do psychopaths engage in violence and aggression more than their non-psychopathic counterparts, psychopathy has also been found to be a predictor of both general as well as violent recidivism (Salekin, Rogers, and Sewell, 1996). Overall, the association with psychopathy and violence may be due in part by psychopathy being associated with executive functioning deficits (Pham, Vanderstukken, Philipot, & Vanderlindin
2003), as the ability to plan and rationally make decisions while inhibiting attention to inappropriate behaviors is compromised.

While psychopathic traits have been minimally examined within university samples, recently, Czar and colleagues (2011) studied both male and female college students with psychopathic traits. Those demonstrating higher levels of psychopathic traits were found to be more likely than those without these traits to have engaged in relational aggression (e.g. manipulation, social exclusion, threats) in both their peer as well as romantic relationships. While it is often opined that males engage in more aggressive behavior than females, this study underscores the importance of focusing on females as perpetrators of aggression as well. In contrast to some previous findings suggesting that the impulsive domain of psychopathy has been a stronger predictor of aggression, some research groups found the impulsive and antisocial dimension of psychopathy as well as the shallow and affective dimension of psychopathy to equally predict relational aggression as well as self-reported sexual aggression in male college students (Kossen, Kellum, and White, 1997).

Based on these findings, it seems that awareness of the relationship between psychopathy and aggression is crucial in understanding the risk of future aggressive behavior for those individuals who may demonstrate psychopathic traits (Hemphill, Hare, & Wong, 1998a). As psychopathy has been found to be a robust predictor of aggression within inpatients and offender samples, additional investigation is warranted in order to clarify both the presence of psychopathic traits within a relatively high functioning and successful sample of college students.

Psychopathy and Alcohol Use

Beyond the risk of becoming aggressive and violent, those with psychopathic traits have
been found to be especially likely to have a substance use disorder. In particular, research has found a link between psychopathy and drug use (Derefinko & Lynam, 2007), and psychopathic traits have been found to be predictive of having a diagnosis of alcoholism, drug disorders, multiple drug disorders, and non-alcohol substance abuse disorders (Smith & Newman, 1990; Hart & Hare, 1989). Core elements of psychopathy, even after controlling for Antisocial Personality Disorder symptoms have been found to be related to substance use including alcohol, cannabis, cocaine, and opiates (Walsh, Allen, & Kosson, 2007). Even Cleckley (1941), the first physician to classify the psychopath in *The Mask of Sanity*, asserted that “although some psychopaths do not drink at all and others drink rarely, considerable overindulgence in alcohol is very often prominent in the life story” (p.355). Moreover, he added “a major point about the psychopath and his relation to alcohol can be found in the shocking, fantastic, or relatively inexplicable behavior which emerges when he drinks” (p. 356). Indeed, psychopathy is highly correlated with variables such as number of substances an individual experiments with, the age of first intoxication as well as number of charges, and convictions for drug related offenses. In addition, it has been hypothesized that features such as irresponsibility and impulsivity are a stronger predictor of substance use than other features such as callousness and unemotional traits (Hemphill, Hart, & Hare (1994).

Recent research has examined the associations between features of psychopathy, heavy episodic drinking, and problem behaviors in college students. In a university sample, Sylvers and colleagues (2011) found that not only were heavy rates of episodic drinking endorsed by more than half of the students surveyed, but a significant positive association was found between heavy drinking and self-reported psychopathic traits. Of note, heavy episodic drinking behavior was more positively associated with the impulsive and antisocial dimension of psychopathy.
rather than the interpersonal and affective factor (Sylvers, Landfield, & Lilienfeld, 2011).

In a study examining college students' scores on the Minnesota Multiphasic Personality Inventory (MMPI; Butcher et al., 1989) and risk for alcoholism, elevations on Scale 4 (Psychopathic Deviate), was found to be positively correlated with a current diagnosis of an alcohol use disorder. The Psychopathic Deviate Scale, originally developed to identify psychopathic patients, was utilized with other measures designed to assess behavioral undercontrol, a core component of psychopathy (Jackson & Sher, 2003). Denson, White, and Warburton (2009) examined university students who were intentionally provoked by individuals assumed to be peers. Those given an alcohol beverage as opposed to a placebo, exhibited an increased aggressive response when allowed to confront their peers. Furthermore, both trait aggression as well as the presence of psychopathic traits were found to moderate this relationship. This finding specifically supports alcohol use as a target of intervention for those students high in trait displaced aggression and psychopathic traits.

In sum, the strong positive relationship between psychopathic traits and substance use as well as psychopathic traits and aggression should encourage researchers to examine what additional factors may contribute to these associations. Moreover, while the associations between psychopathy and alcohol abuse are prevalent, there has been no research examining the conjoint influences of subclinical levels of psychopathy, problem drinking behavior, and alcohol related aggression in college students.

*Problem Alcohol Use and Aggression Among College Students*

Binge drinking tends to peak in early adult years (Monti, Tevyaw, and Borsari (2004/2005), and the highest prevalence of heavy and high risk drinking occurs in young adults ages 19-24 (Johnston, O'Malley, Bachman, & Schulenberg, 2001). In population level estimates
collected from 1998 to 2005, university students between the ages 18 to 24 were shown to demonstrate a steady increase in alcohol-related problem behaviors in the form of unintentional injury, deaths, binge drinking behavior, and driving while under the influence of alcohol (Hingson, Zha, & Weitzman, 2009). Furthermore, alcohol use in early adulthood has been linked to other problem behaviors such as unsafe sexual practices (Hingson, Heeren, Winter & Wechsler, 2005), intimate partner violence (Hines & Straus, 2007), and suicide attempts (Kung, Liu & Joun, 1998; Shiang et al., 1997).

While drinking seems to be a common occurrence on many college campuses, a fair amount of research has also demonstrated that aggression overall is particularly high among young people. In a study examining the past year prevalence rates of aggressive behavior, relatively high proportions of college students experienced (i.e. were a victim) or initiated aggressive acts. Specifically, one out of every three men and one out of every five women had experienced an aggressive act within the past year, and related to particular settings, aggressive behavior was most likely to be observed around a drinking establishment (Leonard, Quigley, & Collins, 2002).

Not only is the general prevalence of both violence and problem alcohol use within a college environment an area of concern, but the positive association between alcohol and interpersonal violence among college students is also well documented. For example, Simons and colleagues (2008) examined 400 undergraduate students' past annual and past month alcohol and drug use including the amount, type, and frequency of use, as well as the prevalence of risky behavior and domestic violence. Results indicated that higher rates of both alcohol and drug use were found to be positively associated with interpersonal violence. Quinn and Fromme (2011) conducted a study examining individual differences in subjective alcohol intoxication and
alcohol related outcomes within a college student sample. Beginning in August of students first year of college and continuing over their four years enrolled in college, participants were asked to utilize a web-based monitoring (diary) system to assess their drinking patterns, level of subjective intoxication, and negative drinking consequences including emotional, social, physical, disciplinary, financial, or academic consequences incurred as a result of their drinking. Overall findings suggested that over the four year period, greater subjective intoxication was associated with an increased likelihood of experiencing negative alcohol related consequences including engaging in illicit drug use, having unsafe sex, and acting aggressively.

Implicit Cognitions Regarding Violence and Alcohol

Baron and Richardson (2004) argue that cognitive factors, such as the thoughts and attitudes one holds, greatly influence both aggressive behavior as well as alcohol use. For example, the relationship between drinking habits and frequency of physical aggression has been found to be significantly stronger for individuals with alcohol aggression expectancies (Dermen & George, 1989), and aggression related expectancies have been positively associated with problem drinking (Noar et al., 2003). In a community sample, Field and colleagues (2004) found that expectations of aggressive behavior following alcohol consumption were a highly influential predictor for the perpetration of intimate partner violence, and within a college student sample, alcohol was found to increase aggression in individuals with more approving and favorable beliefs about aggression compared to those who did not hold such beliefs (Levinson, Giancola, & Parrott 2011).

Contradictory findings, however, have also been uncovered. Fossos and colleagues (2007) indicated that among college students, alcohol aggression expectancies had a minimal
impact on the relationship between problem drinking and violence, that is, having greater expectancies was actually associated with less violence perpetration. A rationalization of this finding involves the notion that individuals who engage in problem drinking may overall be less aware of the relationship between alcohol and aggression (Fossos et al., 2007). Clearly, much research has been conducted utilizing self-report measures of explicit expectancies, motives, and attitudes in the alcohol aggression relationship. While investigation into these explicit constructs surrounding alcohol and aggression are important, uncovering implicit attitudes regarding the two variables may fill a gap in the current literature.

As one can imagine, cognitive constructs are quite difficult to accurately assess. While paper and pencil measures are the most common instrument employed to address mental health issues, inherent in them is the ability for the responder to have both time and motivation for formulating an appropriate response. More specifically, self-report measures are based on an individual’s own willingness to divulge information regarding their thoughts and attitudes. Researchers until recent years have been quite content with this; however, with the advancement of technology, previously inaccessible constructs (i.e. automatic attitudes and cognitions) have begun to be examined.

Implicit cognitions are defined as “the introspectively unidentified (or inaccurately identified) trace of past experience that mediates a response” (Greenwald & Banaji, 1995, p. 5). These cognitions or attitudes are largely representative of associations in memory. Instead of a respondent having an adequate amount of time to formulate an intentional answer, implicit tasks have the capacity to detect associations in which a person has no conscious awareness. That is, they force respondents to answer quickly with neither the time nor the capability to monitor their response. In sum, it can be proposed that implicit attitudes and cognitions are not flawed by
socially desirable responding and most important in understanding the power of implicit attitudes and cognitions is that they are considered stable representative of underlying associations in memory.

The Go/No-Go Association Task (GNAT; Nosek & Banaji, 2001) is one implicit measure with the unique capability to assess implicit attitudes toward a single target (i.e. alcohol), relies on d-prime (d’) for signal detection, and is flexible in its measurement of contextual characteristics. Opposed to other measures such as the Implicit Association Task (IAT; Greenwald, McGee & Schwartz, 1998) which requires that an attitude toward one category (e.g. insects) be evaluated relative to a second category (e.g. flowers), the GNAT has the ability to vary the context of the target being evaluated. That is, the GNAT can focus on only one target category (e.g. alcohol) and measure it within differing contexts to assess how a respondent associates targets in memory.

Minimal research to date has examined implicit attitudes regarding alcohol and even less has examined implicit cognitions associated with violence. In a study conducted by Wiers and colleagues (2002), both implicit and explicit attitudes were assessed in both heavy and light drinkers. Heavy drinkers (as defined by an average of 32 alcoholic drinks per week) as opposed to light drinkers (as defined by an average of 5 alcoholic drinks per week) exhibited strong implicit associations between alcohol and arousal. Surprisingly, both heavy and light drinkers strongly associated alcohol use with negative outcomes. Both groups were slow to respond when alcohol was linked together with positive words and fast to respond when alcohol was linked with negative words. A similar result regarding negative implicit associations has been demonstrated in smokers. Implicitly, both smokers and non-smokers showed an association between smoking and negative attitudes (Swanson et al., 2001). Further, Houben & Wiers
(2008) indicated that positive implicit associations with alcohol may play an important role in drinking behavior and that the strength of negative implicit associations with alcohol may be based on the contrast category in which the target (alcohol) is being compared.

Jajoda & Earlywine (2003), utilizing the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) in a sample of undergraduate university students, found that positive implicit alcohol related cognitions were related to drinking behavior. In particular, students were more likely to drink when they exhibited strong positive beliefs about alcohol. Negative implicit cognitions were unrelated to such behavior. When extended to drugs, adolescents' implicit cognitions in response to drug use cues and drug outcomes has been found to be a predictive of marijuana use, and a much stronger predictor of use when compared to other predictor variables such as gender, socioeconomic status, ethnicity, and level of acculturation. Moreover, the direct effect of implicit cognitions on drug use behavior was not moderated by these other variables (Stacy, Ames, Sussman, & Dent 1996).

Stacy (1997) studied college students' implicit memory associations and prospective drug use behavior. Participants were presented with homographs including words ambiguously related to alcohol (e.g. draft, pitcher, shot), words ambiguously related to marijuana (e.g. pot, joint, bong), and other filler words not related to drug or alcohol use (e.g. trust, change). Participants were instructed to “write next to each word the first word it makes you think of” (Stacy, 1997, p. 64). Responses to these homographs were rated into categories of either alcohol related or not alcohol related (if alcohol homographs) and marijuana related or not marijuana related (if marijuana homographs). Outcome association items were measured utilizing short phrases describing potential outcomes of various behaviors. Outcomes were considered positive outcomes of alcohol or marijuana use (e.g. relaxation), or fillers, which included a variety of
behaviors not related to drug use. Participants were then asked to write the first and second behavior that each of the outcomes made them think of. Results of this study suggested that even when controlling for the predictive effects of previous drug use, memory activations (as assessed with words) predicted drug use prospectively. This finding specifically supports the notion that associations in memory influence train of thought, interpretations, and behavioral decision making processes. The authors propose that this occurs because memory activations lead to a biasing effect on behavioral decisions. That is, unless the person makes a strong effort to access alternative (but less accessible) outcomes or behaviors, a pattern of associations related to drugs or alcohol likely directly influences a pattern of use when the memory activation occurs. In addition, this study also suggests two different aspects of cognition in drug use motivation. These include an implicit component representative of associations in memory, and an outcome expectancy component, more likely associated with explicit cognitions and decision making. This attention and behavior requires higher order cognitive processing and is likely not able to occur within all individuals involved in such encounters.

The interesting results of the aforementioned studies demonstrate the strong effect that positive implicit associations with alcohol have in predicting subsequent drinking behavior, and in addition, that the context in which alcohol is evaluated may influence whether it is viewed positively or negatively. Moreover, the finding that both heavy and light drinkers showed strong negative implicit attitudes toward alcohol is especially thought provoking. It may be that light drinkers are in fact light drinkers because they do not view alcohol favorably either explicitly or implicitly. In turn, heavy drinkers are aware of the extent of their heavy use. Despite endorsing alcohol by overtly consuming it, they may hold not only negative implicit cognitions toward alcohol, but negative explicit attitudes toward it as well. This may be due to the negative
consequences or health problems incurred as a result of their heavy drinking. High risk drinkers (proposed in the current study) in contrast with heavy drinkers, may have limited insight regarding their drinking patterns as problematic. While heavy drinkers are characterized typically only by heavy rates of consumption, high risk, or problem drinkers exhibit other tendencies such as needing a first drink in the morning, unintentionally drinking more than intended, or blacking out while drinking. As such, it may be problematic drinkers view alcohol as implicitly positive as opposed to negative. The research mentioned in this review has also shown that the simple presentation of a written outcome can influence a person's thoughts about a behavior as well as predict engagement in the behavior, if the behavior is associated with the outcome in memory (Stacy, Leigh, & Weingart, 1994). If implicit associations in memory include behaviors such as drinking or violence with good or safe outcomes, certain individuals with these associations may be more likely to think about and act out these behaviors in the future.

Only one published study could be found demonstrating the exploration of implicit cognitions related to violence. As a core feature of psychopathy is pathological lying and manipulation, Snowden and colleagues (2004) studied murderers high in psychopathic traits, murderers low in psychopathic traits, and offenders not convicted of murder through the use of both explicit and implicit measures to assess violent cognitions. The Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) was utilized with both a control version (categories of flower-insect) and a violent version (categories of violence-peace). Results indicated that convicted murderers with high psychopathy scores showed a reduced negative association to violence, while convicted murderers with low psychopathy scores had an increased negative association to violence compared to offenders not charged with murder. No differences were found utilizing strictly explicit measures. Findings in this study emphasize the
importance of continued exploration into not only implicit violent related cognitions, but further study of this construct among those with psychopathic traits. As those with higher psychopathic traits in general tend to have a reduced fear or startle response to aversive words or stimuli, this study provides evidence in line with earlier findings.

Aggression and violence are not phenomenon new to our society. These behaviors are indeed detrimental, are continually growing social concerns, and though many of us are not subjected to such behavior directly, we witness it daily through various domains, such as newspapers, movies, and television. Acts such as these have been around for centuries, can be found in cultures throughout the globe, and are costly to society, to perpetrators, and to victims. Clearly, the presence of these behaviors, still not fully understood, warrants further investigation into the complexities, dynamics and precursors of engaging in such behavior. Because both personological and situational factors simultaneously determine social behavior, it is important to explore the “recipe” for aggression, that is, the complicated combination of traits and situations that can provoke such behavior.

Utilization of the General Aggression Model is particularly important in the current study, as it provides a framework through which to explore aggression as a function of both personality (e.g. psychopathic traits) as well as situational factors (e.g. problem alcohol use) through the aspects of cognition (e.g. positive implicit beliefs regarding both alcohol and aggressive behavior). While numerous studies have attempted to uncover the alcohol-aggression relationship, the relationship is largely to date, not fully understood, and few attempts have been made to elucidate the causal structure of the association. As such, there is much justification in the continued examination into the many associated factors that may link psychopathy and aggression in college (i.e. non clinical) samples. In addition, because the frequency and
prevalence of problem drinking behavior is prominent on college campuses, further research on this population can aid in identification of those students who may be at risk for alcohol problems. Furthermore, violence and aggression have many detrimental consequences in the form of legal problems, interpersonal problems, and financial concerns. Identification of those students at risk for engaging in such behavior may benefit from intervention and prevention strategies. In addition, exploration into implicit cognitions and attitudes, which have a strong link to automatic and impulsive social behaviors, can help explain why people in normal circumstances may denounce behavior, yet when under the influence of alcohol, engage in such acts. Overall, examining these variables in terms of mediation and moderation effects allows for exploration and measurement of conditional indirect effects, and utilizing a moderated mediation model, hypotheses can be examined simultaneously. Overall, this model may provide a window into the complex mechanisms at work in the prediction of alcohol related aggression.
Method

Description of the Sample

The current study was comprised of six variables (IV, Moderator1, IV*Moderator1, Audit, Moderator2, Audit*Moderator2, and the DV), which is equal to 21 “observations” in Kline’s terminology \(v*(v+1)/2=\)unique entries in the VCE where \(v\) is the number of observed variables). Using that number as the number of predictors in the model, the critical t-value with 230 observations is 1.973 and the model can detect an effect size \(f^2\) of 0.0378 using a two-tailed t-test with alpha set to .05 and beta set to .8. This analysis was conducted using the G*Power 3.1.3 program (Faul, Erdfelder, Buchner, & Lang, 2009). It was also estimated that to reach a power level of .80 for a paired samples t-test, assuming Cohen’s (1977) medium effect size of .50 with \(\alpha = .05\), a sample size of 96 would be needed.

Subjects were recruited from the research pool from the Department of Psychology at the University of Georgia to participate in this study. The sample was comprised of university male (25%) and female (75%) students who received course credit for their participation. If enrolled in psychology courses, potential participants were given the opportunity to sign up online to participate in the study that was advertised as “Personality and Reaction Time”. Participation in the research study took place in Dr. Ezemenari M. Obasi’s Hwemudua Alcohol and Health Disparities Laboratory. Participants ranged in age from 17-24 (M=19.2, SD=1.3). Participants self-identified their race as White (84.4%), Black (4.8%), Asian (4.4%), Biracial (1.7%) or other (4.4%). The majority of the participants identified their completed level of education as, “Some college” (59%), “High school graduate” (29%), or “College graduate” (10%). Most identified
their occupation as “Student” (89%) and were single, and never married (96%). With regard to generational differences, 68% were born in the United States, as were their parents and grandparents. Most participants had never sought out psychological services (71%).

Design

Sophisticated models using variables as mediators and moderators are crucial in understanding the casual pathways between relationships in question (Wirtz, 2007), particularly in the field of counseling psychology (Frazier, Tix & Barron, 2004). The main focus of this study was to test a moderated mediation model involving problem alcohol use, psychopathic personality traits, implicit attitudes regarding alcoholic drinks and interpersonal violence, and alcohol related aggression. While mediation occurs when the causal effect of the predictor variable (X) on the outcome variable (Y) is caused by the mediator (M) (Preacher, Rucker, & Hayes, 2007), moderation occurs when the strength of a relationship between an independent and dependent variable is dependent on a third (moderator) variable (Preacher, Rucker, & Hayes, 2007). As such, while the purpose of a mediation model is to explicate an underlying relationship between two constructs, moderator effects test the strength of any given relationship. In conjunction, moderated mediation occurs when the mediation relationship is contingent on the level of the moderator and can explain both “how” and “when” an effect occurs (Preacher, Rucker, & Hayes, 2007; Frone, 1999). Specifically, the model proposed (see Figure 1) sought to investigate problem alcohol use as a mediator of psychopathic personality traits and alcohol related aggression. Furthermore, it concurrently examined implicit cognitions associated with alcohol as a moderator of psychopathic traits and problem alcohol use, and implicit cognitions associated with interpersonal violence as a moderator of problem alcohol use and alcohol related aggression. Data was collected in one sitting from a computerized implicit cognition task and a
battery of assessments that was administered on a PC via MediaLab v2010.

Explicit Measures

**Demographics Form:** A demographic form was utilized to examine age, gender, personal and family history of psychological problems, substance use history, current living situation, education level, self-identified race and ethnicity, and socioeconomic status.

**Problem Alcohol Use:** The Alcohol Use Disorders Identification Test (AUDIT; World Health Organization) was utilized to measure problem alcohol use. The AUDIT is a well-established 10-item screening questionnaire designed to measure both the amount and frequency of drinking, alcohol dependence, and problems caused by alcohol in adults. The AUDIT is used to identify whether a person engages in hazardous, risky, or harmful drinking (Saunders, Aasland, Babor, De La Fuente, & Grant, 1993). The AUDIT has been examined across culture, gender, and age and has been found as an accurate measure of risk (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993; Saunders, Aasland, Amundsen, & Grant, 1993; Babor, Campbell, Room, & Saunders, 1994). Response scales of the AUDIT vary across the 10 items with scores ranging from “Never” or “No” (0) to “Daily or almost daily” or “Yes, during the last year” (4). Individuals with higher scores on the AUDIT (score of ≥ 8) exhibit behavior that is consistent with hazardous, harmful, or risky drinking, as well as possible alcohol dependence (Saunders et al., 1993). The AUDIT has been found to have adequate reliability (a=.86) within a college student sample, and has been shown to have high sensitivity (.94) and moderate specificity (.66) in the detection of high-risk drinkers when compared to DSM-IV diagnostic criteria for alcohol abuse and dependence (Fleming et al., 1991).

Implicit Measures

**Interpersonal Violence GNAT (GNAT-AN):** The Go/No-go Association Task-
Interpersonal Violence (GNAT-VR) is a modified version of the Go/No-go Association Task (GNAT; Nosek & Banaji, 2001) and was utilized to measure implicit cognitions associated with interpersonal violence with four attributes: “good” and “bad” and “safe” and “dangerous”. The task consisted of multiple blocks which allowed “violent behaviors” (target) to be combined with all attributes. For example, “violent behaviors” (e.g., BRAWL, CHOKE, MURDER, RAPE, TORTURE, etc.) was paired with “good” in one block, “bad” in another block, “safe” in a third block, and “dangerous” in a fourth block. Implicit cognitions associated with violence were measured using “recreational activities” (e.g., BASKETBALL, DANCING, HIKING, PAINTING, SWIM, etc.) as the distractor for “violent behaviors”. Additionally, “good” attribute terms were the distractor for “bad” attribute terms and “safe” attribute terms were distractors for “dangerous” attribute terms.

Stimuli for all concepts and attributes consisted of English written words. The 24 words used to represent “violent behaviors” and “recreational behaviors” as well as words associated with “safe” and “dangerous” were developed by Dr. Ezemenari M. Obasi for purposes of a prior research study. The 24 words used to represent good and bad attributes were utilized from prior research studies (Belleza, Greenwald, & Banaji, 1986; Nosek & Banaji, 2001). Labels for the signal (target) category and attribute for each block were continuously presented on the upper left and upper right quadrants of the computer screen (i.e. “violent behavior” and “good”) as a reminder for participants. Stimuli were randomly presented in the middle of the computer screen and participants were instructed to (1) press the “large green button” (a go response) on the Cedrus keypad as quickly as possible for stimuli belonging to either the signal (target) or the attribute (i.e. good, bad, safe, dangerous) for the block, or (2) refrain from pressing the “large green button” (a “no go” response) on the Cedrus keypad for stimuli that do not belong to either
of the predefined categories for that block. Accuracy for the task was reinforced by presentation of a green “O” below the stimulus for a correct response or a red “X” below the stimulus for an incorrect response for a period of 100ms.

Each participant was familiarized to the task by participating in four practice blocks that included detecting signal (target= “violent behavior”) from noise (distracter= “recreational activities”) for the target and for each attribute (e.g. violent behavior, good, bad, safe, dangerous) independently. Each practice block consisted of 20 trials with a 1000 ms response deadline. Participants completed an experimental block that combined the target with the attribute (i.e. “violent behavior” and “good”; “violent behavior” and “bad”). Each block consisted of 76 trials, where the first 16 trials were considered practice trials. The GNAT-VR was run with a response deadline of 600 ms. These response times were found to be fast enough to minimize ceiling effects in error rates, but slow enough to support sustaining accuracy (Nosek & Banaji, 2001).

**Alcoholic Drinks GNAT (GNAT-AN):** The GNAT (Nosek & Banaji, 2001) was utilized and modified to test implicit cognitions associated with alcoholic drinks by associating alcoholic drinks (e.g., BUD LIGHT, COSMOPOLITAN, GIN, MARTINI, RUM, TEQUILA, etc.) with four attributes (i.e. “good”, “bad”, “safe”, and “dangerous”). The GNAT-AN is identical to the GNAT-VR with two major differences: (1) the target was changed to “alcoholic drinks”, and (2) automatic cognitions associated with “alcoholic drinks” were measured using “non-alcoholic drinks” (e.g. COCA-COLA, GATORADE, MILK, SMOOTHIE, TEA, etc.) as a distracter. The 24 words that were used to represent alcoholic drinks and non-alcoholic drinks were developed by Dr. Ezemenari M. Obasi as part of a prior study.

Sensitivity to targets on the GNAT-VR and GNAT-AN was measured using d-prime, which assessed the participants ability to discriminate targets (signal) from distractors (noise).
Greater sensitivity is representative of a stronger relationship between the target category and attribute. Both implicit association tasks were administered using Inquisit 2.0, a precision reaction time measure.

**Psychopathic Personality Traits:** The Levenson Self Report Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995) is a 26 item self-report measure designed to assess the presence of both primary and secondary psychopathic personality traits in non-institutionalized settings. Levels of both primary and secondary psychopathic traits were derived from the participant's scores on the two factors of the LSRP. The LSRP is the only self-report measure of psychopathy that assesses the two factor structure of psychopathy including both primary (e.g. callousness, shallow affect) as well as secondary (e.g. impulsivity, poor behavioral control) psychopathy (Miller, Flory, Lynam, & Leukefeld, 2002; Levenson et al., 1995). Participants are asked to rate their response for each item on a 4 point scale ranging from "disagree strongly" (1) to "agree strongly" (4). Higher scores on the LSRP are representative of higher levels of psychopathy. The LSRP total score has been found to have good convergent validity (r=.66) with the Hare Self Report Psychopathy Scale (Hare, 1985) and adequate internal consistency (Cronbach's alpha = .80) (Lynam, Whiteside, & Jones, 1999).

**Alcohol Related Aggression:** The Alcohol Related Aggression Questionnaire (ARAQ; McMurray et al., 2006) is a 28 item self-report measure designed to assess an individual's propensity to engage in aggressive behavior after consumption of alcohol. The ARAQ is comprised of four factors: (1) alcohol related aggression expectancies (AA); trait aggression (TA); drinking context (DC); sensitivity to pain and anxiety (PA) as well as a total ARAQ score. Participants respond to items on a 4 point scale, ranging from "strongly disagree" (0) to "strongly agree" (3). The respondents total score ranges from 0-84, with higher scores indicating a greater
propensity to engage in aggression after consuming alcohol. The Alcohol Aggression (AA) factor in particular is theoretically meaningful in that it measures the alcohol-aggression outcome expectancy that is the respondent's expectation that if he or she drinks then the risk of their own aggression will increase (McMurran, 2009). Of the four factors measured by the ARAQ, the AA scale demonstrates the most reliability and validity, it is internally consistent (Cronbach's alpha = 0.96), and has been found to discriminate individual's with a conviction for alcohol-related violence from those without one (a= .93); (McMurran et al., 2006). The ARAQ-AA was used in this study.

Data Collection

MediaLab v2010 experimental software was programmed to administer measures of this study in the following order: (1) implicit measures (GNAT-AN and GNAT-VR) were randomized, (2) explicit measures including the Alcohol Use Disorder Identification Test (AUDIT), Alcohol Related Aggression Questionnaire (ARAQ), and Levenson Self Report Psychopathy Scale (LSRP) were randomized, (3) demographic questionnaire, (4) debriefing form.

Participants were informed of the general nature of the study, informed consent was collected, and participants were assigned subject numbers for the purpose of confidentiality. Administration of measures took place in groups of 6 or less participants in the Hwemudua Alcohol and Health Disparities Laboratory. After completion of the instruments, a debriefing form was provided that included both the purpose and the goals of the study as well as how the experimenter could be contacted. Furthermore, information regarding referrals for mental health counseling was provided in any event in which the participants may have experienced distress while completing the study. The battery of instruments took approximately 40 to 55 minutes to
complete. The study was approved by the Institutional Review Board of the University of Georgia.

**Statistical Plan**

Descriptive statistics examined age, gender, self-identified race and ethnicity, education level, occupation, generational characteristics, marital status, current living situation, history of psychological treatment, and socioeconomic status of participants. Means, standard deviations, and frequencies among the measured variables can be found in Tables 1-6. Responses that demonstrated excessive error rates (d’<0) in the implicit cognition tasks – where the participant was unable to detect signal from noise – were removed from subsequent analysis. D-prime, the dependent variable used within the GNAT-AN and GNAT-VR was calculated using the conventional algorithm designed for the GNAT (Nosek & Banaji, 2001).

This study aimed to show how the effect of primary and secondary psychopathic traits (independent variable) on alcohol related aggression (dependent variable) is mediated by problem alcohol use (mediator). Moreover, implicit cognitions were tested as potential moderators of the mediation model. In particular, Baron and Kenny’s (1986) steps for testing mediation include the following: (1) the IV is significantly related to the mediator; (2) IV is significantly related to the DV in the absence of the mediator being included in the model; (3) The mediator is significantly related to the DV; and (4) the relationship between the IV and DV is no longer significant when the mediator is added to the model.

In order to incorporate the variables of interest into the steps recommended by Baron & Kenny (1986) for the model, (1) there needs to be a significant linear relationship between psychopathic personality traits (IV) and problem alcohol use (mediator), (2) a significant linear relationship between psychopathic personality traits (IV) and alcohol related aggression (DV),
(3) a significant linear relationship between problem alcohol use (mediator) and alcohol related aggression (DV), and (4) the relationship between psychopathic personality traits and alcohol related aggression will need to be significantly smaller when the mediator variable, problem drinking, is added to the model. Path analysis was conducted to examine the mediation model without the addition of the moderators. The test of mediation (Hypothesis 1d) included examining the reduction of the relationship between the IV (primary and secondary psychopathic traits) and DV (alcohol related aggression) when the mediator variable (problem alcohol use) was added to the equation.

To assess both Hypothesis 2 and Hypothesis 3, moderators (implicit cognitions) were incorporated into the model. A statistical macro (MODMED) was utilized (Preacher, Rucker, & Hayes, 2007) in order to test both mediation and moderation effects concurrently using a sequence of commands for a custom analysis. Estimation of coefficients in the moderated mediation model assessed whether the indirect effect mentioned previously (i.e. problem drinking as a mediator of psychopathic traits and alcohol related aggression is moderated by both implicit cognitions associated with interpersonal violence as well as implicit cognitions associated with alcohol use.
Table 1

Sample Demographics

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>White</td>
<td>194</td>
<td>84.4</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>11</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>10</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>Biracial</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>10</td>
<td>4.4</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>59</td>
<td>25.7</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>170</td>
<td>73.9</td>
</tr>
<tr>
<td>Relationship Status</td>
<td>Single</td>
<td>222</td>
<td>96.5</td>
</tr>
<tr>
<td></td>
<td>Living with other</td>
<td>6</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>Widowed</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Education</td>
<td>High school grad</td>
<td>67</td>
<td>29.1</td>
</tr>
<tr>
<td></td>
<td>Some college</td>
<td>137</td>
<td>59.6</td>
</tr>
<tr>
<td></td>
<td>College Grad</td>
<td>24</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>Grad training</td>
<td>1</td>
<td>0.4</td>
</tr>
</tbody>
</table>
Table 2

Generational Characteristics

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation</td>
<td>Born outside of U.S.</td>
<td>13</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>Born in US; mother or father born outside US.</td>
<td>19</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>Parents and I born in US; Grandparents born outside U.S.</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>My parents and I were born in the U.S., at least one grandmother or grandfather born outside U.S.</td>
<td>35</td>
<td>15.2</td>
</tr>
<tr>
<td></td>
<td>All grandparents, parents, and I born in U.S.</td>
<td>157</td>
<td>68.3</td>
</tr>
<tr>
<td></td>
<td>Don’t know</td>
<td>1</td>
<td>0.4</td>
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Table 3
Occupation of Participant and History of Psychological Services

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Occupation</td>
<td>Farm laborer; Service worker</td>
<td>6</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>Worker without Professional Training</td>
<td>12</td>
<td>5.2</td>
</tr>
<tr>
<td></td>
<td>Semiskilled Worker</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Clerical/Sales Business Owner ($25k-$50k)</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Technician; Semiprofessional ($50k-$75k)</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Manager; Minor professional ($75k-$100k)</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Administrator; Military Officer; Professional ($100k-$250k)</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Unemployed; Student</td>
<td>205</td>
<td>89.1</td>
</tr>
<tr>
<td>Psychological Services</td>
<td>Yes</td>
<td>65</td>
<td>28.3</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>164</td>
<td>71.3</td>
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Table 4
Mother's Education and Occupation

<table>
<thead>
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<th>Demographic Variable</th>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother's Education</td>
<td>Junior high</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Some high school</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>High school grad</td>
<td>19</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>Some college</td>
<td>32</td>
<td>13.9</td>
</tr>
<tr>
<td></td>
<td>College grad</td>
<td>113</td>
<td>49.1</td>
</tr>
<tr>
<td></td>
<td>Grad training</td>
<td>60</td>
<td>26.1</td>
</tr>
<tr>
<td>Mother’s Occupation</td>
<td>Farm laborer;</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Worker without Professional Training</td>
<td>8</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Semiskilled Worker</td>
<td>5</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td>Clerical/Sales</td>
<td>9</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>Semiprofessional ($50k-$75k)</td>
<td>30</td>
<td>13.0</td>
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<tr>
<td></td>
<td>Manager ($75k-$100k)</td>
<td>31</td>
<td>13.5</td>
</tr>
<tr>
<td></td>
<td>Professional</td>
<td>32</td>
<td>13.9</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>73</td>
<td>31.7</td>
</tr>
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</table>
Table 5

*Father’s Education and Occupation*

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father’s Education</td>
<td>Junior high</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Some high school</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>High school grad</td>
<td>16</td>
<td>6.9</td>
</tr>
<tr>
<td></td>
<td>Some college</td>
<td>33</td>
<td>14.4</td>
</tr>
<tr>
<td></td>
<td>College grad</td>
<td>95</td>
<td>41.3</td>
</tr>
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<td></td>
<td>Grad training</td>
<td>81</td>
<td>35.2</td>
</tr>
<tr>
<td>Father’s Occupation</td>
<td>Farm laborer</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Worker without Professional Training</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Semiskilled Worker</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>Clerical/Sales ($25k-$50k)</td>
<td>14</td>
<td>6.1</td>
</tr>
<tr>
<td></td>
<td>Semiprofessional ($50k-$75k)</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Manager ($75k-$100k)</td>
<td>52</td>
<td>22.6</td>
</tr>
<tr>
<td></td>
<td>Professional ($100k-$250k)</td>
<td>66</td>
<td>28.7</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>11</td>
<td>4.8</td>
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</table>
Table 6
Partner’s Education and Occupation

<table>
<thead>
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<th>Demographic Variable</th>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>Partner’s Education</td>
<td>Less than 7th grade</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Junior high</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Some high school</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>High school grad</td>
<td>61</td>
<td>26.5</td>
</tr>
<tr>
<td></td>
<td>Some college</td>
<td>114</td>
<td>49.6</td>
</tr>
<tr>
<td></td>
<td>College grad</td>
<td>46</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Grad training</td>
<td>5</td>
<td>2.2</td>
</tr>
<tr>
<td>Partner’s Occupation</td>
<td>Farm laborer</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>Worker without</td>
<td>16</td>
<td>6.9</td>
</tr>
<tr>
<td></td>
<td>Professional Training</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Semiskilled Worker</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Clerical/Sales ($25k-$50k)</td>
<td>3</td>
<td>1.3</td>
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<tr>
<td></td>
<td>Semiprofessional ($50k-$75k)</td>
<td>4</td>
<td>1.7</td>
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<tr>
<td></td>
<td>Manager ($75k-$100k)</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>Category</td>
<td>Value 1</td>
<td>Value 2</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>---------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>1</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>(100k-$250k)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>193</td>
<td>83.9</td>
<td></td>
</tr>
<tr>
<td>Student</td>
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</tr>
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</table>
Results

The present study examined the role of problem drinking as a mediator between psychopathic personality traits and alcohol-related aggression and also tested moderator effects of implicit cognitions associated with alcohol and violent behavior (see Figure 1). This chapter presents descriptive data as well as results of mediation and moderation analyses that test the hypotheses of the dissertation. The hypothetical simple mediation models were analyzed using path analysis, a special case of structural equation modeling (SEM) using STATA v12.1 software and analyses of tests of conditional indirect effects when assessing moderated mediation were assessed with a statistical macro as recommended by Preacher, Rucker, & Hayes (2007). Path analysis was chosen because it allowed for the unique contribution of several variables to be tested at one time instead of sequentially and it measures both direct and indirect relationships (Raykov & Marcoulides, 2000). The MODMED macro was utilized as it was able to provide an estimate of the conditional indirect effect of a single causal independent variable on the outcome variable through a proposed mediator variable, conditional on a moderator of the path from the independent variable to the mediator, as well as the path from the mediator to the dependent variable. By properly specifying the command syntax, the macro has the capability to measure the conditional indirect effects for any of the five models described in Preacher, Rucker, and Hayes (2007). This specific study utilized Model 4. Estimates of all paths were calculated using the Maximum Likelihood Estimator (MLE). In MLE, the goal is to find point estimates that would be the most likely to yield the observed results.
Hypotheses Revisited

It was hypothesized that there would be a significant linear relationship between primary and secondary psychopathic personality traits and problem alcohol use. LSRP primary psychopathy scores significantly and positively correlated with total frequency scores on the AUDIT, (r = .181, p = .01). LSRP secondary psychopathy scores also significantly and positively correlated with total frequency scores on the AUDIT, (r = .243, p < .001).

It was hypothesized that there would be a significant linear relationship between psychopathic personality traits and alcohol related aggression. LSRP Primary Psychopathy scores significantly and positively correlated with the Alcohol Aggression index of the Alcohol Related Aggression Questionnaire, (r = .169, p = .01). LSRP Secondary Psychopathy scores also significantly and positively correlated with the Alcohol Aggression index of the Alcohol Related Aggression Questionnaire, (r = .318, p < .001).

It was hypothesized that there would be a significant linear relationship between problem alcohol use and alcohol related aggression. AUDIT total frequency scores significantly and positively correlated with the ARAQ AA scores, (r = .472, p < .001). Correlations for the study constructs can be found in Table 7.

It was predicted that frequency of problem alcohol use behaviors would significantly mediate the relationship between psychopathic personality traits and alcohol related aggression. Mediation analyses were conducted using both primary and secondary psychopathy separately as predictors and the Alcohol Aggression index (AA) of the ARAQ as the criterion variable.

Mediation Effects

Alcohol related aggression was hypothesized to be mediated through problem alcohol use on psychopathic personality traits. Two models were developed to test for simple mediation, one
with primary psychopathic personality traits as the independent variable, and the second with secondary psychopathic traits as the independent variable. The comparative fit index (CFI) for the first model was 1.0 and the root mean square error of approximation (RMSEA) was .08. For the RMSEA, values less than .05 represent good fit, and values as high as .08 indicate reasonable errors of approximation in the population. The structural coefficients (β's) represent hypotheses about the theoretical constructs.

In the first model, utilizing primary psychopathic personality traits as the independent variable, the results were not consistent with the proposed hypotheses. Specifically, analyses did not meet all four of Baron and Kenny's (1986) conditions for mediation: (a) primary psychopathy was not significantly associated with alcohol related aggression (β = 0.14, p=.06); however, (b) primary psychopathy was significantly associated with problem drinking (β = 0.16, p<0.01); (c) the mediator, problem alcohol use, was significantly related to alcohol related aggression (β = 0.6, p <0.001); however, (d), the contribution of primary psychopathy to alcohol related aggression was still significant in the presence of problem alcohol use (β = .09, p <.01), suggesting that problem alcohol use was not a mediator. According to Baron & Kenny (1986), if any of these four steps are not met, mediation cannot be established. Since significant mediation was not observed in Model 1, it was not analyzed further for moderating effects.

In a second model, secondary psychopathic traits were measured as the independent variable, and analyses met all four of Baron and Kenny's (1986) conditions for mediation: (a) secondary psychopathy was a significant predictor of alcohol related aggression (β = 0.38, p <0.01); (b) secondary psychopathy was a significant predictor of problem drinking, (β = .27, p < 0.01); (c) problem drinking was a significant predictor of alcohol related aggression (β = 0.46, p <0.001); and (d) the indirect effect of secondary psychopathic traits to alcohol related aggression
through problem alcohol use was significant (β = .12, p < .05); (Baron & Kenny, 1986), suggesting a mediation effect.

The (CFI) for this model was 0.31 and the (RMSEA) was .05. The CFI depends in large part on the average size of the correlations of the data. That is, if the average size of the correlation between variables is not particularly high, the CFI will not be high. A CFI value of .90 or greater is desirable.

It was hypothesized that implicit attitudes associated with viewing interpersonal violence as “good” would moderate the relationship between problem alcohol use and alcohol related aggression, that is, problem drinking will be more predictive of alcohol related aggression when an individual views interpersonal violence as being implicitly “good” as opposed to “bad”.

It was hypothesized that implicit cognitions associated with viewing alcohol as “good” will moderate the relationship between psychopathic personality traits and problem alcohol use, that is, having psychopathic traits will be more predictive of problem drinking when an individual views alcohol as being implicitly “good” as opposed to “bad”.

**Moderator Effects**

The results of testing for moderator effects were not consistent with the proposed hypotheses. As mentioned previously, a statistical macro was utilized to fit the model which tested the effects of moderation and mediation concurrently. If the conditional indirect effect varies significantly as a function of the moderator(s), then moderated mediation is said to occur. Analysis first consisted of the two computerized Go/No Go Association Tasks which were analyzed using d'prime, a statistic that allows for signal detection to measure implicit social cognitions. Means, correlations, and paired samples tests of the two Go/No-Go Association Tasks can be found in Tables 8-11 and Figures 2-3. Analyses of paired samples statistics
revealed that alcohol was implicitly viewed as bad (M=2.1) as opposed to good (M=1.8) and dangerous (M=1.9) as opposed to safe (M=1.7). In addition, violence was implicitly viewed as bad (M=2.1) as opposed to good (M=1.3), and dangerous (M=1.9) as opposed to safe (M=1.0). Furthermore, analyses of Pair 1 (alcohol good-alcohol bad) revealed a medium effect size (Cohen's d = -0.4) and Pair 2 (violence good-violence bad) revealed a large effect size (Cohen's d = -1.1). In addition, analysis of Pair 1 (alcohol safe-alcohol dangerous) revealed a medium effect size (Cohen's d = -0.5) and Pair 2 (violence safe vs. violence dangerous) revealed a large effect size (Cohen's d = -1.0).

After analysis of the GNAT, questions related to the changing of the relationship of the variables as a function of moderators were measured. First, good and bad cognitions associated with both alcohol and violence was measured with secondary psychopathy as the independent variable (Model 4). Of note, a negative interaction implies that the relationship gets weaker under certain levels of the moderator whereas a positive interaction means that the relationship gets stronger given particular levels of the moderator. When good/bad cognitions were examined in the model, the following direct effects were observed: good/bad alcohol cognitions were not found to be a significant predictor of alcohol related aggression, (β = 4.73, p=.096); the interaction of secondary psychopathy and good/bad cognitions on alcohol related aggression was not significant (β = -.25, p=.129); the association of good/bad violence cognitions on alcohol related aggression was not significant (β = 1.1, p= .370), and the interaction of problem alcohol use and good/bad cognitions on alcohol related aggression was not significant (β = .15, p= .240). Furthermore, the effects of good/bad cognitions on alcohol related aggression through problem alcohol use was not significant (β = 1.3, p=.559); and the interaction of secondary psychopathy and good/bad cognitions on alcohol related aggression through problem alcohol use was not
significant ($\beta = -.06, p = .686$). Analysis of the indirect effects of good/bad alcohol cognitions on alcohol related aggression through problem alcohol use was not significant ($\beta = .61, p = .563$), and the indirect effect of the interaction between secondary psychopathy and good/bad cognitions on alcohol related aggression through problem alcohol use was not significant ($\beta = -.02, p = .670$).

It was hypothesized that implicit cognitions associated with viewing interpersonal violence as “safe” would moderate the relationship between problem alcohol use and alcohol related aggression, that is, problem drinking will be more predictive of alcohol related aggression when an individual views interpersonal violence as being implicitly “safe” as opposed to dangerous. It was also hypothesized that implicit cognitions associated with viewing alcohol as “safe” will moderate the relationship between problem alcohol use and alcohol related aggression, that is, having psychopathic traits will be more predictive of problem drinking behavior when an individual views alcohol as being implicitly “safe” as opposed to “dangerous”.

In Model 5, when safe/dangerous variables were examined in the model, the following direct effects were observed: safe/dangerous alcohol cognitions were not found to be a significant predictor of alcohol related aggression, ($\beta = -.81, p = .752$); the interaction of secondary psychopathy and safe/dangerous cognitions on alcohol related aggression was not significant ($\beta = .02, p = .887$); the association of safe/dangerous violence cognitions on alcohol related aggression was not significant ($\beta = .99, p = .241$), however, the interaction of problem alcohol use and safe/dangerous cognitions on alcohol related aggression was moderately significant ($\beta = -.21, p = .05$). Furthermore, the direct effects of safe/dangerous alcohol cognitions on alcohol related aggression through problem alcohol use was not significant ($\beta = .07, p = .980$); and the interaction of secondary psychopathy and safe/dangerous cognitions on
alcohol related aggression through problem alcohol use was not significant ($\beta = .02, p= .881$). Analysis of the indirect effects of safe/dangerous alcohol cognitions on alcohol related aggression through problem alcohol use was not significant ($\beta = .03, p= .980$), and the indirect effect of the interaction between secondary psychopathy and safe/dangerous cognitions on alcohol related aggression through problem alcohol use was not significant ($\beta = .01, p= .881$).
Table 7

Correlation Coefficients for Study Constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Primary Psychopathy</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2 Secondary Psychopathy</td>
<td>.437**</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>3 AUDIT</td>
<td>.181**</td>
<td>.243**</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4 Alcohol Related Aggression AA</td>
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<td>.318**</td>
<td>.472**</td>
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</table>

Note: **Correlation is significant at the 0.01 level (2-tailed)
Table 8
Means and Standard Deviations of Study Constructs

<table>
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<tr>
<th>Construct</th>
<th>M</th>
<th>SD</th>
<th>SE</th>
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</thead>
<tbody>
<tr>
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<td>.1</td>
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<tr>
<td>Secondary Psychopathy</td>
<td>17.9</td>
<td>4.0</td>
<td>.1</td>
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<tr>
<td>Problem Drinking</td>
<td>8.7</td>
<td>5.2</td>
<td>.1</td>
</tr>
<tr>
<td>Alcohol Aggression</td>
<td>8.5</td>
<td>7.5</td>
<td>.2</td>
</tr>
<tr>
<td>Safe/Dang. Alcohol Cognitions</td>
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<td>.66</td>
<td>2.9</td>
</tr>
<tr>
<td>Good/Bad Alcohol Cognitions</td>
<td>-.28</td>
<td>.69</td>
<td>2.2</td>
</tr>
<tr>
<td>Safe/Dang. Violence Cognitions</td>
<td>-.84</td>
<td>.82</td>
<td>.8</td>
</tr>
<tr>
<td>Good/Bad Violence Cognitions</td>
<td>-.83</td>
<td>.73</td>
<td>1.2</td>
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Table 9

Paired Samples Statistics for Implicit Alcohol and Violence Cognitions Good/Bad

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<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>SE</th>
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</thead>
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<tr>
<td>Alcohol Good</td>
<td>1.8</td>
<td>.8</td>
<td>.1</td>
</tr>
<tr>
<td>Alcohol Bad</td>
<td>2.1</td>
<td>.8</td>
<td>.1</td>
</tr>
<tr>
<td>Violence good</td>
<td>1.3</td>
<td>.8</td>
<td>.1</td>
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<tr>
<td>Violence bad</td>
<td>2.1</td>
<td>.9</td>
<td>.1</td>
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</table>
Table 10

Paired Samples Test for Pair 1 and Pair 2 (Good/Bad)

<table>
<thead>
<tr>
<th></th>
<th>95% CI (2-tailed)</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower</td>
<td>Upper</td>
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<td>Pair 2</td>
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<td>-.73</td>
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<td>212</td>
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</table>

Note: Pair 1: Alcohol good - alcohol bad; Pair 2: Violence good – violence bad
Figure 2

Go/No-Go Association Task Graph Good/Bad

Note: *When alcohol was a target, non-alcoholic drinks were distractors; when violent behavior was a target, recreational activities were distractors*
Table 11

Paired Samples Statistics for Implicit Alcohol and Violence Cognitions Safe/Dangerous

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>SE</th>
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</thead>
<tbody>
<tr>
<td>Alcohol safe</td>
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<td>.7</td>
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<tr>
<td>Alcohol dangerous</td>
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<td>.04</td>
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<tr>
<td>Violence safe</td>
<td>1.0</td>
<td>.7</td>
<td>.05</td>
</tr>
<tr>
<td>Violence dangerous</td>
<td>1.9</td>
<td>.8</td>
<td>.06</td>
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</tbody>
</table>
Figure 3
Go/No-Go Association Task Graph Safe/Dangerous

Note: When alcohol was a target, non-alcoholic drinks were distractors; when violent behavior was a target, recreational activities were distractors
### Table 12

Paired Samples Test for Pair 1 and Pair 2 (Safe/Dangerous)

<table>
<thead>
<tr>
<th></th>
<th>95% CI (tailed)</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
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</thead>
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<tr>
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<td>Lower</td>
<td>Upper</td>
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<td>Pair 1</td>
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<tr>
<td>Pair 2</td>
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<td>-.73</td>
<td>-16.59</td>
<td>212</td>
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</table>

Note: *Pair 1: Alcohol safe - alcohol dangerous; Pair 2: Violence safe – violence dangerous*
Table 13

Direct and Interaction Effects for MODMED Models of Alcohol Aggression

<table>
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<tr>
<th></th>
<th>H1</th>
<th>H2</th>
<th>H3</th>
<th>H4</th>
<th>H5</th>
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<td>Agress:AUDIT</td>
<td>0.62***</td>
<td>0.53***</td>
<td>0.44***</td>
<td>0.46***</td>
<td>0.41***</td>
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<td></td>
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<td>-0.13</td>
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<td>-0.12</td>
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<tr>
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<td>0.10</td>
<td>0.11</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>-0.07</td>
<td>-0.07</td>
<td>-0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agress:Good/Bad Alc.Cogs</td>
<td>3.18</td>
<td></td>
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<td>4.73+</td>
<td>-2.84</td>
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<td></td>
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<td>-0.10</td>
<td></td>
<td></td>
<td>-0.11</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Agress:Good/Bad Agg. Cogs</td>
<td>0.82</td>
<td>1.1</td>
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<td></td>
<td>-1.3</td>
<td>-1.2</td>
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<tr>
<td>Agress:AUDIT*Good/Bad Cogs</td>
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<td>-0.15</td>
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<td></td>
<td>-0.14</td>
<td>-0.12</td>
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<tr>
<td>Agress Psych I * Safe/Dang. Cogs</td>
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<td></td>
<td>-0.10</td>
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<tr>
<td></td>
<td>-0.10</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>1.0</td>
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<td></td>
<td>-0.86</td>
<td>-0.85</td>
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<td>-0.21+</td>
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<td>-0.14</td>
</tr>
<tr>
<td></td>
<td>-0.12</td>
<td>-0.14</td>
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<td></td>
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<td>-0.16</td>
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<td>-0.16</td>
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<tr>
<td>Agress:Psych II*Safe/Dang. Cogs</td>
<td></td>
<td>0.02</td>
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<td>1.34</td>
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<td></td>
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<td>-2.61</td>
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<tr>
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<td>H1</td>
<td>H2</td>
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<td>-0.10</td>
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<td>-0.14</td>
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<td>-0.16</td>
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<td>6.37***</td>
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<td>43.05***</td>
<td>42.24***</td>
<td>40.41***</td>
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<td>var(e.audit): Constant</td>
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<td>25.54***</td>
<td>25.60***</td>
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</table>

+p<.01, *p<.05, **p<.01, ***p<.001

Note: H1: Simple mediation model; H2: Primary psychopathy (Psych I) moderated with good/bad; H3: Primary psychopathy (Psych I) moderated with safe/dangerous; H4: Secondary psychopathy (Psych II) moderated with good/bad; H5: Secondary psychopathy (Psych II) moderated with safe/dangerous
Discussion

The overarching goal of this study was to investigate if problem drinking behaviors (i.e. morning drinking, experiencing guilt after drinking, frequency of drinking) mediated the relationship between psychopathic personality traits and alcohol related aggression. In addition, it explored implicit cognitions associated with alcohol and violence and whether these factors moderated the mediation relationship in a sample of university students. To the author’s knowledge, there are no published research studies that have examined the link between psychopathy, problem alcohol use and alcohol related aggression. In addition, research on implicit attitudes regarding aggression and alcohol is an area that has not yet been highly pursued. The current study was designed to help fill the need for this information. Data was collected from college students, a population known for its heavy and problematic drinking patterns. The current study presented three hypotheses, only one of which was supported by the data. The findings of the study extend the results of previous studies in the extant literature and contribute further by documenting the connection between problem alcohol use, psychopathy, and alcohol related aggression.

Summary of Results

Psychopathic personality traits were hypothesized to be associated with problem alcohol use, and in turn problem alcohol use was hypothesized to be a predictor of alcohol related aggression. The results of this study supported the hypothesis; as both primary psychopathy and secondary psychopathy were linked positively with problem alcohol use. This relationship varied, however, between psychopathy and problem alcohol use across the two factors of
psychopathic traits (primary and secondary). In particular, while all the variables were positively correlated, problem alcohol use was a significant mediator for only secondary psychopathic traits and alcohol related aggression. Regarding the presence of moderators, neither implicit cognitions associated with alcohol or violence were found to be significant.

The associations found in the current study are consistent with those that have emerged recently examining the relationships between psychopathic features, antisocial personality disorder, and heavy episodic drinking (Sylvers, Landfield, & Lilienfeld, 2011). Particularly, the results of the current study place importance on understanding the division of psychopathic traits into both primary and secondary factors in subsequent research. While primary psychopathy includes characteristics such as arrogance, callousness, manipulativeness, and lying, secondary psychopathy includes aspects of personality including impulsivity, proneness to boredom, irresponsibility, and a lack of long-term goals. The findings of the current study coincide with others that have established that certain psychopathic features such as irresponsibility and impulsivity are a stronger predictor of substance use than features such as callousness and unemotional traits (Hemphill, Hart, & Hare, 1994). In addition, it is consistent with established literature linking heavy episodic drinking with the impulsive and antisocial dimension of psychopathy rather than the interpersonal and affective factor (Sylvers, Landfield, & Lilienfeld, 2011). This makes sense given that characteristics such as impulsiveness and irresponsibility can be presented in many individuals with substance use disorders.

The current study also adds to the literature regarding the presence of psychopathic personality traits within the general population, an area that researchers have only recently begun to explore (Neumann & Hare, 2008; Hare & Neumann, 2008). Much of the extant literature has focused on samples of offenders, results of which are not fully appropriate to be generalized to a
community population, nor a college student demographic. The current study also provides somewhat of an understanding of the differences between successful psychopaths (i.e. college students) in the general population and unsuccessful psychopaths (i.e. incarcerated offenders). As stated previously, information is needed because psychopaths within the general population may very well outnumber those within institutional settings. Even psychopathic individuals who are adaptive and continue to function in society at large may be a danger to themselves and their surrounding community.

Contrary to the proposed hypotheses, neither implicit cognitions associated with alcohol or with violent behaviors were found to be moderators of the proposed model. In the current study, however, participants implicitly found alcohol and violence to be bad as opposed to good, and dangerous as opposed to safe. There may be a few reasons that the hypotheses were not supported. First, the variables of interest were not overly represented in the sample in general, making it difficult to examine the variables in depth. Second, individuals who do display psychopathic traits demonstrate what can be characterized as “emotional detachment”, and as an inability to experience deep emotion (Hare, 2003). It could be the case that those scoring high in psychopathic traits have an inhibited response to violence or any situation which warrants an emotional response, such as the implicit measure utilized in this study. This is consistent with the findings of Snowden and colleagues (2004) who demonstrated that convicted murderers with high psychopathy scores showed a reduced negative association to violence, while convicted murderers with low psychopathy scores had an increased negative association to violence. In sum, those high in psychopathic traits may exhibit a lack of any emotion, a likely precursor of being able to more readily hurt others, whether that be emotionally or physically.
Problem Drinking as a Mediator

The current study points to problem drinking behavior as a mediator between psychopathic traits and alcohol related aggression. The use of alcohol in general has been consistently demonstrated as a precursor of aggressive behavior, however the effect of problematic drinking as a predictor has not been largely pursued. Problematic alcohol use can be seen as a precursor to other cognitive, behavioral and physiological issues that may develop after repeated alcohol use. In essence, problem drinking is a risk factor for alcohol dependence, a mental health disorder that includes drinking to the point of clinically significant impairment or distress. It is a debilitating mental health issue that includes a need for markedly increased amounts of alcohol to achieve intoxication, the experience of withdrawal symptoms, having a desire to cut down or quit the substance without success, and spending an inordinate amount of time in activities necessary to obtain the substance. In sum, there are many social, occupational, and recreational activities that are given up or reduced as a result of one’s preoccupation with the substance (APA, 2002). It remains important to remember, however, that while there exists a strong relationship between alcohol and aggression, drinking does not cause aggression, as not every person who drinks invariably becomes aggressive. Conceptually, the findings in the current study are supportive of the General Aggression Model (GAM; Bushman & Anderson, 2002) as it provides further data on aggressive behavior as a function of both situational (i.e. alcohol) and person factors (e.g. personality traits, gender, attitudes). Continued exploration of these variables can continue to elucidate the underlying mechanisms of the alcohol aggression relationship.

The results of the current study place particular importance on problematic drinking, a behavior defined as encompassing both hazardous and harmful consumption tendencies. There are many forms of excessive drinking that cause substantial risk or harm to an individual. They
include things like high level drinking, repeated episodes of drinking to intoxication, drinking that is actually causing physical or mental harm, and drinking that has resulted in the person becoming dependent or addicted to alcohol. Hazardous drinking involves a pattern of use that tends to increase the risk of harmful consequences for both one's physical and mental health. There are also obvious social consequences caused by harmful use, namely, the propensity to engage in aggression or violence. This study adds to the literature and suggests that prevention efforts aimed at individuals who exhibit certain personality attributes may produce a reduction in hazardous drinking and the subsequent behavioral consequences of such use.

*Implicit Cognition Measures*

Paper and pencil measures are regularly utilized in both research and clinical settings for a variety of mental health issues. In contrast to these explicit measures, implicit measures provide a glimpse into certain attitudes or cognitions of an individual. Specifically, implicit cognitions are representative of memory associative processes rather than an individual's rational or intended behavior or response. Extant literature suggests that self-report data may be unreliable at times, however a number of studies with violent offenders have established that that self-report data does have predictive validity (Mills, Loza, & Kroner, 2003). One caveat to measuring implicit attitudes is that they rarely show correspondence with self-report measures. For example, explicit and implicit measures of self-esteem have been found to only weakly be correlated with one another (Greenwald & Farnham, 2000; Karpinski, 2004). In particular, in a study of high risk violent offenders attitudes regarding violence, explicit and implicit tests were not related to each other at all (Polaschek et al., 2010). This could account for why implicit cognitions regarding alcohol and violence were not found to be significant moderators in the current study. This is an area of new research, and just one published study to date has utilized
an implicit association task containing violence related stimuli to investigate aggressive
tendencies with offenders. Gray, MacCulloch, Smith, Morris, and Snowden (2003) paired the
concepts “violence” and “peaceful” with the attributes “pleasant” and “unpleasant” and
compared offenders convicted of murder, and those convicted of other crimes. Results found no
differences in their sensitivity to violence related cues. In a sense, implicit measures have been
treated as though they are a foolproof way to uncover individual's underlying thoughts and
attitude. There seems to be the belief that they will infallibly predict those most likely to engage
in some behavior. Extant research shows that with regard to implicit cognitions, this view is
simplistic and inaccurate—that a 'true' attitude or 'true' thoughts can be uncovered by a single
instrument (Gawronski, 2009).

*Use of the AUDIT*

Results such as the ones found in this project specifically support problematic alcohol use
as a target of intervention for those students high in trait displaced aggression and psychopathic
traits. The instrument used in this study is one that was originally developed to screen for
excessive drinking and to aid in identifying individuals who exhibit excessive drinking patterns.
Those who display problematic drinking patterns then, may benefit from reducing or cutting
down on their alcohol consumption. Though it was measured as a continuous variable in this
study, the AUDIT scoring allows for individuals' scores to be categorized into three groups:
harmful alcohol use, hazardous alcohol use, and alcohol dependence symptoms. As mentioned
before in the review of the literature, alcohol is implicated a vast array of negative consequences
including health issues such as cancer, liver cirrhosis, pancreatitis, diabetes, and stroke. It is also
involved in numerous mental health disorders such as depression, as well as an array of other
social and legal consequences. Not only can the AUDIT be seen as a screening measure for these
types of issues, but based on the results of the current study, it could also be utilized as a screener for aggressive tendencies in college students.

Limitations

While this study utilizes the Go/No-Go Association Task which can infer causality with regard to relationships among variables, its use in conjunction with self-report measures rely on the quality of data provided by the respondents. This may result in a propensity for individuals to engage in positive impression management, therefore subject to social desirability bias. Also, since the findings focused on university students, the results may not generalize to more severely affected populations. In addition, it is possible that the association between psychopathy and problem alcohol use changes at high levels of psychopathy, which tend to be under represented in the relatively high functioning undergraduate student sample. While this study proposes both mediator and moderator variables contributing to the relationship between psychopathic traits and alcohol related aggression, there may be other mediating or moderating variables that have not yet been examined. The current study contributed to the research literature on aggression, specifically regarding the identification of which individuals under what circumstances may be at an increased risk of behaving aggressively.

Conclusion

The study findings point to the need for further investigation of the associations between psychopathy, particularly secondary psychopathy, problem alcohol use (e.g. heavy episodic drinking and negative alcohol use consequences (e.g. aggression) in college students. The long term effects of both problem alcohol use as well as engaging in aggression after using alcohol has both short and long term consequences. More studies aimed at examining these constructs may aid in the identification of students at risk for problem alcohol use as well as aggression.
utilizing brief and easily administered personality questionnaires, such as the one used in this study. Overall, the findings of this study highlight the importance of considering drinking habits when attempting to predict aggressive tendencies. In addition, it stresses the importance of understanding personality factors and patterns of alcohol consumption when addressing treatment and intervention strategies. As it stands, these relationships remain largely not understood, especially in non-correctional and non-forensic populations. It could be helpful in the future to examine the longitudinal relationship between risky drinking behavior and alcohol related aggression throughout the college years to clarify whether the relationship changes depending on age. In addition, examining the variables in this study in correctional or forensic settings, where psychopathy and aggression are more prevalent overall, could provide interesting results.

Regarding practical implications for university student populations, the results of this study suggest that utilization of short and easy to administer screening assessment measures of psychopathy and patterns of drinking may provide valuable insight into students’ risk for engaging in aggressive behavior after consuming alcohol. The measures in this study were brief and easily scored, and could be of aid in screening and implementing treatment strategies. There are clear clinical implications for mental health service providers who are working with college student populations, namely, if certain individuals are more prone to exhibit risky, harmful, or hazardous drinking patterns, then identification and subsequent treatment for these conditions could reduce the propensity for alcohol related aggression. This is of particular importance as it has been found that individuals with co-morbid substance use and psychiatric diagnoses experience more dire financial, medical, and legal consequences (Rosenthal & Westreich, 1999). Furthermore, attention should be paid to students who exhibit patterns of problem drinking
behaviors that prove to be maladaptive. Screening for these problems may aid psychologists in preventing and reducing negative consequences, such as aggression or violence associated with alcohol consumption among university students. This seems crucial given that only 32.5% of university health centers across the nation routinely screened for alcohol problems, and only 11.7% utilized standardized screening instruments to do so (Foote, Wilkens & Vavagiakis, 2004). Overall, the model utilized in this study could prove to be useful when working with university students by providing empirically supported and relevant targets of prevention and intervention.
References


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doi:10.1002/ab.2033


Tremblay, P. F., Graham, K., & Wells, S. (2008). Severity of physical aggression reported by university students: A test of the interaction between trait aggression and alcohol


doi:10.1002/ab.20317


I have been asked to participate in a research project investigating personality traits, substance use, behavior, implicit social cognitions, and other health-related variables. If I choose to participate, I will be asked to complete a computerized reaction time measure along with a series of questionnaires. In addition, I will be asked to provide a saliva sample that will be used to collect biological indicators of health. The current study should take approximately one hour to complete. Upon completion of the study, I understand that I will receive one credit hour toward my class grade in return for my participation. I additionally understand that my participation in this research study is voluntary, and that I can also receive an equivalent amount of course credit for writing a two page article summary. In order to make this study a valid one, some information about (my participation or the study) will be withheld until completion of the study.

The risks and discomfort presented in this study include questions involving my use of alcohol and other potentially illegal behaviors (underage drinking). I understand that I have the option of not participating in this study or terminating my participation at any point during the session without penalty or loss of benefits to which I am otherwise entitled. I am also being asked to complete this study in a group administration format. The room has been set up to minimize any potential discomfort associated with this. In addition, I understand that the researcher will not be watching my individual responses to items.

I understand that my responses to all questionnaires and my performance on a reaction time measure will remain anonymous and will be kept on a secure and password protected server in the researcher’s laboratory. I understand that the saliva sample I give will be marked with an individual number, not a name, and will be kept in a cooler in a secure and locked room in the researcher’s laboratory. I understand that samples of my saliva will be used to study genetic markers (e.g. dopamine, serotonin, etc.) and will not be tested for the presence of any illnesses or diseases such as HIV or AIDS. I understand that my saliva samples for DNA assaying will be kept in the Hwemudua Alcohol and Health Disparities Laboratory (HAHDL) but will be assayed at the UGA Georgia Genomics Facility. My genetic information will only be labeled with a numeric code and will not be linked to me individually.

While my participation in this study may not benefit me directly, I understand that my participation may lead to an increased understanding of the importance of implicit and explicit
cognitions regarding certain attitudes and behaviors. My participation may also lead to an increased understanding of genetic markers involved in certain behaviors.

If I have questions regarding any aspects of this study or the procedures utilized in this study, I may contact the primary investigator, Dr. Ezemenari M. Obasi at 706-542-4792 (email: obasi@uga.edu), Associate Professor in the Department of Counseling and Human Development Services, College of Education, The University of Georgia, 402 Aderhold Hall, Athens, Georgia.

My signature below indicates that the researchers have answered all of my questions to my satisfaction and that I consent to participate in the current study. I have been given a copy of this form.

Name of Participant (print) ________________________ Signature of Participant ____________________________ Date ________________

Name of Researcher (print) __________________________ Signature of Researcher ___________________________ Date ________________

706-542-6519 hwemudua@uga.edu
Phone Email

Please sign both copies, keep one and return one to the researcher.

Additional questions of problems regarding your rights as a research participant should be addressed to: The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia, 30602-7411; Telephone (706)-542-3199; email address IRB@uga.edu
Demographic Questionnaire

TELL US ABOUT YOURSELF:

What is your gender?
1-Male
2-Female

What generation best applies to you?
1-I was born outside of the U.S.
2-I was born in the U.S.; My mother or father was born outside of the U.S.
3-My parents and I were born in the U.S.; All grandparents were born outside of the U.S.
4-My parents and I were all born in the U.S.; At least one grandmother or grandfather was born outside of the U.S. with the remainder born in the U.S.
5-All of my grandparents, both my parents, and I were born in the U.S.
6-Don’t know what generation best fits since I lack some information

What is your current marital status?
1-Single, never been married
2-Not married or not partnered, but living with a significant other
3-Married or partnered, and living with spouse or partner
4-Separated or divorced, with financial support from past spouse or partner
5-Separated or divorced, without financial support from past spouse or partner
6- Widowed, with financial support from deceased spouse or partner
7- Widowed, without financial support from deceased spouse or partner

What is the highest level of education that you have obtained?
1-Less than 7th grade
2-Junior high school (8th-9th grade)
3-Some high school (10th-11th grade)
4-High school graduate
5-Some college or specialized training
6-College/university graduate
7-Graduate/professional training

What is the highest level of education that your spouse, partner, or significant other has obtained?
1-Less than 7th grade
2-Junior high school (8th-9th grade)
3-Some high school (10th-11th grade)
4-High school graduate
5-Some college or specialized training
6-College/university graduate
7-Graduate/professional training

What is the highest level of education that your mother has obtained?
1-Less than 7th grade
2-Junior high school (8th-9th grade)
3-Some high school (10th-11th grade)
4-High school graduate
5-Some college or specialized training
6-College/university graduate
7-Graduate/professional training

What is the highest level of education that your father other has obtained?
1-Less than 7th grade
2-Junior high school (8th-9th grade)
3-Some high school (10th-11th grade)
4-High school graduate
5-Some college or specialized training
6-College/university graduate
7-Graduate/professional training

Have you ever used professional services that were provided by a psychologist?
1-Yes
2-No

What is your race?
1-Black
2-White
3-Asian
4-Biracial
5-Other

What is your ethnicity (e.g. African American, European American, Asian American, Native American, Mexican American, Ghanian, Puerto Rican, British, etc.)?
(fill in the blank)

What is your age?
(fill in the blank)

Your current occupation is:
1-Farm Laborer; Service Worker
2-Worker without professional training
3-Machine Operator; Semiskilled Worker
4-Skilled Manual Worker; Craftsman; Tenant Farmer; Business/Farm Owner (<$25k)
5-Clerical Worker; Sales Worker; Business/Farm Owner ($25k-$50k)
6-Technician; Semiprofessional; Business/Farm Owner ($50-$75k)
7-Manager; Minor Professional; Entertainer; Artist; Business/Farm Owner ($75k-$100k)
8-Administrator; Military Officer; Professional; Business/Farm Owner ($100k-$250k)
9-Unemployed; Homemaker; Student; I don’t know

The occupation of my most recent spouse, partner, or significant other is (note: if the person is retired, use their occupation before retirement. If they are deceased, use their last occupation):
1-Farm Laborer; Service Worker
2-Worker without professional training
3-Machine Operator; Semiskilled Worker
4-Skilled Manual Worker; Craftsman; Tenant Farmer; Business/Farm Owner (<$25k)
5-Clerical Worker; Sales Worker; Business/Farm Owner ($25k-$50k)
6-Technician; Semiprofessional; Business/Farm Owner ($50-$75k)
7-Manager; Minor Professional; Entertainer; Artist; Business/Farm Owner ($75k-$100k)
8-Administrator; Military Officer; Professional; Business/Farm Owner ($100k-$250k)
9-Unemployed; Homemaker; Student; I don’t know

The occupation of my mother is (note: if the person is retired, use their occupation before retirement. If they are deceased, use their last occupation):
1-Farm Laborer; Service Worker
2-Worker without professional training
3-Machine Operator; Semiskilled Worker
4-Skilled Manual Worker; Craftsman; Tenant Farmer; Business/Farm Owner (<$25k)
5-Clerical Worker; Sales Worker; Business/Farm Owner ($25k-$50k)
6-Technician; Semiprofessional; Business/Farm Owner ($50-$75k)
7-Manager; Minor Professional; Entertainer; Artist; Business/Farm Owner ($75k-$100k)
8-Administrator; Military Officer; Professional; Business/Farm Owner ($100k-$250k)
9-Unemployed; Homemaker; Student; I don’t know

The occupation of my father is (note: if the person is retired, use their occupation before retirement. If they are deceased, use their last occupation):
1-Farm Laborer; Service Worker
2-Worker without professional training
3-Machine Operator; Semiskilled Worker
4-Skilled Manual Worker; Craftsman; Tenant Farmer; Business/Farm Owner (<$25k)
5-Clerical Worker; Sales Worker; Business/Farm Owner ($25k-$50k)
6-Technician; Semiprofessional; Business/Farm Owner ($50-$75k)
7-Manager; Minor Professional; Entertainer; Artist; Business/Farm Owner ($75k-$100k)
8-Administrator; Military Officer; Professional; Business/Farm Owner ($100k-$250k)
9-Unemployed; Homemaker; Student; I don’t know
Levenson Self-Report Psychopathy Scale

R: Reverse Coded

[1] Primary Psychopathy
[2] Secondary Psychopathy

Listed below are a number of statements. Each represents a commonly held opinion and there are no right or wrong answers. Please read each statement carefully and choose the number which best describes the extent to which you agree or disagree with each statement, or the extent to which each statement applies to you.

1=Disagree Strongly
2=Disagree Somewhat
3=Agree Somewhat
4=Agree Strongly

1. I am often bored. 1 2 3 4

2. In today's world, I feel justified in doing anything I can get away with to succeed. 1 2 3 4

3. Before I do anything, I carefully consider the possible consequences. 1 2 3 4

4. My main purpose in life is getting as many goodies as I can. 1 2 3 4

5. I quickly lose interest in tasks I start. 1 2 3 4

6. I have been in a lot of shouting matches with other people 1 2 3 4

7. Even if I were trying very hard to sell something, I wouldn't lie about it. 1 2 3 4

8. I find myself in the same kinds of trouble, time after time. 1 2 3 4

9. I enjoy manipulating other people's feelings 1 2 3 4
10. I find that I am able to pursue one goal for a long time.

11. Looking out for myself is my top priority.

12. I tell people what they want to hear so that they will do what I want them to do.

13. Cheating is not justifiable because it is unfair to others.

14. Love is overrated.

15. I would be upset if my success came at someone else's expense.

16. When I get frustrated, I often “let off steam” by blowing my top.

17. For me, what's right is whatever I can get away with.

18. Most of my problems are due to the fact that other people don't understand me.

19. Success is based on survival of the fittest; I am not concerned about the losers.

20. I don't plan anything very far in advance.

21. I feel bad if my words or actions causes someone else to feel emotional pain.

22. Making a lot of money is my most important goal.

23. I let others worry about higher values; my main concern is with the bottom line.
24. I often admire a really clever scam.

25. People who are stupid enough to get ripped off usually deserve it.

26. I make a point of trying not to hurt others in pursuit of my goals.
Alcohol Use Disorders Identification Test

<table>
<thead>
<tr>
<th>Question</th>
<th>Score 0</th>
<th>Score 1</th>
<th>Score 2</th>
<th>Score 3</th>
<th>Score 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often do you have a drink containing alcohol?</td>
<td>Never</td>
<td>Monthly</td>
<td>2-4 times a month</td>
<td>2-3 times a week</td>
<td>4 or more times a week</td>
</tr>
<tr>
<td>2. How many drinks containing alcohol do you have on a typical day when you are drinking?</td>
<td>1 or 2</td>
<td>3 or 4</td>
<td>5 or 6</td>
<td>7, 8, or 9</td>
<td>10 or more</td>
</tr>
<tr>
<td>3. How often do you have six or more drinks on one occasion?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>4. How often during the last year have you found that you were not able to stop drinking once you had started?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>5. How often during the last year have you failed do do what was normally expected from you because of drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>7. How often during the last year have you had a feeling of guilt or remorse after drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>8. How often during the last year have you been unable to remember something that happened the night before because you had been drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>9. Have you or someone else been injured as a result of your drinking?</td>
<td>No</td>
<td>Yes, but not in the past year</td>
<td>Yes, during the past year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested that you cut down?</td>
<td>No</td>
<td>Yes, but not in the past year</td>
<td>Yes, during the past year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Alcohol-Related Aggression Questionnaire (ARAQ)**

The purpose of this questionnaire is to examine the relationship between alcohol and aggression for you. Please report your experiences after drinking. ‘Aggression’ includes all of the following behaviors: verbal aggression, such as shouting at people, physical violence against objects, such as throwing, kicking, or punching things, and physical violence against people, such as shoving, slapping, punching, kicking, and using a weapon.

Please read each of the following items and say whether that item is always true, mostly true, mostly false, or always false for you. Tick the appropriate box for each item.

<table>
<thead>
<tr>
<th></th>
<th>Always true for me</th>
<th>Mostly True for me</th>
<th>Mostly false for me</th>
<th>Always false for me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I get aggressive if I drink too much.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The more I drink, the more upset I get when I do not get what I want.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I drink deliberately to become aggressive.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>The more I drink, the more aggressive I get.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>The more I drink, the more argumentative I get.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I have blamed alcohol for aggression, even though alcohol had nothing to do with it.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>The places where I drink are full of people looking for trouble.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Alcohol brings out my aggressive nature.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>The more I drink, the more agitated I get.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I enjoy being aggressive and alcohol helps me get in the mood.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I get aggressive when I drink strong wines (e.g., sherry, Mad Dog, Buckfast).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Drink makes me aggressive.

The more I drink, the less able I am to reason with people.

The places where I drink are places where people often drink a lot and become aggressive.

The more I drink, the less able I am to control my temper.

The more I drink, the more likely I am to jump to conclusions.

I am aggressive when sober and alcohol makes me more aggressive.

The more I drink, the more worried I feel.

I am aggressive only when I drink wine.

I get aggressive when I mix my drinks.

The more I drink, the more I insult people.

The places where I go to drink bring me into contact with aggressive people.

I get aggressive when I am drunk.

The more I drink, the more impulsive I get.

I drink deliberately to dull physical pain.

I get aggressive when I drink cider.

I get aggressive when
sobering up.

**Scoring**

Always true for me = 3  
Mostly true for me = 2  
Mostly false for me = 1  
Always false for me = 0  

AA = alcohol-aggression outcome expectancies  
(items 1, 2, 4, 5, 8, 9, 11, 13, 14, 16, 17, 21, 22, 24, 25, 26, 27, 28)

TA = trait aggression  
(items 3, 10, 18, 20)

DC = drinking contexts  
(items 7, 15, 23)

PA = sensitivity to pain and anxiety (items 6, 12, 19)
Debriefing Form

Hwemudua Alcohol and Health Disparities Laboratory
The University of Georgia
Dr. Ezemenari M. Obasi

Dear participant,

Thank you for your participation in this research project investigating the relationship between alcohol consumption, reaction time, and other health related variables that may be relevant to drinking and aggression. The purpose of this study is to investigate the influence that biological, psychological, and social environmental factors have on both alcohol use and aggressive behavior.

Any individual identifiers linking you to your data will be removed immediately following your completion of this study. Data and specimens are anonymous and therefore not individually identifiable. All results will be grouped together; therefore and your performance or responses on any of the measures will not be available. The Primary Investigator (Dr. Ezemenari M. Obasi) will maintain all research related data and protocol records for a minimum of three years after the completion of this study.

A list of relevant campus and community resources is available upon request. Should you be interested in pursuing mental health services at UGA, feel free to contact the UGA Center for Counseling (706-542-8508) or the UGA Counseling and Psychiatric Services (706-542-2273). If you have any additional questions regarding this research protocol, please contact:

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