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Impulsivity, Venturesomeness, and Pride: Potential Moderators of the Relationship Between  
Childhood Trauma, Substance Use, and Physical Aggression

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A dissertation

presented to

the faculty of the Department of Psychology

East Tennessee State University

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In partial fulfillment

of the requirements for the degree

Doctor of Philosophy in Psychology

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by

Joshua Paul Hatfield

December 2014

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Keywords: Impulsivity, Venturesomeness, Pride, Childhood Trauma, Substance Abuse, and  
Physical Aggression

## ABSTRACT

### Impulsivity, Venturesomeness, and Pride: Potential Moderators of the Relationship Between Childhood Trauma, Substance Use, and Physical Aggression

by

Joshua Paul Hatfield

Impulsivity, venturesomeness, and pride variables were examined as potential moderators of the associations between childhood trauma and physical aggression, alcohol use and physical aggression, and drug use and physical aggression. Participants ( $n = 457$ ) were college students recruited from a university in the Southeast. It was hypothesized that childhood trauma, alcohol use, and drug use would be associated with increased scores of physical aggression. In addition, it was hypothesized that impulsivity, venturesomeness, authentic pride, and hubristic pride would moderate these relationships. Linear, multivariate hierarchical regression analyses were used to examine these variables as potential moderators. Hypotheses concerning hubristic pride as a moderator of the relationship between alcohol use and physical aggression as well as the relationship between drug use and physical aggression were supported. In addition, the hypothesis concerning authentic pride as a moderator of the relationship between alcohol use and physical aggression was supported albeit in the opposite direction than predicted. Hypotheses concerning the moderating roles of impulsivity and venturesomeness were not supported. Findings support the idea that the deleterious psychological effects of substance use can be compounded by personality factors such as authentic and hubristic pride. The discussion encompasses why interventions should target attributions and cognitions and why simply encouraging someone to have a more “healthy pride” is likely to be ineffective at reducing physical aggression in the context of drug use and alcohol use.

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## CHAPTER 1

### INTRODUCTION

According to the United States Department of Justice, there were an estimated 1,318,398 violent crimes in the United States in 2009 (2010). Of these violent crimes, aggravated assaults accounted for the highest percentage, 61.2%. This was followed by robbery (31%), forcible rape (6.7%), and murder (1.2%). The total number of aggravated assaults in Tennessee was 29,390 (United States Department of Justice, 2010). In fact, the issue of violent crime has also been framed as a public health problem in need of amelioration (e.g., Middleton, 1998; Moore, Prothrow-Stith, Guyer & Spivak, 1994). To treat the problem though, we must better understand its causes.

Some of the factors underlying violent crime have begun to be elucidated. For example, individuals who abuse substances, experienced childhood traumatic events, or both, are more likely to engage in acts of physical aggression (Begić & Jokić-Begić, 2002; Murray et al., 2008). However, not all those who experience childhood traumatic events and/or abuse substances will become physically aggressive. Individual characteristics such as impulsivity, venturesomeness, and pride also seem to affect risk for physical aggression (Cheng, Tracy, & Henrich, 2010; Jaireman, Anderson, & Strathman, 2003). As these variables and physical aggression have been shown to be related, it is imperative that researchers further examine their relationships.

That is the purpose of this study: To investigate how childhood trauma, substance abuse, impulsivity, venturesomeness, and pride interact with one another in their relationship to reports of physical aggression. Improving our understanding of these interrelations may help to inform further development of interventions targeted at reducing violent crimes.

## Physical Aggression

Anderson and Bushman (2002) have defined aggression as a behavior that is carried out with intent to cause harm to another person. More specifically, they define violence as an act of aggression that has as its goal the causing of extreme harm such as physical injury or death to another person. In the study of human aggression aggressive behavior has been categorized into two major groups: 1) affective or reactive aggression where harming the target is the main motive and that is usually in response to a perceived provocation (e.g., jealousy, insult), and 2) instrumental aggression in which aggression is simply a means to achieve an end (e.g., harming a victim to accomplish a robbery) (Geen, 2001).

Overall, causes of physical aggression are often complex and lead to inconclusive discussions (Geen, 2001). Potential antecedents of physical aggression can be grouped into several categories. The first group includes provocation from situations that evoke an aggressive response such as insults and ridiculing. The second refers to the background of an individual with regard to factors such as exposure to violence, attitudes toward violence, personal values, and personality characteristics. Finally, the third concerns the means by which aggression is accomplished, such as whether weapons are involved. These three categories relate to different areas where interventions could potentially be established (Geen, 2001). Geen (2001) noted that psychological research is typically more focused on factors pertaining to personal background and anger-inducing situations. The legislative and criminal justice systems are usually concerned more with the third category. With psychological research as the present framework, we will focus on personal factors known to be related to aggression.

## Epidemiology of Physical Aggression

The Centers for Disease Control and Prevention (CDC; 2010) reported that physical assaults excluding those of a sexual nature were the number one cause of nonfatal violence-related injuries in the United States for the age groups 15-24 and 25-34, for both sexes, and all races. The highest rates of victims of assaults were found to be in the age range of 18-20 (26.9 per 1,000 persons), followed by those 12-14 (24.1 per 1,000 persons), and those 21-24 (21.7 per 1,000 persons; Truman, 2011). The number of both simple and aggravated assaults reported in the year 2010 for the United States was 3,148,250 (Truman, 2011). Because many assaults go unreported, the total number of all violent acts was likely much higher.

Noting the categorical differences above, two studies found rates of physical aggression to be higher amongst teens and young adults compared to the rest of the population, with regard to intimate partner relationships and nonpartner relationships (Chermack, Fuller, & Blow, 2000; Murray et al., 2008). One confounding factor of these studies was the samples consisted of people with substance-use disorders. Thus, it appears within such findings that age may play a role in aggression via its relationship with substance abuse rates. It has been well documented in cross-sectional and longitudinal studies that there is a significant decline in consumption patterns of both drugs and heavy drinking after the peak years between 20 and 25 years of age (Bachman et al., 2002; Substance Abuse and Mental Health Services Administration [SAMHSA], 2005). It is also well-established that substance abuse is strongly associated with aggression especially amongst adolescents (e.g., Doran, Luczak, Bekman, Koutsenok, & Brown, 2012) and this issue is discussed at greater length below.

Sex differences are also well established in rates of physical aggression (Archer, 2004; Daly & Wilson, 1988; Wilkowski, Hartung, Crowe, & Chai, 2012). Specifically, males are

consistently found to have higher rates of physical aggression compared to females (Chermack et al., 2000; Wilkowski et al., 2012). Potential explanations include sexual selection theory that states men seek to establish dominant social positions in order to attract mates (Daly & Wilson, 1988; Daly, Wilson, & Weghorst, 1982; Easton & Shackelford, 2012), evolutionary biological theory that proposes natural selection has made males more sensitive to challenges to status and competition which shapes hormonal responses that lead to more aggressiveness (McAndrew, 2009), and social learning theory where men have been reinforced for their physically aggressive behaviors (Bandura, 1978; Geen, 2001).

Though these findings are consistent, females do engage in direct and indirect aggressive acts, though physical aggression occurs at lower rates and is usually less severe in terms of inflicting injury when compared to men (though there is a small group of females who tend to be highly aggressive), and some studies show females are more likely than males to be physically violent toward a partner within the context of relationships although others indicate mutual violence is more common than asymmetrical violence (Cross & Campbell, 2012; Piquero, Carriaga, Diamond, Kazemian & Farrington, 2012; Testa, Hoffman, & Leonard, 2011). Although group differences have been noted for age and sex, a variety of common factors may also underlie aggressive behavior in general.

### Etiology of Physical Aggression

There is growing support in the literature for a biological basis of physical aggression (Geen, 2001; Richter et al., 2011). For example, Brendgen and colleagues (2008) sampled 406 7-year-old twins and found levels of physical aggression were significantly explained by genetic factors after finding that correlations of monozygotic twins' scores on measures of physical aggression ( $r = .59$ ) were twice as high as dizygotic twins ( $r = .31$ ). Additionally, Saudino and

Hines (2007) sampled 134 monozygotic and 41 dizygotic twin pairs in their study of psychological and physical aggression in intimate relationships and found a strong genetic etiology for both after identifying significant correlations between monozygotic twins in reports of psychological and physical aggression while finding nonsignificant correlations for dizygotic twins. Further, in a study of 2,925 adult twins, Yeh, Coccaro, and Jacobson (2010) found heritability of general aggression and physical aggression to range from .37 to .57. A number of studies based on self-report measures of aggression also found higher correlations among monozygotic twins compared to dizygotic twins on traits related to aggressive behavior (Geen, 2001; Rushton, Fulker, Neale, Nias, & Eysenck, 1986).

However, one methodological problem with genetic heritability studies is that human reproduction cannot be ethically controlled as with animal research (Geen, 2001). And, lacking an experimental design, causal conclusions are not fully possible. Yet, whereas a certain genetic predisposition toward some types of aggression seems likely, heritability researchers uniformly note the need to consider environmental influences on aggressive behaviors (e.g., Bregden et al., 2008; Saudino & Hines, 2007; Yeh et al., 2010). For example, in a study comparing the court convictions of 14,427 adoptees to their biological parents, researchers found the two groups were similar on nonviolent crimes but not violent crimes (Mednick, Gabrielli, & Hutchings, 1984). Geen (2001) noted that although there may never be sufficient evidence to warrant strong conclusions based on the genetic behavioral method, it can be concluded that heritability does play some role in human aggression.

In explaining why aggression might be heritable, evolutionary biology has drawn inferences from studies using primates (Wilson, 2007). The main arguments posit that human aggression developed as an adaptive trait to respond effectively to threats involving short-term

(individual) and long-term (species) survival-related resources, such as food and mates. Mating behavior is particularly relevant when examining human violence that seems to result primarily from jealousy, particularly among young men (Daly et al., 1982; Easton & Shackelford, 2012). Other relevant examples include aggression involving intangible resources such as social status, power, and pride, as evidenced by higher rates of homicide among men, which may be indirectly tied to mating-related aggression (Daly & Wilson, 1988; Geen, 2001).

Beyond heritability and evolutionary perspectives, specific biological factors also seem to influence physical aggression. Relatively high levels of hormones such as cortisol, testosterone, and serotonin have been implicated as predictors for aggressive psychopathology (Carré & Mehta, 2011; Montoya, Terburg, Bos, & van Honk, 2012). These hormones are hypothesized to modulate the human brain's aggression circuitry. For example, Mehta and Beer (2010) found evidence suggesting testosterone influences aggressive behavior through the orbitofrontal cortex, an area of the brain associated with self-regulation and impulse control. However, Geen (2001) wondered whether higher levels of hormones actually raise personal levels of aggressiveness or whether they simply raise the likelihood an individual will respond aggressively if provoked? Geen (2001) also noted it isn't known whether higher hormone levels promote aggressiveness, or whether hormone levels are increased when aggressive behaviors occur. Thus, although it seems certain that some hormones are related to aggressive behavior, an understanding of exactly how they are involved remains elusive.

### Overarching Models of Aggression

Clearly biology is not the only factor in the display of aggression or the lack thereof. In fact, there is a long history of explanatory theories that are primarily psychological in nature. The first of these to receive a great deal of attention and empirical scrutiny was known as the



Frustration-Aggression Hypothesis (Dollard et al. 1939). The idea was that frustration was a requisite factor needed to cause aggressive reactions to various situations. Yet, research over time disconfirmed the Frustration-Aggression Hypothesis. This led Bandura (1973) to develop the social learning theory of aggression.

In this view individuals who are consistently reinforced for physically aggressive behaviors, typically via social rewards such as praise and status conferral, develop an increased probability to engage in aggressive behavior in situations where frustration or provocation may be experienced. Overall, the acquisition, execution, and maintenance of physically aggressive behavior in this model are explained via observational and instrumental learning coupled with social reinforcement (Geen, 2001). Social learning theory is not incompatible with genetic and biological theories of aggression. In fact, it is consistent with a diathesis-stress model of physical aggression where a person with a predisposition toward engaging in aggressive behavior, faced with stressors in the form of situations evoking physical aggression, alleviates the stressors via aggressive behavior, which is thus subsequently negatively reinforced (Bandura, 1978; Geen, 2001). A limitation to the social learning theory, however, is that a comprehensive view of aggression must take into account all of the above listed factors relating to aggressive behavior.

The General Aggression Model (GAM) provides a comprehensive model of aggression as resulting from a convergence of situational and personological inputs (DeWall & Anderson, 2011). Personological contributions include biological factors (e.g., genes and hormones), traits, attitudes, beliefs, and motivations. Situational factors include such things as temperature (e.g., hotter weather is related to increased reported assaults), exposure and/or access to weapons, recent exposure to violence in the media, and perceived provocations (Anderson & Bushman, 2002; Dewall & Anderson, 2011). The mechanism by which the convergence of situational and

personological inputs result in aggression lies largely within the internal states (cognitions, affect, and arousal) that shape situational appraisals and decision-making processes (Dewall & Anderson, 2011).

Appraisal and decision-making may be virtually automatic or more controlled and this influences whether an individual acts impulsively or in a thoughtful manner (Dewall & Anderson, 2011). In addition, situation-relevant information (e.g., whether aggression was deemed to be an effective strategy) affects schemas for future appraisals and decision-making (Anderson & Bushman, 2002; Dewall & Anderson, 2011). The GAM is the theory in which the current study is couched and results explained as it is a well-accepted theory encompassing a broad range of relevant factors. It is worth noting some that researchers question whether the GAM will be dominant for much longer as research continues to accumulate; however, it is also worth noting these researchers lack empirical support for alternative theories (e.g., Ferguson & Dyck, 2012). Factors involved in learning and a propensity to engage in aggression that do fall within the GAM are myriad and frequently begin in childhood and are often associated with the home environment.

#### Childhood Trauma and Physical Aggression

Estimates suggest that 50% to 80% of children and adolescents in the United States report some type of victimization or traumatic event; these are broken down into sexual assaults (5%-8%), murder of a family member or friend (8%), witnessing family violence or abuse (10%), abuse (16%), and physical assaults (22%-61%) (Finkelhor, Ormrod, & Turner, 2009; Ford, Chapman, Connor, & Cruise, 2012; Kilpatrick et al., 2000). According to the U.S. Department of Health and Human Services (DHHS), an estimated 695,000 children in 2010 were reported to be victims of abuse and/or neglect. Of these, 78.3% were victims of neglect, 17.6% suffered from

physical abuse, and 9.2% suffered sexual abuse (DHHS, 2011). Again, because such events often go unreported, the actual problem is likely to be of a much greater magnitude.

Previous research has found support for the role of childhood maltreatment or trauma in the etiology of adult aggression (Chen, Coccaro, Lee, & Jacobson, 2012). Traumatic stressors such as physical or sexual abuse or neglect and witnessing family or community violence have an adverse impact on childhood development and attachment that places individuals at risk for problems such as depression, anxiety, risk taking, substance abuse, and aggression (Ford et al., 2012). Previous research suggests childhood maltreatment, or trauma, may actually be a source of alterations in biological, psychological, and interpersonal regulatory capacities during development that may contribute to psychopathology (Cicchetti & Toth, 1995). Furthermore, exposure to childhood maltreatment or trauma may compromise the ability to self-regulate emotions thus leading to impulsive and/or aggressive behaviors (Ford, 2005).

The GAM posits that individuals who are deprived of resources needed to meet their basic physical, emotional, social, and psychological needs may be predisposed to violence and aggression (Anderson & Bushman, 2002; Dewall & Anderson, 2011). In addition, individuals are more likely to engage in violence if they have a history of being exposed to multiple examples of violence and aggression that appear to ‘work’ in the sense of achieving some desired outcome for the aggressor, are desensitized to violence due to repeated exposures to violent stimuli, and are recurrently placed into situations that potentially elicit violence (e.g., Bandura, 1973; Dewall & Anderson, 2011; Miller, 2004).

Maltreatment and traumatic experiences in childhood can have profound impact for many on psychological functioning throughout the life span (Toth, Harris, Goodman, & Cicchetti, 2011). One potential mechanism through which traumatic experiences affect one’s propensity for

aggression is via the thwarting of skills or processes related to emotion regulation (Cicchetti, Ganiban, & Barnett, 1991). Early parent-child interactions appear to be crucial to such regulation and exposure to violence and anger within families has been found to increase emotional reactivity in children (Maughan & Cicchetti, 2002; Toth et al., 2011). Compared to nonabused children, physically abused children typically require less sensory input to identify facial expressions of anger, suggesting they become ‘wired’ to detect anger (Pollak & Kistler, 2002; Pollak & Sinha, 2002). Not only are these children more likely to notice angry expressions, they also have a harder time withdrawing their attention from them (Pollak & Tolley-Schell, 2003; Toth et al., 2011).

Physically abused children are more likely to acquire a hostile attribution bias that is to become habitually likely to attribute hostile intent to others, be hypervigilant to hostile cues, fail to attend to nonhostile cues, and acquire a broader repertoire of various aggressive responses to interpersonal and everyday difficulties (Dodge, Pettit, Bates, & Valente, 1995; Toth et al., 2011). Children who have experienced sexual abuse, emotional maltreatment, and neglect are also more likely than children who have not been victimized to show deviations in patterns of processing negative affective signals (Toth et al., 2011). All forms of childhood trauma or maltreatment are associated with aggressive behavior, and victimized children are more likely to be disruptive and aggressive compared to their nonvictim counterparts, with child victims of physical abuse being at the highest risk for future aggressive behavior (Klimes-Dougan & Kistner, 1990; Rogosch, Cicchetti, & Aber, 1995; Toth et al., 2011). Furthermore, childhood trauma and maltreatment have been consistently found to significantly contribute toward the development of substance use disorders (Thatcher & Clark, 2010).

## Substance Use and Physical Aggression

As noted above, substance use has been conclusively linked to perpetration of aggressive behavior. According to the Diagnostic and Statistical Manual (DSM-IV-TR) there are two types of substance use disorders: Substance dependence and substance abuse. It is important to note that substances include both illicit drugs and alcohol. The DSM-IV-TR describes dependence as

“...a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues use of substance despite significant substance-related problems. There is a pattern of repeated self-administration that usually results in tolerance, withdrawal, and compulsive drug-taking behavior...”; whereas abuse is described as “...a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances”

(American Psychiatric Association, 2000, p. 192 & 198).

In 2007 data from the National Survey on Drug Use and Health (U.S. Substance Abuse and Mental Health Services Administration, 2008) revealed 23% of Americans age 12 or older had engaged in occasional binge drinking, with 8% reporting current use of illicit drugs, and 6% reporting current marijuana use. Also in 2007 the Monitoring the Future Study indicated that 33% of young adults, 35% of college students, and 36% of 12<sup>th</sup> grade students reported illicit drug use in the year before the survey (Johnston, O’Malley, Bachman, & Schulenberg, 2008a, 2008b). Further, the National Epidemiological Study of Alcohol Related Conditions (NESARC) found 7.9 million people met criteria for alcohol dependence in 2001, while 18% of the adult population met criteria for alcohol abuse at some time during their lives (Hingson, Heeren, & Winter, 2010). NESARC data led to estimates of prevalence rates for current drug dependence and abuse at 0.6% and 1.4%, respectively (Compton, Thomas, Stinson, & Grant, 2007).

Substance use, abuse, and dependence have been linked to genetic, personality, and environmental factors (Hasin & Katz, 2010). Family and twin studies have documented strong familial and genetic components for both alcohol and drug dependence (Kendler, Jacobson, Prescott, & Neale, 2003; Nurnberger et al., 2004). Genes affecting substance metabolism and neurotransmitter systems have been implicated in substance use (Hasin & Katz, 2010). Personality factors such as sensation-seeking, impulsivity, and neuroticism have likewise been linked to substance use (Donohew et al., 1999; Hasin & Katz, 2010). Further, environmental factors such as parents and peers who use, experiencing physical, sexual, and/or emotional abuse, substance availability, pricing, and laws all seem to affect substance use rates (Hasin & Katz, 2010).

Kliewer (2010) described a socialization model of drug use including three pathways through which families influence drug use in individuals. The first is ‘coaching’ where parents influence children with regard to alcohol and drug use via communication. It was reported that open communication, frequent discussions about how to respond to situations involving drugs, and showing clear disapproval of substance use can help reduce risk for future use. The second pathway is that of ‘modeling,’ where it is well documented that parental use of drugs and alcohol increases the chance that children will use as well (Bransetter, Masse, & Greene 2007; Chassin, Curran, Hussong, & Colder, 1996). Specifically, parents who use and abuse drugs send the message to their children that this is an acceptable or effective means of coping with stress (Kliewer, 2010). The third is the ‘family context’ pathway that encompasses parent-adolescent relationships, the emotional climate, and family management. These factors contribute to an individual’s identity formation and needs for relatedness, autonomy, and competence (Skinner &

Wellborn, 1994) Threats to these needs may result in individuals using substances to cope (Kliewer, 2010).

Early substance use (i.e., before age 18) has been found to be a predictor of future violent behavior (Hawkins et al., 2000). Early-onset use is also a risk factor for a variety of antisocial behaviors including cruelty to people and animals as well as general criminality (Gordon, Kinlock, & Batties, 2004; Gustavson et al., 2007; Kuperman et al., 2005; Wilson & Levin, 2005). Aggression and substance abuse commonly coincide and higher risks of violent and nonviolent offenses are associated with substance abuse (Grann & Fazel, 2004). Fights often occur while individuals are either intoxicated or experiencing withdrawal symptoms (Donovan, 2010). In a study of male inmates researchers found that those classified as substance abusers were more likely to have had multiple incarcerations, more convictions as juveniles, and more violent behaviors (Cuomo, Sarchiapone, Giannantonio, Mancini, & Roy, 2008).

Researchers examining the empirical validity of psychiatric classification systems have found evidence to suggest continua, or spectrums, of psychopathology exist (Helzer, Kraemer, & Krueger, 2006; Krueger & Markon, 2006). Externalizing disorders such as antisocial personality disorder and substance dependence are often grouped with disinhibitory personality traits such as aggression and impulsivity (Krueger, Markon, Patrick, Benning, & Kramer, 2007; Tackett & Krueger, 2011). In terms of the five-factor model of personality, externalizing disorders appear to be a combination of disagreeableness and low conscientiousness, which seem to form the core of aggressive and externalizing behaviors (Goldberg, 1993; Tackett & Krueger, 2011).

Impulsivity and venturesomeness are two other personality factors associated with externalizing disorders.

## Impulsivity, Venturesomeness, Childhood Trauma, Substance Abuse, and Physical Aggression

Another salient risk factor for aggression is impulsivity (Moffitt, Krueger, Caspi, & Fagan, 2000; Hatfield & Dula, 2014). As described above, some researchers differentiate irritable forms of aggression (also described as impulsive or disinhibited) from predatory forms of aggression, where the latter involves attainment of a goal in the absence of emotion, physiological arousal, or empathy (Levi, Nussbaum, & Rich, 2010). The former may occur at any point at which an individual perceives an insult or slight, and this type of aggression is associated with intense anger, hostility, and arousal that is out of proportion to the stimulus. Also, as noted above, those harboring a hostile attribution bias are more likely to perceive situations in negative manners and others as having hostile intent toward them. Thus, those with higher versus lower levels of impulsiveness are more likely to engage in aggressive situational responses.

The prefrontal cortex has been implicated in angry affect and aggressive behavior (Davidson, Putnam, & Larson, 2000; Raine, 2008; Siever, 2008) as well as with effortful control (MacDonald, 2008). Evidence suggests abnormalities in the prefrontal cortex are associated with higher levels of aggressive and antisocial behavior (Denson, 2011). Serotonin receptors in the prefrontal cortex appear to play a prominent role in the facilitation and/or inhibition of anger and aggression (Davidson et al., 2000; Siever, 2008). MacDonald (2008) argued that the prefrontal cortex allows humans to inhibit aggressive impulses and make cost-benefit analyses. Consistent with this line of research, appraisals and decision-making processes preceding thoughtful or impulsive actions are highlighted in the GAM (Anderson & Bushman, 2002; Dewall & Anderson, 2011). Whether biologically predetermined or a function of learning or a combination of these, impulsiveness is an important factor to consider in the study of aggression.



Research on impulsiveness has pointed to the need to differentiate between sensation-seeking behavior (i.e., venturesomeness) and impulsivity. Eysenck and Eysenck (1978) defined venturesomeness as a trait susceptibility to boredom and a consequent seeking of thrills and/or adventure. Impulsivity, on the other hand, is simply an inclination to act in a risky manner due to a lack of planning and a failure to evaluate potential long-term consequences. For example, sky diving requires planning to execute and is associated with venturesomeness. Getting into a fight spontaneously is typically an impulsive act. However, correlations between these two variables are typically of moderate strength. Eysenck (2004) thus maintained that researchers investigating impulsivity should always seek to distinguish it from venturesomeness.

Aggression, substance abuse, and childhood trauma have all been associated with impulsivity and venturesomeness (Bornovalova, Gwadz, Kahler, Aklin, & Lejuez, 2008; Cuomo et al., 2008; Joireman et al., 2003). In a study of college students Joireman and colleagues (2003) found those with higher levels of venturesomeness had greater desires to engage in verbal and physical aggression. In addition, both impulsivity and venturesomeness have been linked to risky behaviors such as substance abuse (Zuckerman, 1994). Cuomo and colleagues (2008) found inmates who were substance abusers compared to those who were not reported higher levels of childhood trauma, impulsivity, hostility, and violent behavior. Further, venturesomeness has also been linked to antisocial traits. This evidence suggests that when people have higher levels of impulsivity, venturesomeness, and substance abuse, they are also likely to have trouble regulating their emotions and relating well with others and are thus more likely to be aggressive (Joireman et al., 2003). For the reasons listed above and due to a paucity of research examining impulsivity and venturesomeness in the context of pride, childhood trauma, substance abuse, and

physical aggression, impulsivity, and venturesomeness were examined in hopes of elucidating their respective roles and interrelationships.

### Pride and Physical Aggression

The GAM theorizes that most incidents of violence occur during an escalating cycle in which two parties retaliate back and forth after an initial perceived conflict (Anderson & Bushman, 2002; Dewall & Anderson, 2011). In this escalation cycle the dyadic dynamic is influenced by a triggering event such as a minor disagreement or an individual (Person A) bumping into another. If the other individual (Person B) perceives this as an affront to self-image, status, or power, the individual may decide reprisal is necessary and/or justified and so may retaliate against Person A either verbally, gesturally, and/or physically. Now Person B's retaliation has become a potential provocation for Person A, and if so, the cycle is likely to escalate until one or the other desists or is too injured to persist. Dewall and Anderson (2011) said this escalation could be viewed as an attempt for one side to signal to the other that it should back down. However, as the above example implies, it may be that neither person can desist without loss of status, power, etc. In such cases it may be that one's pride interferes with making accurate inferences and/or with decision-making processes that would otherwise inhibit violent behavior.

Pride is defined as a self-conscious emotion that can impact interpersonal functioning (Izard, Ackerman, & Schultz, 1999; Leary, 2007). Pride appears to have potential for both positive and negative social consequences, and researchers have distinguished between two types: 'Authentic' and 'hubristic' (Leary, 2007; McGregor, Nail, Marigold, & Kang, 2005). Authentic pride is derived from specific accomplishments by an individual that would be recognized and respected by others. On the other hand, hubristic pride is related to global beliefs

about abilities and strengths and is often perceived by others as indicative of arrogance and conceit (Carver, Sinclair, & Johnson, 2010; Tracy & Robins, 2004, 2007a, 2007b).

Authentic pride has been shown to be inversely related to measures of anger, hostility, and aggression, whereas hubristic pride has been positively correlated to these measures (Carver et al., 2010; Tracey et al., 2009). Further, hubristic pride is positively related with impulsiveness and alcohol use and negatively related to conscientiousness, self-control, and attention control. Authentic pride showed the same significant relationships in the opposite directions (Carver et al., 2010). As hubristic pride addresses self-perceived power and status-seeking that are related to social dominance characteristics such as narcissism, aggression, and disagreeableness (e.g., Cheng et al., 2010), Carver and colleagues (2010) suggested inclusion of hubristic pride measures in research may help us better understand impulsivity, aggression, and substance use issues.

Although there is a paucity of research examining childhood maltreatment/trauma and pride, it is possible there is a link between the two. From a psychodynamic perspective rejection from parents and overall parental coldness may promote continuous attention and admiration seeking behaviors in children that appear to lead to narcissistic traits (Kernberg, 1975; Kohut, 1977; Otway & Vignoles, 2006; Thomaes & Bushman, 2011). Thus, this research may help to elucidate whether there is a relationship between childhood maltreatment or trauma and pride, and pathways between those factors and physical aggression.

#### Statement of the Problem

It has been established above that physical aggression is a severe problem in the United States. Childhood maltreatment or trauma and substance abuse are predictors of physical aggression. Yet, not all with a history of childhood maltreatment or trauma or those who abuse

substances will go on to be physically aggressive. Personological variables such as impulsivity, venturesomeness, and hubristic pride also contribute to risk for physical aggression. Further, authentic versus hubristic pride may buffer against a risk for physical aggression. Very little is known about the moderating effects of these variables on the association between childhood trauma, substance abuse, and physical aggression. Thus, the purpose of this study is to examine the potential moderating effects of impulsivity, venturesomeness, and pride on the association between childhood trauma and physical aggression and between substance use and physical aggression.

## CHAPTER 2

### METHODS

#### Procedure

Participants for this study were recruited from a university in the Southeast after IRB-approval was obtained. Written informed consent was obtained from all participants in the study. Participants received extra credit in their psychology courses for completing a set of online surveys. Participants were recruited and completed the study via the Psychology Department's online participant management system, hosted by Sona Systems, Inc., which ensures the system is compliant with all mandated and accepted federal and ethical guidelines for human participants in research (see [www.sona-systems.com/compliance.asp](http://www.sona-systems.com/compliance.asp)). All surveys and items within surveys were presented in random order to prevent ordering effects and mitigate any systematic fatigue effects.

The program G\*Power 3 (see [www.psych.uni-duesseldorf.de/abteilungen/aap/gpower3/](http://www.psych.uni-duesseldorf.de/abteilungen/aap/gpower3/); Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lange, & Buchner, 2007) was used to calculate a-priori the sample size needed to achieve the recommended power level (.80). Computation of the sample size (N) is the function of the recommended power level (.80), a prespecified alpha level (.05), and a prespecified effect size of small (.10). The prespecified power and alpha levels are standards in psychological research that minimize the likelihood of both Type I and Type II errors (Cohen, 1988, 1992). The smallest effect size was chosen for these analyses as, to my knowledge, there is no published research providing suggestions for the effect sizes based on the relationships hypothesized. The small effect size is a conservative approach chosen to increase the likelihood of finding effects should they exist (Cohen, 1992;

Fields, 2009; Forshaw, 2007). Based on the G\*Power 3 analysis, the calculated sample size is 151 participants. See Table 1 below for details.

Table 1

*G\*Power 3 Power Analysis Output*

Model Test: F-tests (Linear multiple regression: Fixed model, R <sup>2</sup> increase)			
	Input		Output
Effect Size	0.10 (small)	Noncentrality parameter	22.20
$\alpha$ (error probability)	0.05	Critical F	1.64
Power (1- $\beta$ error probability)	0.80	Numerator df	19
Number of tested predictors	19	Denominator df	202
Total number of predictors	18	Total Sample Size	222

Measures

Demographic Questionnaire

A basic demographic questionnaire assessing age, gender, race, and education (education is in formal years of schooling, with 17 years=postgraduate work) was administered to all participants to assist with characterization of the sample, control for extraneous factors, and detect group differences. In addition, questions assessing receipt of previous mental health treatment for self and/or family, as well as history of arrests of self and/or family, were added to better characterize the sample.

Buss-Perry Aggression Questionnaire

The Buss-Perry Aggression Questionnaire (BPAQ) was used to assess physical aggression as it is a widely used self-report instrument and has become the gold standard for the measurement of aggression (Gerevich, Bacskai, & Czobor 2007; Tremblay & Ewart, 2005). The BPAQ consists of 29 items in a self-report format with four subscales measuring physical aggression, verbal aggression, hostility, and anger (Buss & Perry, 1992). The BPAQ uses a 5-point Likert scale ranging from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me) where higher scores indicate more aggressiveness. Example items from the

physical aggression subscale include “Once in a while I can’t control the urge to strike another person,” and “Given enough provocation, I may hit another person” (Buss & Perry, 1992).

The BPAQ has moderate to high internal consistency (.70 to .85) and has been found to be a valid measure across multiple samples (Becker, 2007; Buss & Perry, 1992; Gerevich et al., 2007; Harris, 1997; Liu, Zhou, & Gu, 2009; Surís et al., 2005). Buss and Perry (1992) found adequate internal consistency for the total score ( $\alpha = .89$ ) as well as for the physical aggression subscale ( $\alpha = .85$ ) across three samples consisting of 1,253 college students. Furthermore, they found men to have significantly higher scores on physical aggression. Gerevich et al. (2007) found the physical aggression subscale of the BPAQ to have high internal consistency ( $\alpha = .82$ ) and calculated effect sizes, which suggested strong associations between male gender and physical aggression in a nationally representative sample of Hungarian adults ( $N = 1,200$ ). Tremblay and Ewart (2005) found the physical aggression subscale of the BPAQ to have good internal consistency ( $\alpha = .85$ ) with men scoring significantly higher than women on this subscale in a Canadian college sample. Test-retest reliability was calculated for 372 subjects after a 9-week interval and suggested adequate stability over time for the physical aggression subscale (.80). In addition, others have found the BPAQ to be a valid instrument, to have adequate test-retest reliabilities, and to show significant gender differences (men’s scores higher than women’s) in alcohol dependent populations (McPherson & Martin, 2010), Dutch violent forensic psychiatric patients (Hornsveld, Muris, Kraaimaat, & Meesters, 2009), and veteran populations (Surís et al., 2005). In the current study  $\alpha = .92$  for the total scale and  $\alpha = .86$  for the physical aggression subscale.

## I<sub>7</sub> Impulsiveness Questionnaire

Impulsiveness and venturesomeness were assessed using the subscales of the I<sub>7</sub> Impulsiveness Questionnaire (I<sub>7</sub>; Eysenck & Eysenck, 1978; Eysenck, Pearson, Easting, & Allsopp, 1985). The I<sub>7</sub> consists of three subscales with 19 items measuring impulsivity (“Do you often get into a jam because you do things without thinking?”), 16 items measuring venturesomeness (“Do you welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional?”), and 19 items measuring empathy (“Do you often get emotionally involved with your friends’ problems?”).

The scale uses a yes-no answer format. Reliabilities (alpha) across two studies (containing 1,320 participants aged 16-87 years) for males range from .84-.85 for impulsiveness and .79-.85 for venturesomeness, and for females range from .82-.83 for impulsiveness and .78-.84 for venturesomeness (Eysenck & Eysenck, 1978; Eysenck et al., 1985). These individuals were recruited in the London area and were approached at random on the street and by house-to-house circulation of questionnaires in addition to groups of teachers and students (Eysenck et al., 1985). Furthermore, the correlation between impulsiveness and venturesomeness were .24 and .11 for males and females, respectively (Eysenck et al., 1985). In the current study  $\alpha=.80$  for the total score,  $\alpha=.83$  for impulsiveness, and  $\alpha=.80$  for venturesomeness.

Both the impulsiveness and venturesomeness subscales of the I<sub>7</sub> have demonstrated adequate internal consistency ( $>.80$ ) and have also been found to be valid measures across samples (Aluja & Blanch, 2007; Eysenck, 1993; Eysenck & Eysenck, 1978; Eysenck, & McGurk, 1980; Eysenck et al., 1985; Parker & Bagby, 1997; Zimmermann, Rossier, & de Stadelhofen, 2004). In a study consisting of 92 male and 215 female students Corulla (1987) found the I<sub>7</sub> to have adequate reliabilities for all scales with alpha coefficients of .82, .78, and .72



for the impulsiveness, venturesomeness, and empathy subscales, respectively. In addition, Russo, Leone, and De Pascalis (2011) found the I<sub>7</sub> to be a reliable and valid self-report measure with cross-cultural generalizability. Indeed, the I<sub>7</sub> has been validated for use in England (Eysenck et al., 1985), France (Caci, Nadalet, Baylle', Robert, & Boyer, 2003), the Netherlands (Lijffijt, Caci, & Kenemans, 2005), Spain (Aluja & Blanch, 2007), and Italy (Russo et al., 2011).

### Childhood Trauma Questionnaire

Childhood maltreatment or trauma history was assessed using the total score of the physical abuse subscale of the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998), a 28-item measure using a 5-point Likert scale ranging from never true to very often true. The scale consists of six subscales gauging a history of emotional abuse ("I believe I was emotionally abused"), physical abuse ("I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor"), sexual abuse ("Someone tried to make me do sexual things or watch sexual things"), emotional neglect ("People in my family said hurtful or insulting things to me"), physical neglect ("I didn't have enough to eat"), and minimization-denial ("There was nothing I wanted to change about my family").

The CTQ has demonstrated adequate reliability and validity, with internal consistency reliability coefficients ranging from .66 to .92 across a wide range of samples (Bernstein & Fink, 1998; Scher, Stein, Asmundson, McCreary, & Forde, 2001). Scher et al. (2001) found the physical abuse subscale to demonstrate acceptable internal consistency (.69) in a community sample. The CTQ has also been found to demonstrate convergent validity with therapists' ratings of abuse and neglect and clinician-rated interviews of child abuse with correlations ranging from .42 for physical neglect and emotional abuse subscales to .72 for sexual abuse subscales and has even demonstrated strong test-retest reliabilities ranging from .79-.86 over an average time

period of 4 months (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; Bernstein & Fink, 1998; Fink, Bernstein, Handelsman, Foote, & Lovejoy, 1995; Scher et al., 2001). Scher et al. (2001) published psychometric data on the CTQ using a sample of 1,007 male and female residents between the ages of 18 and 15-years-of-age from a racially mixed community sample. The authors found the CTQ to have adequate internal consistency ( $\alpha = .91$ ) and to be a valid measure of childhood trauma. In the current sample  $\alpha = .84$ .

### Authentic and Hubristic Pride Scales

Authentic and hubristic pride were assessed using the two scales of the Authentic and Hubristic Pride Scales (Tracy & Robins, 2007). The scale consists of 14 questions using a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely) where 7 questions measure authentic pride (“I feel like I am productive”) and 7 questions measure hubristic pride (“I feel arrogance”). The Authentic and Hubristic Pride Scales have demonstrated adequate reliability and validity with internal consistency reliability coefficients ranging from .88-.91 for authentic pride and from .89-.90 for hubristic pride across a range of college student samples (Cheng et al., 2010; Damian & Robins, 2012; Tracy & Robins, 2007). The two scales have also been found to have significantly different correlations with the Big Five dimensions (Tracy & Robins, 2007). In the current study  $\alpha = .93$  for authentic pride and  $\alpha = .90$  for hubristic pride.

### Alcohol Use Disorders Identification Test

The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) was used to identify individuals with hazardous and harmful patterns of alcohol consumption. The measure consists of 10 questions about alcohol-related problems (“How often during the last year have you failed to do what was normally expected of you because of drinking?”), alcohol dependence symptoms (“How often during the last year have you

needed a first drink in the morning to get yourself going after a heavy drinking session?”), and recent alcohol use (“How often do you have a drink containing alcohol?”) (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

The scale has demonstrated high internal consistency ranging from .83-.94 (Meneses-Gaya et al., 2010) and high test-retest reliability ( $r = .86$ ; Sinclair, McRee, & Babor, 1992) across a variety of subpopulations and countries (Babor et al., 2001; Saunders et al., 1993). An investigation of the psychometric properties across three countries was undertaken for the AUDIT. Specifically, Cremonte, Ledesma, Cherpitel, and Borges (2010) recruited participants from emergency departments in Argentina ( $n = 780$ ), Mexico ( $n = 1,624$ ), and the United States ( $n = 1,220$ ). Of these individuals they included only those individuals who reported having at least one drink in the last 12 months ( $n = 2,105$ ). They found the AUDIT to have a sensitivity level ranging from 92%-94% and a specificity level ranging from 80%-98% for alcohol dependence across countries. Furthermore, they found the AUDIT to have good reliability with alphas ranging from .86-.92 across countries and found the AUDIT to have the highest validity compared to three of the most commonly used screeners (Cremonte et al., 2010). In the current sample  $\alpha = .84$ .

In a recent systematic review of the psychometric properties of the AUDIT, de Meneses-Gaya, Zuardi, Loureiro, and Crippa (2009) examined articles published between 2002 and 2009 related to the psychometric properties of the AUDIT. They found 47 articles that included studies across several different countries as well as samples consisting of adolescents, adults, and elderly individuals. They conclude that the AUDIT is a valid and efficient tool for identifying harmful use, abuse, and dependence of alcohol and that it has satisfactory psychometric properties (de Meneses-Gaya et al., 2009).

Celio, Vetter-O'Hagen, Lisman, Johansen, and Spear (2011) randomly selected 170 individuals outside of bars with ages ranging from 18-32 and had 52% of these individuals complete an online follow-up within 2 days. Participants were administered the AUDIT and their blood alcohol concentrations (BAC) were assessed. Celio et al. (2011) found that participants consumed a mean of eight drinks, had mean scores of 12.56 (SD = 5.90) on the AUDIT, and had mean BACs of 0.112 (SD = 0.062). It is important to note that those who followed up did not score significantly different on demographic questions, AUDIT scores, or total number of drinks. However, they did have significantly higher BACs (Celio et al., 2011). Cut-off scores from the AUDIT manual suggest that scores between 8 and 15 warrant advice focused on reducing drinking, scores between 16 and 19 suggest brief counseling, and scores above 20 warrant diagnostic evaluation for alcohol dependence (Babor et al., 2001).

#### Drug Use Disorders Identification Test

The Drug Use Disorders Identification Test (DUDIT; Berman, Bergman, Palmstierna, & Schlyter, 2005, 2007) was used to identify individuals with drug-related problems. The measure consists of 11 questions focusing on illicit drug use and related consequences (e.g., frequency, poly drug use, cravings, harmful use) with 9 questions being scored on a 5-point Likert scale (0-4) and 2 questions being scored on a 3-point Likert scale (values of 0, 2, and 4; Berman et al., 2005, 2007). Example items from the measure include "How often do you use drugs other than alcohol?" and "Have you or anyone else been hurt (mentally or physically) because you used drugs?" (Berman et al., 2005, 2007).

The scale has demonstrated high internal consistency ranging from .80 to .94 as well as sensitivity and specificity scores of .90 and .85 respectively in a variety of populations (Berman, et al., 2005, 2007; Voluse et al., 2012). The majority of the psychometric data on the DUDIT has

been derived from individuals with severe drug problems in Sweden. However, Voluse et al. (2012) undertook a study to evaluate the psychometric properties of the DUDIT in clinical populations and with less severe substance abusers in the US. The sample consisted of 39 alcohol abusers who did not report drug abuse problems, 79 drug abusers in residential treatment, and 35 drug abusers in outpatient treatment. Voluse et al. (2012) report that the DUDIT was a psychometrically sound screener for drug problems. In their sample the DUDIT was found to have good reliability ( $\alpha = .94$ ), high convergent validity ( $r = .85$ ) with the Drug Abuse Screening Test (DAST-10; Skinner, 1982), good sensitivity (.90) and specificity (.85) scores when using a cut-off score of 8, and good discriminant validity as it significantly differentiated alcohol abusers from drug abusers (Voluse et al., 2012). In the current study  $\alpha = .90$ .

Berman et al. (2005) evaluated the psychometric properties of the DUDIT in Sweden in a sample of heavy drug users in the general population, inpatient detox facilities, on probation, and in prison. They found the DUDIT to have adequate sensitivity (90%) with the DSM-4 and ICD-10 and sensitivity (78% and 88%) with the DSM-4 and the ICD-10, respectively. Reliability ( $\alpha = .80$ ) was adequate for this sample (Berman et al., 2005). In a more recent study of offenders with mental health problems in a Swedish sample, Durbeej and colleagues (2010) found that the DUDIT showed moderate to high accuracy for identification of drug dependency diagnoses and was associated with drug and legal problem severity.

### Statistical Analyses

Prior to conducting analyses a graphical and statistical review of the data was conducted to detect the presence of any outliers or missing data and to verify the normality of the data. Mahalanobis distance values were calculated across all predictor variables. Based on standards set by Barnett and Lewis (1978), values above 25 are a cause for concern even in large samples and when there are five or more predictor variables. Mahalanobis distance values indicated there were outliers at  $\alpha=.01$  for the dependent variable of physical aggression as measured by the BPAQ,  $F(7,473)=19.44$ ,  $p<.001$ . This statistic identifies outlying cases for the dependent variable and revealed 16 cases too extreme to be tolerated. These cases were removed from subsequent analyses. Furthermore, the variable physical aggression as measured by the BPAQ subscale was found to violate of the assumption of normality. The positively skewed variable was transformed via logarithmic transformations according to standards set by Aiken and West (1991) for all regression analyses.

In order to reduce multicollinearity defined as coefficients of  $r = .80$  or higher (Field, 2009) in regression models with interaction terms predictor and moderator variables were centered (Aiken & West, 1991), which involved creation of a new variable by subtraction of the mean score and resulted in a mean of zero with no change to the standard deviation. In order to determine the independence of each study variable, Pearson's product-moment correlation coefficients were calculated for continuous variables (Field, 2009). Variables with coefficients of  $r = .80$  or higher should not be included together in statistical analyses. No variables met this criterion.

## Multivariate Hierarchical Linear Regressions

Multivariate hierarchical linear regressions were used to explore the relative importance of the predictor variables of childhood trauma, substance abuse, impulsivity, venturesomeness, and pride to physical aggression and to conduct moderation analyses according to accepted guidelines (Baron & Kenny, 1986). For these linear regressions the outcome variable was physical aggression scored as a continuous variable. Covariates such as age and sex were entered on the first step of regression models along with predictor variables, and interaction terms were entered on the second step (Field, 2009). Independent models were conducted for each independent variable (alcohol use, drug use, and childhood maltreatment/trauma) and each moderator. Combined models were also analyzed examining all moderator variables simultaneously for each independent variable in order to assess the unique effects of the moderator variables.

In order to determine the unique effects of variables in the moderation analyses, it is important to statistically control for potentially confounding variables (Baron & Kenny, 1986). Variables having a strong association with physical aggression include age and sex (Archer, 2004; Chermack et al., 2000; Daly & Wilson, 1988; Murray et al., 2008; Wilkowski et al., 2012). Therefore, these variables were covaried in the moderation analyses. In addition, when conducting moderation analyses for alcohol use as the predictor childhood trauma/maltreatment and drug use were controlled for and, likewise, drug and alcohol use were controlled in analyses examining childhood trauma or maltreatment. The reason for controlling statistically for these variables is to assess the independent effects of each variable because of the possible overlap that may exist between two measures. To create graphic displays of potential moderating effects, the variable authentic pride was split one standard deviation above and below the mean, whereas the

variable hubristic pride was separated into high, medium, and low groups based on percentiles (i.e., 33%, 66%, and 99%) due to a significant positive skew (Aiken & West, 1991).

### Hypotheses

(Note: Table 19 at the end of the Results section summarizes findings for each hypothesis.)

1. Childhood trauma (Cumulative CTQ score) will be significantly positively associated with higher scores on the BPAQ physical aggression subscale.
2. Alcohol use will be significantly positively associated with higher scores on the BPAQ physical aggression subscale.
3. Drug use will be significantly positively associated with higher scores on the BPAQ physical aggression subscale.
4. Hubristic pride, impulsivity, and venturesomeness will all be significantly positively associated with higher scores on the BPAQ physical aggression subscale.
5. Authentic pride will be significantly negatively associated with higher scores on the BPAQ physical aggression subscale.
6. Impulsivity will moderate the relationship between childhood trauma and physical aggression such that individuals with higher levels of impulsivity will report increased physical aggression in the context of childhood trauma.
7. Impulsivity will moderate the relationship between alcohol use and physical aggression, such that individuals with higher levels of impulsivity will report increased physical aggression in the context of alcohol use.
8. Impulsivity will moderate the relationship between drug use and physical aggression such that individuals with higher levels of impulsivity will report increased physical aggression in the context of drug use.



9. Venturesomeness will moderate the relationship between childhood trauma and physical aggression such that individuals with higher levels of venturesomeness will report increased physical aggression in the context of childhood trauma.
10. Venturesomeness will moderate the relationship between alcohol use and physical aggression such that individuals with higher levels of venturesomeness will report increased physical aggression in the context of alcohol use.
11. Venturesomeness will moderate the relationship between drug use and physical aggression such that individuals with higher levels of venturesomeness will report increased physical aggression in the context of drug use.
12. Hubristic pride will moderate the relationship between childhood trauma and physical aggression such that individuals with higher levels of hubristic pride will report increased physical aggression in the context of childhood trauma.
13. Hubristic pride will moderate the relationship between alcohol use and physical aggression such that individuals with higher levels of hubristic pride will report increased physical aggression in the context of alcohol use.
14. Hubristic pride will moderate the relationship between drug use and physical aggression such that individuals with higher levels of hubristic pride will report increased physical aggression in the context of drug use.
15. Authentic pride will moderate the relationship between childhood trauma and physical aggression such that individuals with higher levels of authentic pride will report decreased physical aggression in the context of childhood trauma.

16. Authentic pride will moderate the relationship between alcohol use and physical aggression such that individuals with higher levels of authentic pride will report decreased physical aggression in the context of alcohol use.
17. Authentic pride will moderate the relationship between drug use and physical aggression such that individuals with higher levels of authentic pride will report decreased physical aggression in the context of drug use.
18. In combined models examining all moderator variables simultaneously impulsivity, venturesomeness, and hubristic pride will all moderate the relationship between childhood trauma or maltreatment and physical aggression such that higher levels of all moderator variables will be associated with higher levels of physical aggression.
19. In combined models examining all moderator variables simultaneously authentic pride will moderate the relationship between childhood trauma or maltreatment and physical aggression such that higher levels of authentic pride will be associated with lower levels of physical aggression.
20. In combined models examining all moderator variables simultaneously impulsivity, venturesomeness, and hubristic pride will all moderate the relationship between alcohol use and physical aggression such that higher levels of all moderator variables will be associated with higher levels of physical aggression.
21. In combined models examining all moderator variables simultaneously authentic pride will moderate the relationship between alcohol use and physical aggression such that higher levels of authentic pride will be associated with lower levels of physical aggression.

22. In combined models examining all moderator variables simultaneously impulsivity, venturesomeness, and hubristic pride will all moderate the relationship between drug use and physical aggression such that higher levels of all moderator variables will be associated with higher levels of physical aggression.
23. In combined models examining all moderator variables simultaneously authentic pride will moderate the relationship between drug use and physical aggression such that higher levels of authentic pride will be associated with lower levels of physical aggression.

## CHAPTER 3

### RESULTS

#### Descriptive Statistics

Descriptive statistics were calculated for each variable and scale in the study (refer to Table 2). The final sample, after exclusion of multivariate outliers, was comprised of 457 college students, 68.7% (n = 314) of whom were female, and who ranged between 18 and 58 years of age (mean age = 21.24 years, SD = 5.45). Reports indicate that 20.2% (n = 91) of the sample had endorsed receiving some type of mental health treatment. Further, 27.6% (n = 121) reported that a family member with whom they lived while growing up had received some type of mental health treatment. Of the sample only 6.7% (n = 30) endorsed a history of being arrested, while 22.6% (n = 100) reported that a family member with whom they lived while growing up had a history of being arrested.

Table 2

*Levels of Demographic, Predictor, and Criterion Variables for the Total Sample*

Variable	Mean	Standard Deviation
Age	21.24	5.455
Physical Aggression	21.282	7.827
Childhood Trauma	19.593	11.829
Alcohol Use	4.618	5.373
Drug Use	2.873	5.861
Authentic Pride	24.770	5.995
Hubristic Pride	10.777	4.530
Venturesomeness	9.261	3.717
Impulsivity	7.723	4.439

Note: Physical Aggression=Physical Aggression Subscale of the Buss-Perry Aggression Questionnaire; Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Authentic Pride=Authentic Pride Scale; Hubristic Pride=Hubristic Pride Scale; Venturesomeness=Venturesomeness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; Impulsivity=Impulsiveness subscale of the I<sub>7</sub> Impulsiveness Questionnaire.

Participants' reports revealed that 78.6% of individuals were White (n = 359), 6.6% were Hispanic American (n = 30), 6.1% were African American (n = 28), .4% were American Indian or Alaska Native (n = 2), 1.3% were Asian (n =6), 1.1% selected "Citizen of Foreign Country" (n = 5), 4.6% selected "Other" (n = 21), and the remaining 1.3% either selected "Don't Know" or

did not respond to the question ( $n = 6$ ). With regard to education level, 43.3% ( $n = 198$ ) endorsed “freshman,” 21.0% ( $n = 96$ ) endorsed “sophomore,” 18.2% endorsed “junior,” 16.4% endorsed “senior,” and .7% endorsed “graduate student.”

In the present sample scores on the physical aggression subscale of the BPAQ were comparable to previous studies involving college students. Specifically, Buss and Perry (1992) examined 1,253 college students finding mean scores for males as 24.3(7.7) and for females as 17.9(6.6). These scores were also comparable to those of an offender population that found the average score for males 24.1(7.7), for females 20.8(7.6), in a sample consisting of 124 males and 76 females (Williams, Boyd, Cascardi, & Poythress, 1996).

Our sample had lower mean scores on the CTQ than those presented in previous research. Specifically, Scher et al. (2001) examined a community sample consisting of 1,007 participants finding mean scores of 31.71(9.13) for men and 31.77(11.20) for women. Wright et al (2001) found a mean of 35.21(10.71) for a sample of 949 college students. Other studies revealed mean scores ranging from 32.43(5.96) to 36.8(7.4) in college students samples (Heath, Toste, Nedecheva, & Charlebois, 2008; Merckelbach, Horselenberg, & Schmidt 2002).

Scores on the AUDIT in our sample were comparable to a large community sample that used a cut-off score of 8 to identify problem drinkers. Specifically, Cunningham, Neighbors, Wild, and Humphreys (2012) found mean scores of 4.2(1.5) for those scoring less than 8 ( $n=11,252$ ) and mean scores of 11.7(4.6) for those scoring 8 or greater ( $n=2,757$ ). Utpala-Kumar and Deane (2012) examined episodic drinking among university students. They found nonheavy episodic drinkers to have mean scores of 5.82(3.63), infrequent heavy episodic drinkers to have mean scores of 11.26(5.07), and frequent heavy episodic drinkers to have mean scores of 16.84(5.66) in a sample of 303 students ranging from 18 to 35 years of age.

In regard to drug use as measured by the DUDIT, our sample has lower rates of reported problematic drug use than previous research findings of other populations. However, it is important to note that there is a lack of available normative data for community and college samples. Voluse and colleagues (2012) examined the psychometric properties of the DUDIT in substance abusers in outpatient and residential treatment settings. They found the lowest mean score of 3.26(5.73) to correspond to alcohol abusers without drug problems who were in either outpatient or residential settings. They found mean scores of 23.46(11.03) and 25.97(12.42) for outpatient drug abusers and residential drug abusers, respectively. Additional research has noted scores for individuals with substance use problems has ranged from 16.9(9.8) for individuals who relapsed (Landheim, Bakken, & Vaglum, 2006) to 31.9(6.1) for a sample of opiate abusers in an inpatient setting (Berman, Källmén, Barredal, & Lindqvist, 2008; Voluse et al., 2012).

Previous research has reported the mean and standard deviation item value as opposed to the mean total score on the hubristic pride and authentic pride scales. Therefore, mean item scores were calculated as to make a meaningful comparison with previous research. The mean item score for the authentic pride scale in our study was 3.54(.86), whereas the mean item score for hubristic pride was 1.54(.65). This is similar to previous research (n=589) that found mean scores of 3.31(.82) and 1.69(.71) for authentic and hubristic pride respectively in a college student sample (Damian & Robins, 2013). Orth, Robins, and Soto (2010) examined 2,611 individuals from ages 13-89 via an internet-based international study and found mean scores of 3.53(.89) for authentic pride and 1.95(.86) for hubristic pride.

Scores on the Impulsiveness and Venturesomeness subscales of the I<sub>7</sub> were also comparable to those in existing studies. Specifically, Eysenck et al. (1985) found impulsiveness mean scores ranging from 6.55(4.43) to 8.76(4.31) for males and 7.48(4.42) to 8.17(4.44) for

females in community samples. They further found venturesomeness mean scores ranging from 7.64(4.25) to 10.61(3.22) for males and from 6.51(4.00) to 8.32(3.83) for females. Aluja and Blanch (2007) found male impulsiveness mean scores of 6.17(4.35) and female scores of 5.73(4.49) for a sample of 1,817 university students. Further, they found venturesomeness scores of 8.51(4.14) and 6.44(3.88) for males and females respectively (Aluja & Blanch, 2007).

#### Bivariate Associations

An examination of Pearson's product moment correlations supported the first hypothesis that scores on our measure of Childhood Trauma (CTQ) would be significantly and positively associated with scores on the Physical Aggression Subscale of the BPAQ ( $r = .137, p = .003$ ). In support of the second hypothesis, scores on the AUDIT were significantly positively associated with scores on the Physical Aggression Subscale of the BPAQ ( $r = .254, p = .000$ ). In addition, scores on the DUDIT were significantly positively associated with scores on the Physical Aggression Subscale of the BPAQ ( $r = .227, p = .000$ ), supporting the third hypothesis.

Supporting the fourth hypothesis, Impulsiveness scores from the subscale of the I<sub>7</sub> Impulsiveness Questionnaire were significantly positively associated with the Physical Aggression Subscale of the BPAQ ( $r = .354, p = .000$ ). Further, scores on the Venturesomeness subscale of the I<sub>7</sub> were significantly positively associated with the Physical Aggression Subscale of the BPAQ ( $r = .263, p = .000$ ). In addition, scores on the Hubristic Pride Scale were significantly positively associated with the Physical Aggression Subscale of the BPAQ ( $r = .274, p = .000$ ). Lastly, in support of our fifth hypothesis, scores on the Authentic Pride Scale were significantly negatively associated with the Physical Aggression Subscale of the BPAQ ( $r = -.132, p = .005$ ). Correlations are reported in Table 3.

Table 3  
*Pearson's Product Moment Correlations*

	2	3	4	5	6	7	8	9	Impulsivity
1. Age	.08	.07	.22**	.07	.10*	-.08	.02	-.09	.08
2. Gender	-	-.32**	.05	-.06	-.09	.00	-.12*	-.25**	.01
3. Physical Aggression	-	-	.14**	.25**	.23**	-.13**	.27**	.26**	.35**
4. Childhood Trauma	-	-	-	.27**	.26**	-.24**	.20**	-.09	.21**
5. Alcohol Use	-	-	-	-	.58**	-.16**	.17**	.14**	.18**
6. Drug Use	-	-	-	-	-	-.24**	.17**	.13**	.16**
7. Authentic Pride	-	-	-	-	-	-	.08	.09	-.06
8. Hubristic Pride	-	-	-	-	-	-	-	.03	.26**
9. Venturesomeness	-	-	-	-	-	-	-	-	.21**

Note: Physical Aggression=Physical Aggression Subscale of the Buss-Perry Aggression Questionnaire; Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Authentic Pride=Authentic Pride Scale; Hubristic Pride=Hubristic Pride Scale; Venturesomeness=Venturesomeness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; Impulsivity=Impulsiveness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01

### Moderation Analyses

#### Impulsivity as a Moderator

Higher scores on the CTQ were not significantly associated with higher levels of physical aggression (standardized  $\beta = .03, p = .49$ ), and impulsivity did not significantly moderate this relationship,  $F(1, 421) = .006, p = .938$ . This finding failed to support the sixth hypothesis. However, there was a main effect for impulsivity that was associated with higher levels of physical aggression (standardized  $\beta = .32, p = .000$ ; refer to Table 4).

Higher scores on the AUDIT were associated with greater levels of physical aggression (standardized  $\beta = .15, p = .003$ ). Failing to support the seventh hypothesis, impulsivity was not a significant moderator of this relationship,  $F(1, 421) = 2.88, p = .091$ . There was a main effect for impulsivity that was associated with higher levels of physical aggression (standardized  $\beta = .32, p = .000$ ; refer to Table 5).



Table 4

*Childhood Trauma, Impulsivity, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>	R <sup>2</sup> = .288***		
Step 2 Δ R <sup>2</sup>	ΔR = .000		
	t-value	Unβ[SE]	Standardized β
Step 1			
(Constant)	41.37***	1.21[.03]	-
Sex	8.12***	.12[.02]	.03
Age	.78	.00[.00]	.03
Childhood Trauma	.70	.00[.00]	.03
Impulsivity	7.50***	.01[.00]	.32
Drug Use	1.16	.00[.00]	.06
Alcohol Use	3.00**	.01[.00]	.15
Step 2			
(Constant)	41.31***	1.21[.03]	-
Sex	8.12***	.12[.02]	.34
Age	.79	.00[.00]	.03
Childhood Trauma	.70	.00[.00]	.03
Impulsivity	7.50***	.01[.00]	.32
Drug Use	1.16	.00[.00]	.06
Alcohol Use	3.00**	.01[.00]	.15
Childhood Trauma X Impulsivity	-.08	.00[.00]	-.00

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Impulsivity=Impulsiveness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01; \*\*\*p < .001

Table 5

*Alcohol Use, Impulsivity, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>	R <sup>2</sup> = .288***		
Step 2 Δ R <sup>2</sup>	ΔR = .005		
	t-value	Unβ[SE]	Standardized β
Step 1			
(Constant)	42.33***	1.23[.03]	-
Sex	8.12***	.12[.02]	.34
Age	.78	.00[.00]	.03
Childhood Trauma	.70	.00[.00]	.03
Impulsivity	7.50***	.01[.00]	.32
Drug Use	1.24	.00[.00]	.06
Alcohol Use	3.00**	.01[.00]	.15
Step 2			
(Constant)	42.45***	1.23[.03]	-
Sex	8.00***	.12[.02]	.33
Age	.78	.00[.00]	.03
Childhood Trauma	.72	.00[.00]	.03
Impulsivity	7.46***	.01[.00]	.32
Drug Use	1.24	.00[.00]	.06
Alcohol Use	3.17**	.01[.00]	.16
Alcohol Use X Impulsivity	-1.70	.00[.00]	-.07

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Impulsivity=Impulsiveness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01; \*\*\*p < .001

In a similar analysis scores on the DUDIT were not significantly associated with higher levels of physical aggression (standardized  $\beta = .06, p = .25$ ), and impulsivity did not significantly moderate this relationship,  $F(1, 421) = .292, p = .589$ . This finding does not support the eighth hypothesis. There was a main effect for impulsivity that was associated with higher levels of physical aggression (standardized  $\beta = .32, p = .000$ ; refer to Table 6).

Table 6  
*Drug Use, Impulsivity, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>		R <sup>2</sup> = .288***		
Step 2 $\Delta$ R <sup>2</sup>		$\Delta$ R = .000		
	t-value	Un $\beta$ [SE]	Standardized $\beta$	
Step 1				
(Constant)	40.60***	1.21[.03]	-	
Sex	8.12***	.12[.02]	.34	
Age	.78	.00[.00]	.03	
Childhood Trauma	.70	.00[.00]	.03	
Impulsivity	7.50***	.01[.00]	.32	
Drug Use	1.16	.00[.00]	.06	
Alcohol Use	3.00**	.01[.00]	.15	
Step 2				
(Constant)	40.56***	1.21[.03]	-	
Sex	8.05***	.12[.02]	.34	
Age	.81	.00[.00]	.04	
Childhood Trauma	.70	.00[.00]	.70	
Impulsivity	7.50	.01[.00]	.32	
Drug Use	1.24	.00[.00]	.06	
Alcohol Use	2.99	.01[.00]	.15	
Drug Use X Impulsivity	-.541	.00[.00]	-.023	

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Impulsivity=Impulsiveness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01; \*\*\*p < .001

### Venturesomeness as a Moderator

Higher scores on the CTQ were significantly positively associated with higher levels of physical aggression (standardized  $\beta = .09, p = .04$ ), however, failing to support hypothesis nine, venturesomeness did not significantly moderate this relationship,  $F(1, 421) = .07, p = .793$ .

There was a main effect for venturesomeness, that was associated with higher levels of physical aggression (standardized  $\beta = .19, p = .000$ ; refer to Table 7).

Table 7

*Childhood Trauma, Venturesomeness, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>		R <sup>2</sup> = .224***	
Step 2 Δ R <sup>2</sup>		ΔR = .000	
	t-value	Unβ[SE]	Standardized β
Step 1			
(Constant)	39.30***	1.20[.03]	-
Sex	6.43***	.10[.02]	.29
Age	1.28	.00[.00]	.06
Childhood Trauma	2.06*	.00[.00]	.09
Venturesomeness	4.14***	.01[.00]	.19
Drug Use	1.24	.00[.00]	.07
Alcohol Use	3.12**	.01[.00]	.16
Step 2			
(Constant)	39.24***	1.20[.03]	-
Sex	6.43***	.10[.02]	.29
Age	1.28	.00[.00]	.06
Childhood Trauma	2.07*	.00[.00]	.10
Venturesomeness	4.14***	.01[.00]	.19
Drug Use	1.23	.00[.00]	.06
Alcohol Use	3.12**	.01[.00]	.16
Childhood Trauma X Venturesomeness	.262	.00[.00]	.01

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Venturesomeness= Venturesomeness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01; \*\*\*p < .001

Higher scores on the AUDIT were significantly positively associated with higher scores of physical aggression (standardized  $\beta = .16, p = .002$ ), however, failing to find support for the 10<sup>th</sup> hypothesis venturesomeness was not a significant moderator of this relationship,  $F(1, 421) = .31, p = .579$ . There was a main effect for venturesomeness, that was associated with higher levels of physical aggression (standardized  $\beta = .19, p = .000$ ; refer to Table 8).

Scores on the DUDIT were not significantly associated with higher levels of physical aggression (standardized  $\beta = .07, p = .217$ ), nor did venturesomeness significantly moderate this relationship,  $F(1, 421) = 3.24, p = .07$ , contrary to hypothesis 11. Venturesomeness did exhibit a main effect where higher scores were associated with higher levels of physical aggression (standardized  $\beta = .19, p = .000$ ; refer to Table 9).

Table 8

*Alcohol Use, Venturesomeness, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>	R <sup>2</sup> = .224***		
Step 2 Δ R <sup>2</sup>	ΔR = .001		
	t-value	Unβ[SE]	Standardized β
Step 1			
(Constant)	39.70***	1.20[.03]	-
Sex	6.43***	.10[.02]	.29
Age	1.29	.00[.00]	.06
Childhood Trauma	2.06*	.00[.00]	.10
Venturesomeness	4.14***	.01[.00]	.19
Drug Use	1.24	.00[.00]	.07
Alcohol Use	3.12**	.01[.00]	.16
Step 2			
(Constant)	39.59***	1.20[.03]	-
Sex	6.40***	.10[.02]	.28
Age	1.28	.00[.00]	.06
Childhood Trauma	2.09*	.00[.00]	.10
Venturesomeness	4.16***	.01[.00]	.19
Drug Use	1.22	.00[.00]	.06
Alcohol Use	3.12**	.01[.00]	.16
Alcohol Use X Venturesomeness	.56	.00[.00]	.02

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Venturesomeness= Venturesomeness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01; \*\*\*p < .001

Table 9

*Drug Use, Venturesomeness, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>	R <sup>2</sup> = .224***		
Step 2 Δ R <sup>2</sup>	ΔR = .006		
	t-value	Unβ[SE]	Standardized β
Step 1			
(Constant)	38.09***	1.18[.03]	-
Sex	6.43***	.10[.02]	.26
Age	1.28	.00[.00]	.06
Childhood Trauma	2.06*	.00[.00]	.09
Venturesomeness	4.14***	.01[.00]	.19
Drug Use	1.24	.00[.00]	.07
Alcohol Use	3.12**	.01[.00]	.16
Step 2			
(Constant)	38.06***	1.19[.03]	-
Sex	6.56***	.12[.02]	.29
Age	1.23	.00[.00]	.05
Childhood Trauma	1.88	.00[.00]	.09
Venturesomeness	3.89***	.01[.00]	.18
Drug Use	1.81	.00[.00]	.10
Alcohol Use	2.79**	.01[.00]	.15
Drug Use X Venturesomeness	-1.80	.00[.00]	-.08

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Venturesomeness= Venturesomeness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01; \*\*\*p < .001

## Hubristic Pride as a Moderator

Higher scores on the CTQ were not significantly associated with higher levels of physical aggression (standardized  $\beta = .04, p = .36$ ), nor did hubristic pride significantly moderate this relationship,  $F(1, 422) = .581, p = .446$ . This finding fails to support hypothesis 12. However, there was a main effect for hubristic pride that was associated with higher levels of physical aggression (standardized  $\beta = .19, p = .000$ ; refer to Table 10).

Table 10

*Childhood Trauma, Hubristic Pride, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>	R <sup>2</sup> = .229***		
Step 2 $\Delta$ R <sup>2</sup>	$\Delta$ R = .001		
	t-value	Un $\beta$ [SE]	Standardized $\beta$
Step 1			
(Constant)	39.56***	1.20[.03]	-
Sex	7.03***	.11[.02]	.31
Age	1.09	.00[.00]	.05
Childhood Trauma	.92	.00[.00]	.04
Hubristic Pride	4.41***	.01[.00]	.19
Drug Use	1.39	.00[.00]	.07
Alcohol Use	3.27**	.01[.00]	.17
Step 2			
(Constant)	39.44***	1.20[.03]	-
Sex	7.02***	.11[.02]	.30
Age	1.02	.00[.00]	.05
Childhood Trauma	1.09	.00[.00]	.05
Hubristic Pride	4.47***	.01[.00]	.20
Drug Use	1.40	.00[.00]	.07
Alcohol Use	3.33**	.01[.00]	.18
Childhood Trauma X Hubristic Pride	-.76	.00[.00]	-.04

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Hubristic Pride= Hubristic Pride Scale \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Higher scores on the AUDIT were associated with higher levels of physical aggression (standardized  $\beta = .17, p = .001$ ), and, in support of the 13<sup>th</sup> hypothesis hubristic pride was a significant moderator of this relationship,  $F(1, 422) = 5.27, p = .022$ . Inclusion of the interaction of alcohol use and hubristic pride in the model resulted in an  $R$ -squared change of .010, accounting for an additional 1% of the variance ( $p = .022$ ). The adjusted  $R$ -square value for the model was .226, where the model accounted for 22.6% of the variance in physical aggression scores. Those with higher levels of hubristic pride have higher levels of physical aggression in

the context of alcohol use (see Table 11 and Figure 1). There was also a main effect for hubristic pride that was associated with greater levels of physical aggression (standardized  $\beta = .19, p = .000$ ).

Table 11  
*Alcohol Use, Hubristic Pride, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>		R <sup>2</sup> = .229***	
Step 2 $\Delta$ R <sup>2</sup>		$\Delta$ R = .010*	
	t-value	Un $\beta$ [SE]	Standardized $\beta$
Step 1			
(Constant)	40.43***	1.22[.03]	-
Sex	7.03***	.11[.02]	.31
Age	1.09	.00[.00]	.05
Childhood Trauma	.92	.00[.00]	.04
Hubristic Pride	4.41***	.01[.00]	.19
Drug Use	1.39	.00[.00]	.07
Alcohol Use	3.27**	.01[.00]	.17
Step 2			
(Constant)	40.69***	1.22[.03]	-
Sex	7.09***	.11[.02]	.31
Age	.85	.00[.00]	.04
Childhood Trauma	1.27	.00[.00]	.06
Hubristic Pride	4.42***	.01[.00]	.19
Drug Use	1.79	.00[.00]	.10
Alcohol Use	3.54***	.01[.00]	.19
Alcohol Use X Hubristic Pride	-2.30*	.00[.00]	-.106

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Hubristic Pride= Hubristic Pride Scale \*p < .05; \*\*p < .01; \*\*\*p < .001

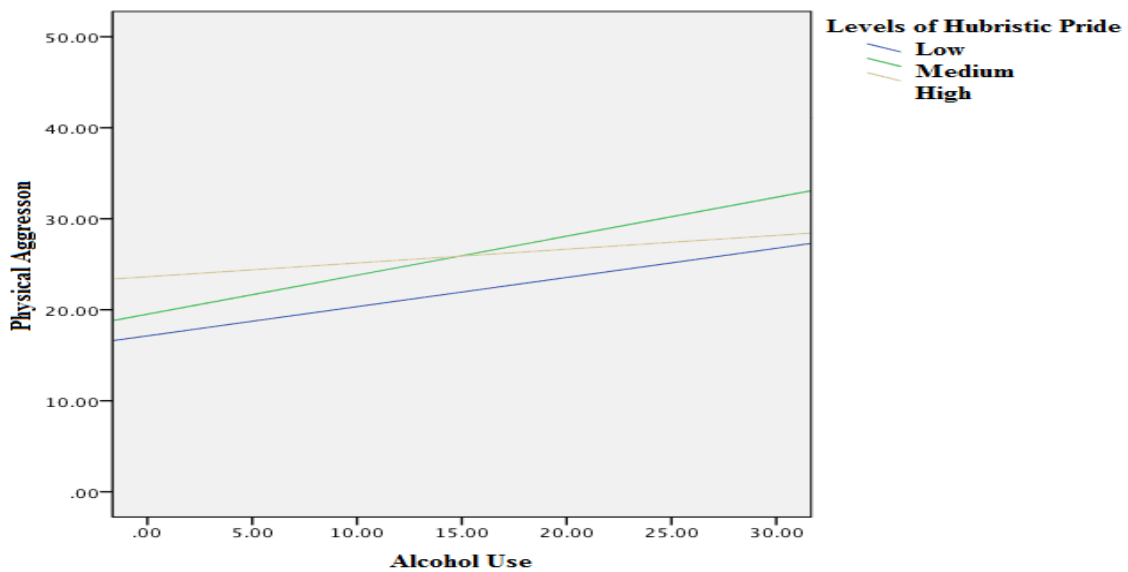


Figure 1  
*Hubristic Pride as a Moderator Between Alcohol Use and Physical Aggression*

Post hoc regression analyses were run for each grouping of the moderator variable (i.e., high, medium, and low). Results indicated significant interaction effects for only the low and medium level groups (i.e., the lowest two thirds of scores). Specifically, the lowest 33% of scores on hubristic pride significantly interacted with alcohol use ( $p < .000$ ) in predicting physical aggression such that those low in hubristic pride were more likely to report physical aggression with higher levels of alcohol use. In addition, the medium level group (middle third) of scores on hubristic pride significantly interacted with alcohol use ( $p < .005$ ) in predicting physical aggression such that those scoring in the middle third of participants in hubristic pride were more likely to report physical aggression with higher levels of alcohol use. The interaction was not significant for those indicating high (i.e., top third of participants) levels of hubristic pride. In sum, alcohol use significantly interacted with those in the low and middle third percentiles of hubristic pride in predicting higher levels of reported physical aggression.

Higher scores on the DUDIT were not significantly associated with higher levels of physical aggression (standardized  $\beta = .07, p = .166$ ); however, in support of hypothesis 14 hubristic pride was a significant moderator of this relationship,  $F(1, 422) = 4.73, p = .030$ . Inclusion of the interaction of drug use and hubristic pride in the model resulted in an  $R$ -squared change of .009, accounting for an additional .9% of the variance ( $p = .030$ ). The adjusted  $R$ -square value for the model was .225, representing that the model accounted for 22.5% of the variance in physical aggression scores. Thus, those reporting higher levels of hubristic pride also reported higher levels of physical aggression in the context of drug use (see Table 12 and Figure 2). There was also a main effect for hubristic pride that was associated with greater levels of physical aggression (standardized  $\beta = .19, p = .000$ ).

Table 12

*Drug Use, Hubristic Pride, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>		R <sup>2</sup> = .229***	
Step 2 Δ R <sup>2</sup>		ΔR = .009*	
	t-value	Unβ[SE]	Standardized β
Step 1			
(Constant)	38.73***	1.20[.03]	-
Sex	7.03***	.11[.02]	.31
Age	1.09	.00[.00]	.05
Childhood Trauma	.92	.00[.00]	.04
Hubristic Pride	4.41***	.01[.00]	.19
Drug Use	1.39	.00[.00]	.07
Alcohol Use	3.27**	.01[.00]	.17
Step 2			
(Constant)	38.91***	1.20[.03]	-
Sex	7.10***	.11[.02]	.31
Age	.97	.00[.00]	.04
Childhood Trauma	1.11	.00[.00]	.05
Hubristic Pride	4.51***	.01[.00]	.20
Drug Use	1.71	.00[.00]	.09
Alcohol Use	3.60***	.01[.00]	.19
Drug Use X Hubristic Pride	-2.17*	.00[.00]	-.10

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Hubristic Pride= Hubristic Pride Scale \*p < .05; \*\*p < .01; \*\*\*p < .001

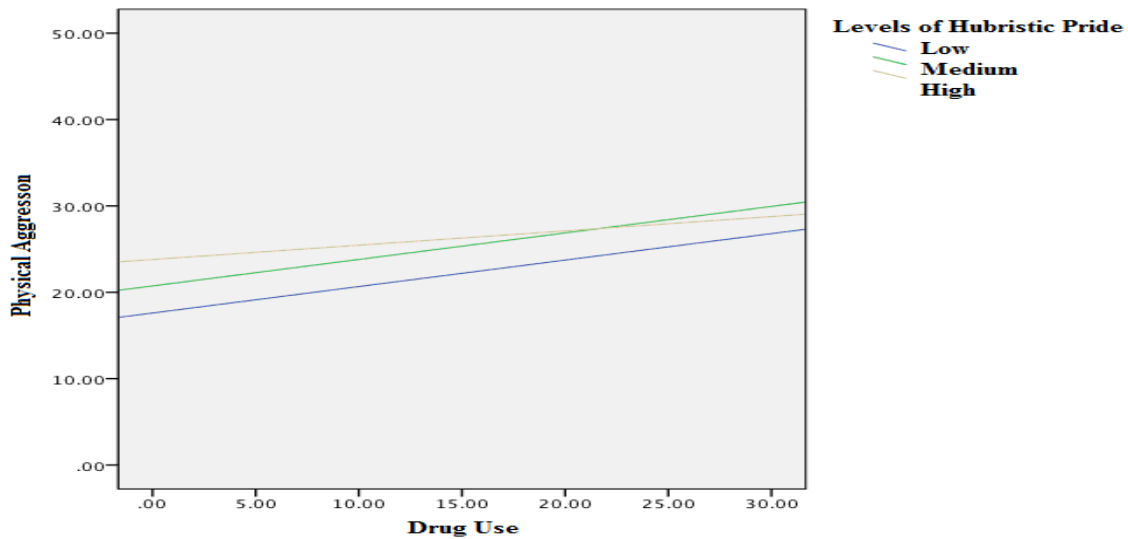


Figure 2

*Hubristic Pride as a Moderator Between Drug Use and Physical Aggression*

Post hoc regression analyses were again conducted for each grouping of the moderator variable (i.e., high, medium, and low). Results indicated significant interaction effects for only the low and medium level groups (i.e., the lowest two thirds of scores). Specifically, the lowest



33% of scores on hubristic pride significantly interacted with drug use ( $p < .05$ ) in predicting physical aggression such that those low in hubristic pride were more likely to report physical aggression with higher levels of drug use. In addition, the medium level group (middle third) of scores on hubristic pride significantly interacted with drug use ( $p < .05$ ) in predicting physical aggression such that those scoring in the middle third of participants in hubristic pride were more likely to report physical aggression with higher levels of drug use. The interaction was not significant for those indicating high (i.e., top third of participants) levels of hubristic pride. In sum, drug use significantly interacted with those in the low and middle third percentiles of hubristic pride scores in predicting higher levels of reported physical aggression.

#### Authentic Pride as a Moderator

Higher scores on the CTQ were not significantly associated with higher levels of physical aggression (standardized  $\beta = .06$ ,  $p = .21$ ), nor did authentic pride significantly moderate this relationship,  $F(1, 422) = .365$ ,  $p = .546$ . This finding is in contrast to hypothesis 15. There was no significant main effect for authentic pride (standardized  $\beta = -.07$ ,  $p = .121$ ; refer to Table 13).

Higher levels of Alcohol Use were associated with higher levels of physical aggression (standardized  $\beta = .18$ ,  $p = .001$ ), and authentic pride was a significant moderator of this relationship,  $F(1, 422) = 3.86$ ,  $p = .050$ . This finding supports hypothesis 16. Inclusion of the interaction of alcohol use and authentic pride in the model resulted in an  $R$ -squared change of .007 accounting for an additional .7% of the variance ( $p = .050$ ). The adjusted  $R$ -square value for the model was .193 representing that the model accounted for 19.3% of the variance in physical aggression scores. Those reporting higher levels of authentic pride also reported higher levels of physical aggression in the context of alcohol use (see Table 14 and Figure 3). However, there was no main effect for authentic pride (standardized  $\beta = -.07$ ,  $p = .121$ ).

Table 13

*Childhood Trauma, Authentic Pride, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>		R <sup>2</sup> = .199***	
Step 2 Δ R <sup>2</sup>		ΔR = .001	
	t-value	Unβ[SE]	Standardized β
Step 1			
(Constant)	38.71***	1.20[.03]	-
Sex	7.50***	.12[.02]	.33
Age	.99	.00[.00]	.05
Childhood Trauma	1.25	.00[.00]	.06
Authentic Pride	-1.55	.00[.00]	-.07
Drug Use	1.31	.00[.00]	.07
Alcohol Use	3.44**	.01[.00]	.18
Step 2			
(Constant)	38.66***	1.20[.03]	-
Sex	7.39***	.12[.02]	.33
Age	1.02	.00[.00]	.05
Childhood Trauma	1.34	.00[.00]	.07
Authentic Pride	-1.53	.00[.00]	-.07
Drug Use	1.37	.00[.00]	.08
Alcohol Use	3.48**	.01[.00]	.19
Childhood Trauma X Authentic Pride	.60	.00[.00]	.03

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Authentic Pride= Authentic Pride Scale \*p < .05; \*\*p < .01; \*\*\*p < .001

Table 14

*Alcohol Use, Authentic Pride, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>		R <sup>2</sup> = .187***	
Step 2 Δ R <sup>2</sup>		ΔR = .007*	
	t-value	Unβ[SE]	Standardized β
Step 1			
(Constant)	39.36***	1.21[.03]	-
Sex	7.50***	.12[.02]	.33
Age	.99	.00[.00]	.99
Childhood Trauma	1.25	.00[.00]	.06
Authentic Pride	-1.55	.00[.00]	-.07
Drug Use	1.31	.00[.00]	.07
Alcohol Use	3.44**	.01[.00]	.18
Step 2			
(Constant)	39.54***	1.21[.03]	-
Sex	7.15***	.11[.02]	.32
Age	.91	.00[.00]	.04
Childhood Trauma	1.44	.00[.00]	.07
Authentic Pride	-1.71	.00[.00]	-.08
Drug Use	1.62	.00[.00]	.09
Alcohol Use	3.65	.01[.00]	.20
Alcohol Use X Authentic Pride	1.97*	.00[.00]	.09

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Authentic Pride= Authentic Pride Scale \*p < .05; \*\*p < .01; \*\*\*p < .001

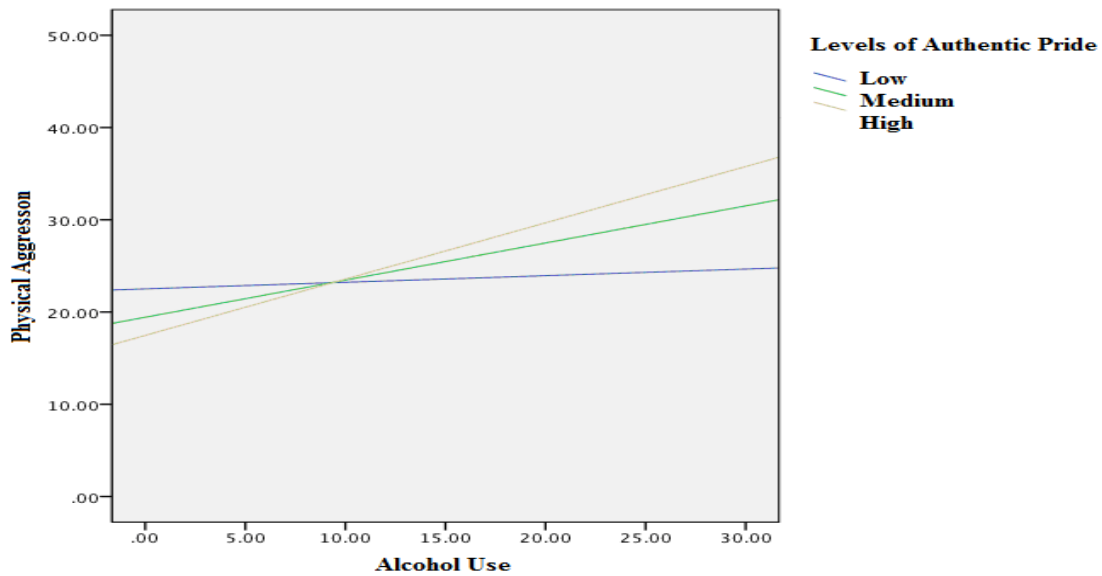


Figure 3  
*Authentic Pride as a Moderator Between Alcohol Use and Physical Aggression*

Post hoc regression analyses were conducted for each grouping of the moderator variable (i.e., within the average range and average  $\pm$  1SD). Results indicated significant interaction for the +1SD group and the average (or medium) level groups. Specifically, those scoring one standard deviation above the mean on authentic pride significantly interacted with alcohol use ( $p < .000$ ) in predicting physical aggression such that those high in authentic pride were more likely to report physical aggression with higher levels of alcohol use. In addition, the medium level group (average group) of scores on authentic pride significantly interacted with alcohol use ( $p < .000$ ) in predicting physical aggression such that those scoring in the average range for participants in our sample on authentic pride were more likely to report physical aggression with higher levels of alcohol use. The interaction trended toward significance for those indicating low (i.e., -1SD) levels of authentic pride ( $p = .06$ ). In sum, alcohol use significantly interacted with those in the +1SD and average ranges of authentic pride scores in predicting higher levels of reported physical aggression.

Higher scores on the DUDIT were not significantly associated with higher levels of physical aggression (standardized  $\beta = .07, p = .190$ ); however, contrary to hypothesis 17, authentic pride trended toward significance as moderator of this relationship,  $F(1, 422) = 3.75, p = .054$ . Inclusion of the interaction of drug use and authentic pride in the model resulted in an  $R$ -squared change of .007 accounting for an additional .7% of the variance ( $p = .054$ ). The adjusted  $R$ -square value for the model was .193 such that the model accounted for 19.3% of the variance in physical aggression scores. Thus, those reporting higher levels of authentic pride had higher levels of physical aggression in the context of drug use (refer to Table 15). There was no significant main effect for authentic pride (standardized  $\beta = -.07, p = .121$ ).

Table 15  
*Drug Use, Authentic Pride, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>		R <sup>2</sup> = .199***	
Step 2 $\Delta$ R <sup>2</sup>		$\Delta$ R = .007	
	t-value	Un $\beta$ [SE]	Standardized $\beta$
(Constant)	37.73***	1.19[.03]	-
Sex	7.50***	.12[.02]	.33
Age	.99	.00[.00]	.05
Childhood Trauma	1.25	.00[.00]	.06
Authentic Pride	-1.55	.00[.00]	-.07
Drug Use	1.31	.00[.00]	.07
Alcohol Use	3.44**	.01[.00]	.18
Step 2		Standardized $\beta$	
(Constant)	37.87***	1.20[.03]	-
Sex	7.27***	.12[.02]	.32
Age	.84	.00[.00]	.04
Childhood Trauma	1.48	.00[.00]	.07
Authentic Pride	-1.38	.00[.00]	-.06
Drug Use	2.03*	.00[.00]	.12
Alcohol Use	3.48**	.01[.00]	.19
Drug Use X Authentic Pride	1.94	.00[.00]	.10

Note: Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Authentic Pride= Authentic Pride Scale \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

### Combined Model Examining All Moderators and Childhood Trauma

In a combined model examining childhood trauma and all moderators entered simultaneously scores on the measure of childhood trauma were not significantly associated with scores of physical aggression (standardized  $\beta = .02, p = .73$ ), nor did any variable significantly

moderate this relationship  $F(1, 415) = .07, p = .99$ . This finding fails to support hypotheses 18 and 19. However, there were main effects found for higher scores on the following variables in terms of being associated with higher scores of physical aggression: alcohol use (standardized  $\beta = .13, p = .009$ ), impulsivity (standardized  $\beta = .25, p = .000$ ), venturesomeness (standardized  $\beta = .14, p = .002$ ), and hubristic pride (standardized  $\beta = .15, p = .001$ ). Further, there was a main effect for authentic pride with higher scores being associated with lower scores of physical aggression (standardized  $\beta = -.11, p = .008$ ; see Table 16).

Table 16  
*Childhood Trauma, All Moderators, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>	R <sup>2</sup> = .327***		
Step 2 $\Delta$ R <sup>2</sup>	$\Delta R = .000$		
	t-value	Un $\beta$ [SE]	Standardized $\beta$
Step 1			
(Constant)	42.52***	1.22[.03]	-
Sex	6.82***	.10[.02]	.29
Age	1.05	.00[.00]	.04
Childhood Trauma	.35	.00[.00]	.02
Impulsivity	5.79***	.01[.00]	.25
Venturesomeness	3.17**	.01[.00]	.14
Hubristic Pride	3.44**	.01[.00]	.15
Authentic Pride	-2.67**	.00[.00]	-.11
Drug Use	.46	.00[.00]	.02
Alcohol Use	2.63**	.00[.00]	.13
Step 2			
(Constant)	42.07***	1.22[.03]	-
Sex	6.70***	.10[.02]	.29
Age	1.06	.00[.00]	.05
Childhood Trauma	.34	.00[.00]	.02
Impulsivity	5.72***	.01[.00]	.25
Venturesomeness	3.15**	.01[.00]	.14
Hubristic Pride	3.40**	.01[.00]	.15
Authentic Pride	-2.63**	.00[.00]	-.11
Drug Use	.49	.00[.00]	.03
Alcohol Use	2.63**	.00[.00]	.13
Childhood Trauma X Impulsivity	-.01	.00[.00]	.00
Childhood Trauma X Venturesomeness	-.27	.00[.00]	-.01
Childhood Trauma X Hubristic Pride	-.12	.00[.00]	-.01
Childhood Trauma X Authentic Pride	.39	.00[.00]	.02

Note: Physical Aggression=Physical Aggression Subscale of the Buss-Perry Aggression Questionnaire; Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Authentic Pride=Authentic Pride Scale; Hubristic Pride=Hubristic Pride Scale; Venturesomeness=Venturesomeness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; Impulsivity=Impulsiveness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01

## Combined Model Examining All Moderators and Alcohol Use

When examining alcohol use and all moderators entered simultaneously alcohol use was significantly associated with higher scores of physical aggression (standardized  $\beta = .13, p = .009$ ). Contrary to hypotheses 20 and 21 no variable was a significant moderator  $F(1, 415) = 1.79, p = .130$ . Main effects were found for the following, with higher scores being related to higher physical aggression: alcohol use (standardized  $\beta = .13, p = .009$ ), impulsivity (standardized  $\beta = .25, p = .000$ ), venturesomeness (standardized  $\beta = .14, p = .002$ ), and hubristic pride (standardized  $\beta = .15, p = .001$ ). A main effect for authentic pride being associated with lower physical aggression scores was found (standardized  $\beta = -.11, p = .008$ ; see Table 17).

Table 17

### *Alcohol Use, All Moderators, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>		R <sup>2</sup> = .327***	
Step 2 $\Delta$ R <sup>2</sup>		$\Delta$ R = .011	
	t-value	Un $\beta$ [SE]	Standardized $\beta$
Step 1			
(Constant)	43.09***	1.22[.03]	-
Sex	6.82***	.10[.02]	.29
Age	1.05	.00[.00]	.04
Childhood Trauma	.35	.00[.00]	.02
Impulsivity	5.79***	.01[.00]	.25
Venturesomeness	3.17**	.01[.00]	.14
Hubristic Pride	3.44**	.01[.00]	.15
Authentic Pride	-2.67**	.00[.00]	-.11
Drug Use	.46	.00[.00]	.02
Alcohol Use	2.63**	.00[.00]	.13
Step 2			
(Constant)	43.25***	1.24[.03]	-
Sex	6.51***	.10[.02]	.28
Age	.86	.00[.00]	.04
Childhood Trauma	.69	.00[.00]	.03
Impulsivity	5.62***	.01[.00]	.25
Venturesomeness	3.07**	.01[.00]	.13
Hubristic Pride	3.45**	.01[.00]	.14
Authentic Pride	-2.63**	.00[.00]	-.11
Drug Use	.99	.00[.00]	.05
Alcohol Use	3.08**	.01[.00]	.15
Alcohol Use X Impulsivity	-1.14	.00[.00]	-.05
Alcohol Use X Venturesomeness	.57	.00[.00]	.02
Alcohol Use X Hubristic Pride	-1.28	.00[.00]	-.06
Alcohol Use X Authentic Pride	1.69	.00[.00]	.07

Note: Physical Aggression=Physical Aggression Subscale of the Buss-Perry Aggression Questionnaire; Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Authentic Pride=Authentic Pride Scale; Hubristic Pride=Hubristic Pride Scale; Venturesomeness=Venturesomeness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; Impulsivity=Impulsiveness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01

### Combined Model Examining All Moderators and Drug Use

In a combined model examining drug use and all moderators entered simultaneously scores of drug use were not significantly associated with scores of physical aggression (standardized  $\beta = .02$ ,  $p = .646$ ). However, one interaction term, authentic pride by drug use, significantly moderated this relationship (standardized  $\beta = -.11$ ,  $p = .028$ ), though there was a trend toward significance for the entire model  $F(1, 415) = 2.25$ ,  $p = .063$ . This finding fails to support hypotheses 22 and 23. Inclusion of the interaction of drug use and authentic pride in the model resulted in an  $R$ -squared change of .014 accounting for an additional 1.4% of the variance ( $p = .063$ ). The adjusted  $R$ -square value for the model was .320, where the model accounted for 32.0% of the variance in physical aggression scores. Thus, those reporting higher levels of authentic pride also reported lower levels of physical aggression in the context of drug use (see Table 18).

There were also main effects found for higher scores on the following variables in terms of being associated with higher scores of physical aggression: alcohol use (standardized  $\beta = .13$ ,  $p = .009$ ), impulsivity (standardized  $\beta = .25$ ,  $p = .000$ ), venturesomeness (standardized  $\beta = .14$ ,  $p = .002$ ), and hubristic pride (standardized  $\beta = .15$ ,  $p = .001$ ). Furthermore, there was a main effect for authentic pride with higher scores being associated with lower scores of physical aggression (standardized  $\beta = -.11$ ,  $p = .008$ ; see Table 18). A summary of all hypotheses and results are presented in Table 19.

Table 18

*Drug Use, All Moderators, and Physical Aggression-Multivariate Regression*

Step 1 R <sup>2</sup>		R <sup>2</sup> = .327***	
Step 2 Δ R <sup>2</sup>		ΔR = .014	
	t-value	Unβ[SE]	Standardized β
Step 1			
(Constant)	41.43***	1.22[.03]	-
Sex	6.82***	.10[.02]	.29
Age	1.05	.00[.00]	.04
Childhood Trauma	.35	.00[.00]	.02
Impulsivity	5.79***	.01[.00]	.25
Venturesomeness	3.17**	.01[.00]	.14
Hubristic Pride	3.44**	.01[.00]	.15
Authentic Pride	-2.67**	.00[.00]	-.11
Drug Use	.46	.00[.00]	.02
Alcohol Use	2.63**	.00[.00]	.13
Step 2			
(Constant)	41.47***	1.23[.03]	-
Sex	6.78***	.10[.02]	.29
Age	.77	.00[.00]	.03
Childhood Trauma	.52	.00[.00]	.02
Impulsivity	5.44***	.01[.00]	.24
Venturesomeness	2.91**	.01[.00]	.13
Hubristic Pride	3.43**	.01[.00]	.15
Authentic Pride	-2.32*	.00[.00]	-.10
Drug Use	2.00*	.00[.00]	.12
Alcohol Use	2.60**	.00[.00]	.13
Drug Use X Impulsivity	.06	.00[.00]	.00
Drug Use X Venturesomeness	-1.66	.00[.00]	-.07
Drug Use X Hubristic Pride	-1.75	.00[.00]	-.08
Drug Use X Authentic Pride	2.20*	.00[.00]	.11

Note: Physical Aggression=Physical Aggression Subscale of the Buss-Perry Aggression Questionnaire; Childhood Trauma=CTQ; Alcohol Use=AUDIT; Drug Use=DUDIT; Authentic Pride=Authentic Pride Scale; Hubristic Pride=Hubristic Pride Scale; Venturesomeness=Venturesomeness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; Impulsivity=Impulsiveness subscale of the I<sub>7</sub> Impulsiveness Questionnaire; \*p < .05; \*\*p < .01



Table 19  
*Summary of Main Findings For Specific Hypotheses*

Hypotheses	Results	Contributing Sources
1. CTQ $\leftarrow(+)\rightarrow$ PA	Fully Supported.	Chen et al., 2012.
2. ALC $\leftarrow(+)\rightarrow$ PA	Fully Supported.	Grann & Frazel, 2004.
3. DRG $\leftarrow(+)\rightarrow$ PA	Fully Supported.	Grann & Frazel, 2004.
4. HP $\leftarrow(+)\rightarrow$ PA	Fully Supported.	Carver et al., 2010.
IMP $\leftarrow(+)\rightarrow$ PA	Fully Supported.	Cuomo et al., 2008.
VNT $\leftarrow(+)\rightarrow$ PA	Fully Supported.	Joireman et al., 2003.
5. AP $\leftarrow(-)\rightarrow$ PA	Fully Supported.	Tracey et al., 2009.
6. IMP(+)	Not Supported.	Exploratory based on
CTQ $\downarrow\rightarrow$ PA	Main effect for IMP found.	Ford, 2005.
7. IMP(+)	Not Supported.	Exploratory based on
ALC $\downarrow\rightarrow$ PA	Main effect for IMP found.	Tackett & Krueger, 2011.
8. IMP(+)	Not Supported.	Exploratory based on
DRG $\downarrow\rightarrow$ PA	Main effect for IMP found.	Cuomo et al., 2008.
9. VNT(+)	Not Supported.	Exploratory based on
CTQ $\downarrow\rightarrow$ PA	Main effect for VNT found.	Bornovalva, 2008 & Joireman et al., 2003.
10. VNT(+)	Not Supported.	Exploratory based on
ALC $\downarrow\rightarrow$ PA	Main effect for VNT found.	Joireman et al., 2003.
11. VNT(+)	Not Supported.	Exploratory based on
DRG $\downarrow\rightarrow$ PA	Moderation trended toward significance (p = .07).	Joireman et al., 2003.
12. HP(+)	Not Supported.	Exploratory based on
CTQ $\downarrow\rightarrow$ PA	Main effect for HP found.	Thomaes & Bushman, 2011 & Uji et al., 2012.
13. HP(+)	Fully Supported.	Carver et al., 2010.
ALC $\downarrow\rightarrow$ PA		
14. HP(+)	Fully Supported.	Exploratory based on
DRG $\downarrow\rightarrow$ PA		Thomaes & Bushman, 2011.
15. AP(-)	Fully Supported.	Exploratory based on
CTQ $\downarrow\rightarrow$ PA		Carver et al., 2010.
16. AP(-)	Partially Supported.	Exploratory based on
ALC $\downarrow\rightarrow$ PA	Moderation Opposite Direction.	Carver et al., 2010.
17. AP(-)	Not Supported.	Exploratory based on
DRG $\downarrow\rightarrow$ PA	Moderation trended toward significance (p = .054).	Carver et al., 2010.

Note: Table Continued On Next Page.

$\leftarrow(+)\rightarrow$  = significant positive correlation;  $\leftarrow(-)\rightarrow$  = significant negative correlation;  
 $\downarrow\rightarrow$  = moderation analysis with (+) and (-) indicating hypothesized direction of effect;  
PA = Physical Aggression Subscale of the Buss-Perry Aggression Questionnaire;  
CTQ = Childhood Trauma Questionnaire; ALC = AUDIT; DRG = DUDIT; AP = Authentic Pride Scale;  
HP = Hubristic Pride Scale; VNT = Venturesomeness subscale of the I7 Impulsiveness Questionnaire;  
IMP = Impulsiveness subscale of the I7 Impulsiveness Questionnaire.

Table 19 (Continued)  
*Summary of Main Findings For Specific Hypotheses*

Hypotheses	Results	Contributing Sources
18. IMP VNT HP(+) CTQ ↓→ PA (Combined Model)	Not Supported. Main effects for all moderators were found.	Purely Exploratory.
19. AP(-) CTQ ↓→ PA (Combined Model)	Not Supported. Main effects for all moderators were found.	Purely Exploratory.
20. IMP VNT HP(+) ALC ↓→ PA (Combined Model)	Not Supported. Main effects for all moderators were found.	Purely Exploratory.
21. AP(-) ALC ↓→ PA (Combined Model)	Not Supported. Main effects for all moderators were found.	Purely Exploratory.
22. IMP VNT HP(+) DRG ↓→ PA (Combined Model)	Not Supported. Main effects for all moderators were found.	Purely Exploratory.
23. AP(-) DRG ↓→ PA (Combined Model)	Not Supported. Moderation trended toward significance for AP.	Purely Exploratory.

Note: ←(+)->= significant positive correlation; ←(-)->= significant negative correlation;  
↓→ = moderation analysis with (+) and (-) indicating hypothesized direction of effect;  
PA = Physical Aggression Subscale of the Buss-Perry Aggression Questionnaire;  
CTQ = Childhood Trauma Questionnaire; ALC = AUDIT; DRG= DUDIT; AP = Authentic Pride Scale;  
HP = Hubristic Pride Scale; VNT = Venturesomeness subscale of the I7 Impulsiveness Questionnaire;  
IMP = Impulsiveness subscale of the I7 Impulsiveness Questionnaire.

## CHAPTER 4

### DISCUSSION

#### Overview of Main Findings

The current study was an examination of the moderating roles of impulsivity, venturesomeness, and pride on the relationships between childhood trauma, alcohol use, drug use, and physical aggression. Our bivariate findings were consistent with previous research and in conjunction with our findings concerning moderating roles also contribute to an expanding body of literature on childhood trauma, substance use, venturesomeness, impulsivity, pride, and physical aggression (Bornovalova et al., 2008; Carver et al., 2010; Cheng et al., 2010; Cuomo et al., 2008; Joireman et al., 2003).

We did not find support for impulsivity, venturesomeness, or pride as moderators of relationships between childhood trauma and physical aggression. Nor did we find support for impulsivity and venturesomeness moderating the relationships between alcohol use and physical aggression or drug use and physical aggression. Trends in the data suggested that authentic pride moderated the relationship between drug use and physical aggression. We found support for both authentic pride and hubristic pride as moderators of the relationship between alcohol use and physical aggression. Finally, we found support for hubristic pride as a moderator of the relationship between drug use and physical aggression.

This study extends the abovementioned research by examining the moderating roles of both risk and protective factors, specifically impulsivity, venturesomeness, and pride, in the context of substance use and childhood trauma. Differences were found in the effects of authentic and hubristic pride as moderators of the relationships between alcohol use and physical aggression and drug use and physical aggression.

## Bivariate Findings

In our sample of college students, and in support of the first hypothesis, childhood trauma was found to be significantly positively associated with physical aggression, supporting existing literature (Klimes-Dougan & Kistner, 1990; Rogosch et al., 1995; Toth et al., 2011).

Interestingly, in regression analyses controlling for age, sex, drug use, and alcohol use, childhood trauma was not a significant predictor in models examining the moderating roles of impulsivity, hubristic pride, and authentic pride. However, childhood trauma was a significant predictor in analyses examining venturesomeness as a moderator.

It may be that levels of impulsivity, hubristic pride, and authentic pride account for some of the childhood trauma variable's variance in physical aggression. Specifically, it may be the ability to self-regulate emotions that can be negatively affected by childhood trauma plays more of a role than only examining the trauma itself (Ford, 2005). As noted previously, our sample had lower mean scores on the CTQ than previous studies (Heath et al., 2008). In addition, we examined the total score on the CTQ as opposed to examining individual subscales that may vary in their effect on physical aggression (Toth et al., 2011).

An important caveat here is that individuals in this largely young adult sample were recalling childhood experiences and for various reasons may or may not have been accurate historians. Although biases potentially exist for any self-reported variables, items dealing with more remote experiences, especially of a traumatic nature may be subject to additional memory distortions (Buckley, Blanchard, & Neill, 2000).

In support of the second hypothesis, alcohol use was significantly positively associated with physical aggression, and this finding is consistent with previous research demonstrating that the use of alcohol is associated with physical aggression (Bácskai, Czobor, & Gerevich, 2008;

Grann & Frazel, 2004). Importantly, alcohol use was found to be a significant predictor while controlling for childhood trauma, drug use, sex, and age in all regression analyses including combined models examining all variable. These findings suggest alcohol use is an important variable in predicting aggressive behavior among college students given that it remains a significant predictor when controlling for personality variables such as the moderators examined. Most likely the probability for physical aggression is a function of disinhibition associated with alcohol use combined with normative beliefs regarding the perceived acceptability of physical aggression (Bushman, 1997; Huesmann & Guerra, 1997). This notion is touched on again further below.

Supporting the third hypothesis, drug use was significantly associated with physical aggression. This finding is also consistent with past research documenting the association between drug use and physical aggression (Bácskai, Czobor, & Gerevich, 2011). Interestingly, drug use was not found to be a significant predictor of physical aggression in regression analysis examining the moderator variables while controlling for childhood trauma, alcohol use, age, and sex. It is possible that personality variables such as those examined as moderators or other variables such as type of drugs used or socioeconomic status account for the variance shared between drug use and physical aggression.

Further, it is important to consider prevalence rates and research concerning various types of drugs. Use of drugs such as cocaine, phencyclidine, amphetamines, inhalants (such as gasoline and paint), and anabolic steroids are consistently used in violence risk assessments (Drogin, Dattilio, Sadoff, & Gutheil, 2011), whereas the marijuana-violence relationship is not deemed significant when common risk factors such as ethnicity and hard drug use are controlled for (Wei, Loeber, & White, 2004). Although specific types of drugs were not differentiated in the

current study, the Monitoring the Future study conducted by the National Institute on Drug Abuse found annual prevalence rates of college students' illicit drug use for any illicit drug to be 35%. Yet, when marijuana was factored out the prevalence rate decreased to 17.3% (Johnston, O'Malley, Bachman, & Schulenberg, 2008). It is possible that the characteristics of our sample, if similar to national rates such as these, contributed to this nonfinding. It is important for future research to specifically examine drug types when studying the relationship between drug use and physical aggression.

Significant positive bivariate associations were also found between physical aggression and the moderator variables of impulsivity, venturesomeness, and hubristic pride, supporting our fourth hypothesis. These findings were consistent with previous research finding physical aggression to be associated with impulsivity (Cuomo et al., 2008), venturesomeness (Joireman et al., 2003), and hubristic pride (Carver et al., 2010). Finally, there was a significant negative bivariate association between authentic pride and physical aggression in support of our 5<sup>th</sup> hypothesis. This finding was also consistent with previous literature (Tracey et al., 2009). These variables and their relationships to other study variables are discussed further in the following sections.

### Impulsivity

The current study failed to find support for the sixth hypothesis concerning the moderating role of impulsivity in the relationship between childhood trauma and physical aggression. This is despite previous support being found for the adverse effects of childhood trauma on impaired information processing, impaired impulse control, aggressive behaviors, and the ability to self-regulate emotions (Chen, Coccaro, Lee, & Jacobson, 2012; Ford, 2005). Thus,

it is possible that impulsivity has more of a mediating role in the relationship between childhood trauma and physical aggression as opposed to its exploration in this study as a moderator.

Previous research supports the idea that childhood trauma or maltreatment is a risk factor in the development of trait impulsivity and aggression (Brodsky et al., 2001). Perhaps the relationship between childhood trauma and physical aggression depends on other variables such as aggression-endorsing cognitive schemas, delinquent peer relationships, and/or episodic maladaptive hyperarousal (Ford et al., 2012). The current findings suggest that the potential development of impulsivity or other maladaptive self-regulating behaviors potentially resulting from childhood trauma should be further explored and possibly used as targets of future intervention and prevention programs.

In addition, results failed to support the seventh hypothesis that impulsivity would moderate the relationship between alcohol use and physical aggression. This is despite previous research that linked alcohol use, impulsivity, and physical aggression as disinhibitory characteristics of a broad spectrum labeled externalizing disorders (Tackett & Krueger, 2011). In contrast to our hypothesis, impulsivity did not significantly interact with alcohol use in predicting physical aggression. We did find that both impulsivity and alcohol use were robust, independent predictors of physical aggression and previous research supports the use of both in violence risk assessments (Drogin, et al., 2011).

In our sample the effect of alcohol use on physical aggression was not dependent upon levels of impulsivity. Alcohol use has been associated with physical aggression as a result of disinhibition during intoxication (Bushman, 1997). And as suggested above, acts of physical aggression resulting from disinhibition may be viewed as unacceptable in a sober state of mind (Drogin et al., 2011).

It may also be that individuals who view themselves as impulsive do not necessarily view their impulsive behaviors as socially unacceptable. Huesmann and Guerra (1997) suggested normative beliefs (i.e., self-regulating beliefs about the appropriateness and acceptability of behaviors) regulate an individual's spectrum of appropriate behaviors such as those involving harm to others. The social schemas an impulsive individual uses to process information in a time efficient manner may be distinct from those who report less impulsivity. Therefore, there may be a distinct difference between disinhibited behaviors and impulsive behaviors in our sample.

Some individuals may respond aggressively as a result of being impulsive, whereas others' physically aggressive behaviors are a result of disinhibition, and thus the weighting of factors may differ for these two types of individuals. It may also be that other personality factors moderate the relationship such as disagreeableness and low conscientiousness (Goldberg, 1993) or impulsive individuals' schemas may be reflective of deficient empathy or a tendency to externalize blame (Krueger et al., 2007). Future research should examine the moderating roles of these variables as they relate to both alcohol use and impulsivity. Overall, in the context of our sample it appears that impulsivity and alcohol use are additive, not multiplicative, when predicting physical aggression.

Support was not found for the eighth hypothesis predicting the moderating role of impulsivity in the relationship between drug use and physical aggression. Like alcohol use, illicit drug use is a personality trait that falls under the spectrum of externalizing disorders and is thus associated with impulsivity and physical aggression (Cuomo et al., 2008; Tackett & Krueger, 2011). As noted previously, drug use was not a significant predictor in these regression analyses.

Behavior problems such as drug use, although characterized as irresponsible and impulsive in nature, may lead to physical aggression via other pathways than impulsivity. For



instance, Tackett and Krueger (2011) differentiated externalizing disorders via two facets: Problems with substances and callous aggression associated with a lack of empathy. It may be that the effect of drug use on physical aggression depends on additional variables such as a lack of empathy, increased hostility, depression, or a lack of resilience (Cuomo et al., 2008). Future studies should examine these variables in the context of specific types of illicit drugs to elucidate relationships that could be targeted for intervention.

### Venturesomeness

In moderation analyses venturesomeness was not found to be a significant moderator of the relationship between childhood trauma and physical aggression, which was contrary to our ninth hypothesis. This is despite childhood trauma having been identified in previous research as a risk factor for risk-taking propensity and sensation-seeking (Bornovalova et al., 2008) and adult aggression (Chen et al., 2012). Both variables were positively correlated with physical aggression and found to be significant predictors in regression analyses. However, venturesomeness and childhood trauma were not related in our current sample.

Although both may be viewed as having significant relationships to physical aggression, our current findings do not support an interaction effect. As mentioned before, research suggested that physically abused children are more likely to acquire a hostile attribution bias and a repertoire of aggressive responses (Dodge et al., 1995; Toth et al., 2011). It may be important to differentiate the type of the abuse to determine how it influences a hostile attribution bias and aggressive responses in order to observe any potential effect of venturesomeness on the relationship between childhood trauma and physical aggression.

Childhood trauma has been shown to adversely impact the ability to regulate affective experiences (Cicchetti et al., 1991) that may be more likely to produce and/or be related to a trait

such as impulsivity as opposed to venturesomeness. Research involving fMRI techniques to characterize the neurobiological profile when studying sensation-seeking (i.e., venturesomeness) have found that high sensation-seekers when shown high-arousal stimuli (i.e., nudity, erotica, extreme sports, violence, and bodily mutilation) did not show activation in regions involved in emotional regulation, behavioral monitoring, and decision-making (Joseph, Liu, Jiang, Lynam, & Kelly, 2009). Chen and colleagues (2012) suggested that childhood maltreatment modifies the association between social information processing and adult aggression. It may be that the moderating effect is thus found in the levels of hostile attribution bias and/or negative emotional responses and is not necessarily dependent on a proneness to boredom.

Support was also not found for the moderating role of venturesomeness in the relationship between alcohol use and physical aggression, contrary to the 10<sup>th</sup> hypothesis. Previous research demonstrated links between physical aggression and both alcohol use (Gran & Frazel, 2004) and venturesomeness (Joireman et al., 2003). However, findings from the present study suggest individuals who score high on measures of venturesomeness also endorse higher levels of physical aggression regardless of their reported alcohol use. Perhaps it is the interaction of these variables along with another variable such as deficits in empathy that can explain these relationships.

In the current sample the effect of alcohol use on physical aggression was not dependent upon levels of venturesomeness. However, both were independent predictors of physical aggression, thus supporting previous research (Bornovalova et al., 2008; Cuomo et al., 2008; Joireman et al., 2003). Previous research has shown sensation-seeking to be a multilayered personality trait consisting of susceptibility to boredom, thrill and adventure seeking, and disinhibition (Joseph et al., 2009; Zuckerman, 2005). Given the predisposition to disinhibition

experienced by those with this trait, alcohol use may not significantly increase disinhibition to the extent it might in individuals with low levels of venturesomeness. It is also possible that the variables measuring venturesomeness and alcohol use overlap and both tap into the construct of disinhibition.

Contrary to the 11<sup>th</sup> hypothesis, venturesomeness did not moderate the relationship between drug use and physical aggression even though previous research documents strong relationships among these three variables (Butler & Montgomery, 2004; Gran & Frazel, 2004; Joireman et al., 2003). Findings from the present study thus suggest that individuals who score high on measures of venturesomeness also endorse higher levels of physical aggression, despite their reported drug use. Interestingly, there was a trend toward significance for the model.

Thus it is possible that as drug use and venturesomeness increase, so do reported rates of physical aggression. However, it must be noted that this may be a spurious finding as the overall model did not reach significance. A possible explanation, similar to the findings with alcohol use, is that individuals high in the trait of venturesomeness already display disinhibited behavior that may not be significantly further compounded by drug use. Another potential explanation is that these variables (i.e., venturesomeness and drug use) may overlap and tap into the construct of disinhibition in the context of physical aggression.

Given the positive correlation between venturesomeness and extraversion (Eysenck & Eysenck, 1978), it may be that venturesomeness would have to be combined with higher levels of disagreeableness and low conscientiousness in order to interact significantly with drug use to increase rates of physical aggression. It is also possible that venturesomeness does not contrast enough with traits such as agreeableness and thus would need an added interpersonal irritability component to confer a higher risk for physical aggression (Goldberg, 1993; Tackett & Krueger,

2011). Thus, there seems to be a need to examine a sociability component related to personality and cognition.

### Hubristic Pride

The data did not support the 12<sup>th</sup> hypothesis concerning hubristic pride as a moderator of the relationship between childhood trauma and physical aggression. To our knowledge, there is no existing literature documenting the link between hubristic pride and childhood trauma. We did find these variables to be significantly positively correlated, thus suggesting a relationship. This finding, in conjunction with previous research documenting the relationship between hubristic pride and physical aggression (Cheng et al., 2010), may help support theories suggesting hubristic pride is a defense against implicit low self-esteem (Kernberg, 1975). Potentially being related to childhood trauma, it may also be used as a narcissistic self-regulation in defense against excessive shame (Tracey et al., 2009; Uji, Nagata, Kitamura, 2012). Additionally, research supports the notion that narcissism and unstable self-esteem are effective in predicting aggression as aggression is used as a method of defending a highly favorable view of the self against any source seeking to discredit that view (Baumeister, Bushman, & Campbell, 2000).

Previous research demonstrated a connection between childhood sexual abuse and state and trait shame (Dorahy & Clearwater, 2012). The importance of differentiating types of childhood trauma when examining moderating relationships is further supported by the consistent finding that despite all forms of childhood trauma being significantly related to physical aggression, child victims of physical abuse are at the highest risk for future aggressive behavior (Klimes-Dougan & Kistner, 1990; Rogosch et al., 1995; Toth et al., 2011). Further examination of the pathways from childhood experiences to personality types would help clarify

these issues. Specifically, we recommend investigation into how variables such as shame influence hubristic pride and associated cognitive schemas related to physical aggression in the context of differing types of childhood trauma.

In support of our 13<sup>th</sup> hypothesis, hubristic pride was found to be a significant moderator of the relationship between alcohol use and physical aggression. Higher levels of hubristic pride were associated with higher levels of physical aggression in the context of alcohol use. Previous research found strong associations between hubristic pride, physical aggression, and measures of self-control such as those pertaining to alcohol use (Carver et al., 2010). Our findings support and extend these findings to include the effect of alcohol use on physical aggression as a function of the level of hubristic pride.

Interestingly, the interaction between hubristic pride and alcohol use was only significant for the low and medium level pride groups when predicting physical aggression. This suggests that alcohol use functions differently for individuals in these groups in predicting physical aggression. The nonfinding for the high hubristic pride group may be a result of these individuals already experiencing higher levels of other issues relevant in violence risk prediction such as impulsivity, alcohol use, narcissism, antisocial traits, and psychopathy (Carver et al., 2010 Cheng et al., 2010; Weisfeld & Wendorf, 2000). In regard to those individuals in the low and medium groups alcohol use appeared to interact significantly with reported levels of hubristic pride in increasing the propensity toward physical aggression, possibly due to the disinhibition associated with alcohol use (Bushman, 1997). Thus, we identified hubristic pride as a predictive personality factor for physical aggression in the context of alcohol use. These results suggest hubristic pride could be the target of intervention and prevention programs especially among individuals with

alcohol use problems. Thus, future research should examine cognitive schemas associated with this type of pride that may contribute to an increased risk for physical aggression.

In support of our 14th hypothesis, hubristic pride moderated the relationship between drug use and physical aggression such that higher levels of hubristic pride were associated with higher levels of physical aggression in the context drug use. There is a paucity of research documenting a relationship between hubristic pride and drug use. However, our results indicated a significant positive association between these two variables. In addition to previous research documenting the relationship between hubristic pride and physical aggression (Cheng et al., 2010), these results reveal a significant interaction effect between drug use and hubristic pride on physical aggression.

Similar to the finding for alcohol use, the interaction between hubristic pride and drug use was only significant for the low and medium level pride groups when predicting physical aggression. Thus, the data suggested drug use functions differently for individuals in these groups in predicting physical aggression. The nonfinding concerning the moderating role in the high hubristic pride group may again be attributed to these individuals already demonstrating many empirically validated violence risk prediction factors, as discussed above (Drogin et al., 2011). This high hubristic pride group may simply be more likely to report higher levels of physical aggression regardless of drug use. For the individuals in the low and medium hubristic pride groups increased drug use also increased risk for physical aggression.

Previous research has documented that when examining drugs such as opiates, psychostimulants, phencyclidine, and benzodiazepines personality factors may be equally or even more important than pharmacological ones in risk for heightened violence (Hoaken & Stewart, 2003). This study also supports the notion that personality factors are important

(Benotsch, Jeffers, Snipes, Martin, & Koester, 2013) and specifically identifies hubristic pride as a risk factor for physical aggression in the context of drug use. Thus, as with alcohol use, hubristic pride and associated cognitive schemas could be the target of violence prevention and intervention programs especially among those with drug use problems.

### Authentic Pride

Contrary to the 15<sup>th</sup> hypothesis, authentic pride was not found to moderate the relationship between childhood trauma and physical aggression. Previous research supported the idea that there is a relationship between childhood trauma and physical aggression (Chen et al., 2012), but there is a lack of research connecting childhood trauma and authentic pride. In this regression analysis neither childhood trauma nor authentic pride demonstrated a main effect despite both being significantly correlated with one another and with physical aggression. Given the direction of the relationships, authentic pride appeared to be a protective factor in relation to both childhood trauma and physical aggression. However, there was no support for the notion that the relationship between childhood trauma and physical aggression was dependent upon authentic pride. It may be that the effects of childhood trauma and authentic pride cancel each other when predicting physical aggression. Future research should examine how the adverse effects of childhood trauma may be combated by authentic pride.

Perhaps people who have experienced childhood trauma have difficulty creating or maintain authentic pride. Although there is little research on the relationship between these two specific constructs, previous research suggests that individuals who have experienced physical abuse, sexual abuse, or neglect in childhood have significantly lower self-esteem scores (Reiland & Lauterbach, 2008). On the other hand, authentic pride is positively related to measures of self-control, adaptive achievement, and goal engagement (Carver et al., 2010). Because the current

study found a significant negative bivariate correlation between the two variables, it may be important to examine the mediating role of constructs such as shame and locus of control when attempting to elucidate the association between childhood trauma and authentic pride.

Partially supporting the 16<sup>th</sup> hypothesis, given the erroneous prediction of the effect's direction, we found authentic pride moderated the relationship between alcohol use and physical aggression. Surprisingly, higher levels of authentic pride were associated with higher levels of physical aggression in the context of alcohol use. Our results concerning authentic pride being significantly negatively associated with both alcohol use and physical aggression are consistent with previous findings (Carver et al., 2010). However, our results suggest that in the context of alcohol use authentic pride becomes a risk factor for physical aggression. This suggests that violence intervention techniques focused on building "healthy pride" may be ineffective in the context of alcohol use. Thus, interventions aimed at other factors such as cognitive schemas and hostile attributions may be more important and effective in the context of alcohol use.

Post-hoc analyses indicated that those high in authentic pride were more likely to report physical aggression in the context of alcohol use. Previous research has suggested that authentic pride is correlated with measures of self-control (Carver et al., 2010). However, the current data suggest that in the context of alcohol use the self-control of these individuals may diminish significantly due to the disinhibiting effects of alcohol, which is consistent with Bushman's (1997) findings. Individuals with low levels of authentic pride did not show a significant interaction with alcohol use in prediction of physical aggression as did those with medium and high scores. Although previous research found that alcohol reduces self-awareness (Hull, Young, & Jouriles, 1986), it is possible that individuals with higher rates of authentic pride may feel as if they have more to lose when confronted with a perceived slight.



Another possibility is that the authentic pride scale was tapping into a different construct. Specifically, recent research has suggested the scale may be assessing something else; that it does not assess pride deriving from one's natural ability but instead may correlate with narcissism and willingness to coerce others in order to get what one desires (Holbrook, Piazza, & Fessler, 2014). In our study authentic pride consistently displayed a negative relationship with physical aggression. However, when alcohol use was considered authentic pride appeared to become more of a risk factor. Both the medium and high-level pride groups significantly interacted with alcohol use and endorsed more physical aggression as use increased.

Authentic pride failed to reach significance as a moderator of the relationship between drug use and physical aggression. As with hubristic pride, there is a scarcity of research examining the relationship between authentic pride and drug use. Our results suggest a significant negative association between drug use and authentic pride, further suggesting authentic pride is a protective factor against drug use. In addition, as noted previously, authentic pride was also negatively associated with physical aggression, and this is suggestive of a protective mechanism that is also consistent with previous research (Carver et al., 2010). However, the moderation analysis trended toward significance and suggested that in the context of drug use authentic pride may yet be a risk factor for physical aggression.

Importantly, during this analysis there were no main effects for either authentic pride or drug use, and the data did not suggest a strong interaction between these two variables when predicting physical aggression. It is possible that the effects of authentic pride may differ depending on the type of drug(s) used and thus this is a potential avenue for future research. However, similar to the findings with alcohol use, the disinhibiting effects of substances may

counteract any protective function of authentic pride. This would suggest that “healthy pride” may not be a beneficial target of violence reduction or prevention in the context of drug use.

### Combined Models

In exploratory analyses analyzing all variables and their moderating roles simultaneously, none of the models reached statistical significance. These findings thus failed to support the 18<sup>th</sup> through the 22<sup>nd</sup> hypotheses. However, it is important to note that all moderator variables and alcohol use were found to have main effects in all models. Interestingly, neither drug use nor childhood trauma reached significance as an independent predictor of physical aggression in moderation analyses. These results suggest that the moderator variables (i.e. impulsivity, venturesomeness, and hubristic pride) and alcohol use are robust risk factors for physical aggression even when analyzed simultaneously. In addition, authentic pride was identified as a protective factor outside the context of substance use.

Interestingly, concerning the 23<sup>rd</sup> hypothesis the model trended toward significance and the only interaction term that was significant was the moderating effect of authentic pride on the relationship between drug use and physical aggression. Given the trend toward significance in both combined models and independent models, this relationship appears to warrant further research in hopes of elucidating the effect of authentic pride on physical aggression in the context of drug use.

### Implications

These findings have implications for treatment and violence prevention along with the identification of risk factors. Specifically, our findings support the idea that the deleterious psychological effects of substance use can be compounded by personality factors such as authentic and hubristic pride. Specifically, both authentic pride and hubristic pride, when

combined with higher levels of alcohol, are associated with increased levels of reported physical aggression. This pattern was similar for hubristic pride and drug use. Given the current findings, it appears that pride is simply pride in the context of alcohol and drug use, and regardless of whether it is considered healthy or not it may be deemed worth fighting for by individuals so affected. These results imply that hubristic pride along with drug use should be targets of both risk assessments and interventions. Given the findings with authentic pride, when focusing on these we need to target attributions and cognitions as simply encouraging someone to have more “healthy pride” may likely be ineffective at reducing physical aggression in the context of drug use and alcohol use.

Our data also support previous research documenting the following as risk factors for physical aggression: alcohol use, drug use, childhood trauma, venturesomeness, impulsivity, and hubristic pride (Begić & Jokić-Begić, 2002; Cheng et al., 2010; Hatfield & Dula, 2014; Joireman et al., 2003; Murray et al., 2008). The findings also supported the idea that authentic pride is negatively correlated with physical aggression; however, this factor appears to become a risk factor when combined with alcohol use.

Acts of violence have been found to be largely the result of individuals attempting to save “face” (i.e., save one’s reputation; avoid or reduce embarrassment) when confronted with an insult or slight (Shaver & Mikulincer, 2011). Given this assumption and in conjunction with findings of the current study, it is important to assess target variables such as pride when trying to reduce the risk for physically aggressive behaviors in the context of alcohol and drug use. From a social learning theory perspective, individuals may be rewarded with praise and status conferral for some physically aggressive behaviors (Geen, 2001). It is therefore apparent that a reciprocal relationship may exist between pride and physical aggression that is then compounded

in the context of substance use. The current findings suggest a need for prevention programs aimed at changing social paradigms so as to more clearly confer praise and status on those who model nonviolent, problem-solving, and peaceful conflict resolution skills.

From this perspective it is important for treatments and interventions to target the normative beliefs that may underlie an individual's aggressive behaviors (Huesmann & Guerra, 1997), most of which may begin forming in childhood (Bandura, 1973). Such social schemas, if learned, can be targeted through multicomponent cognitive-behavioral therapy and education programs that focus on multiple mediators of aggression (Blake & Hamrin, 2007). Specifically, this could be achieved through targeting arousal management, providing social skills training, and ultimately engaging in cognitive restructuring of the schemas (Feindler, 1995) related to physical aggression, pride, substance use, and substance expectancies.

Cognitive restructuring may help address maladaptive behavior patterns that are formed early in life. Such techniques have been used to treat survivors of trauma by helping them recognize, challenge, and change negative and unhelpful thoughts and emotions related to their history of maltreatment (Mueser, Rosenberg, & Rosenberg, 2009). Shifting, or refocusing, maladaptive values is a component in techniques used to treat unhealthy personality characteristics such as those associated with unrealistic pride and narcissistic traits to help the client make a significant investments in the lives of others (Buechler, 2010). Cognitive restructuring appears to be adaptable to even difficult-to-treat populations. For example, it has been found to positively influence inmate institutional behavior and disciplinary infractions through the reduction of both assaults and refusals to obey direct orders (Baro, 1999).

Results from the current study suggest that interventions addressing pride and associated schemas may be warranted in violence reduction. Clinicians may find cognitive-behavioral

techniques such as arousal management, social skills training, and cognitive restructuring used to target pride's impact on physical aggression useful adjuncts in addition to existing empirically supported treatments for substance use disorders that include medications for alcohol use such as naltrexone and medications for drug use like methadone as well as cognitive-behavioral approaches, community reinforcement, contingency management, 12-step models, and motivational interviewing (Nathan & Gorman, 2007).

### Limitations and Future Research

Although our study had many strengths, the results must be viewed in the context of some limitations. Cross-sectional data such as the data collected in this study preclude the establishment of causal relationships and includes the possibility of bidirectionality of associations between variables. For example, reciprocal relationships may exist between personality traits, substance use, and physical aggression. Future research should use a longitudinal design in order to address the causal mechanisms in understanding physical aggression. Although our sample size was relatively large, its diversity was limited and this diminishes the ability to generalize results to other racial and ethnic groups as well as to noncollege students. Future research should include diverse samples (potentially those with higher rates of physical aggression), explore potential moderating roles of socio-cultural factors, and examine potential mediators of these relationships such as locus of control or shame.

Furthermore, issues of measurement must also be scrutinized. This study used self-report questionnaires examining aggressive behaviors, childhood maltreatment, and substance use that may be subject to demand characteristics and social desirability (Becker, 2007). Future research should also examine more closely the subscales of the childhood trauma questionnaire and their various relationships to these variables. Again, another potential limit to our method is that

participants may be more inaccurate in recalling remote experiences from childhood as opposed to say symptoms or behaviors within more recent memory. It has also been suggested that memory distortions may be more prominent with regard to abuse or trauma history (Buckley et al., 2000).

In addition, when looking at college students it may also be informative to analyze other types of aggression such as verbal aggression as these may have higher rates and varying relationships to the proposed moderator variables. Finally, as mentioned in the discussion section, it may be helpful to examine various types of drugs when examining risk factors for physical aggression, as cocaine and amphetamines have demonstrated different effects in previous research (Drogin et al., 2011).

### Conclusion

Violence has been identified as a public health concern (United States Department of Justice, 2010) and although there are many well-validated empirical risk factors used in risk assessments (Drogin et al., 2011), a better understanding is needed to effectively prevent and treat the problem. Given high prevalence rates of physical aggression in young adults (Chermack et al., 2000), this appears to be an important population to study. Alcohol and drug use along with a history of childhood traumatic events have been demonstrated to be associated with physical aggression (Begić & Jokić-Begić, 2002; Murray et al., 2008). Understanding how these risk factors may interact with personality factors such as impulsivity, venturesomeness, and pride can help inform prevention education, risk assessments, and treatment. Overall, our findings contribute to on-going research attempting to elucidate the meaning and impact of different types of pride (Holbrook et al., 2014; Tracy & Robins, 2014) and hopefully aid in research attempting

to understand the causes and manifestations of human aggression and violence (Shaver & Mikulincer, 2011).

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