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AN ANALYSIS OF PSYCHOPATHY AND SADISM

ARTICULATING THE HEART OF DARKNESS: A PSYCHOMETRIC AND
BEHAVIORAL ANALYSIS OF THE RELATIONSHIP BETWEEN PSYCHOPATHY AND
SADISM

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor
of Philosophy at Virginia Commonwealth University

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Abstract

Psychopathy and sadism, personality constructs largely characterized by antagonistic tendencies, share several similar traits and behaviors such as cruelty, callousness, and antisocial behavior. Due to this overlap, it remains unclear whether sadism is simply a facet of psychopathy, or they represent distinct but related constructs. The degree of overlap and distinction between these traits has yet to be empirically and thoroughly examined; therefore, the present project had two overarching interconnected aims: 1) Investigate the degree of *psychometric* overlap between psychopathy and sadism, and 2) examine potential *behavioral* distinctions between psychopathy and sadism. In Study 1, participants completed an online battery of questionnaires including the most commonly used sadism measures to examine its factor structure and nomological network (Aim 1). A four-factor structure that was *independent from* psychopathy was ultimately identified. In Study 2, participants completed an aggression task online to examine the ways in which psychopathy and sadism differentially (or similarly) relate to aggressive behavior (Aim 2). The egocentricity and antisocial facets of psychopathy were positively related to aggression during the task. Contrary to hypotheses, none of the sadism factors were related to task aggression, yet there was a significant interaction between Factor 2 of sadism and condition. This project has the potential to provide valuable insights to theories of antagonistic personality traits and improve clinical and forensic assessment procedures.

Introduction

Psychopathy and sadism are two highly antagonistic constellations of personality traits. In fact, they are two of the most severe risk factors for criminal offending and aggression across a wide range of contexts, rendering these traits major public health concerns (Foulkes, 2019; Kiehl & Hoffman, 2011; Reidy et al., 2015). Despite the risks they pose, these constructs are relatively poorly understood. Among both lay populations and scholars, it is unclear how much of psychopathy can be accounted for by sadism and vice versa. It is possible they reflect largely similar underlying constructs such that distinguishing between the two becomes unnecessary or redundant. However, there is also a distinct possibility that sadism and psychopathy *reflect two distinct constructs*, each with its own defining features, factor structures, and nomological networks, which would have important implications for theory, practice, and policy. Yet, this remains largely unexamined.

Antagonism: The Common Core of Psychopathy and Sadism

Antagonism-Agreeableness is a bipolar personality trait dimension defined within the Five-Factor Model (FFM) framework – a theory of personality stating that all aspects of personality can be boiled down to five basic traits: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Lynam & Miller, 2019). Although most commonly discussed in terms of the FFM, the Agreeableness-Antagonism trait domain is ubiquitous across virtually every model of general and pathological personality (Lynam & Miller, 2019). Even within the new addition of the Diagnostic and Statistical Manual (DSM-5; American Psychiatric Association, 2013), which has made the transition to a dimensional trait-based approach to diagnosing

personality disorders, Antagonism features prominently in the newly agreed-upon four factor structure of pathological personality (Lynam & Miller, 2019; Widiger, Livesley, & Clark, 2009; Widiger & Mullins-Sweatt, 2009).

Agreeableness refers to individual differences in the motivation and ability to maintain positive or harmonious social relations across a variety of interpersonal contexts (Lynam & Miller, 2019). Antagonism, as the polar opposite of Agreeableness, instead describes a hostile orientation towards others and lack of motivation or ability to maintain positive social relationships in the interest of attaining other goals (Graziano & Tobin, 2019; Lynam & Miller, 2019). Antagonism can further be characterized by five specific factors: callousness, immorality, distrust, combativeness, and arrogance (Lynam & Miller, 2019; Vize, Collison, Miller, & Lynam, 2019). Such characteristics render this trait dimension one of the strongest predictors of a variety of externalizing behaviors including, importantly, all forms of aggression and antisocial behavior (Jones, Miller, & Lynam, 2011; Lynam & Miller, 2019; Vize, Collison, Miller, & Lynam, 2019). Unsurprisingly then, antagonism is also a major (and arguably the most important) contributor to 'dark' personality traits, particularly psychopathy (Lynam & Miller, 2019).

Psychopathy

Psychopathy is a multifaceted personality construct that has been defined and characterized in numerous different ways by many scholars (Cleckley, 1982; Hare, 2003). Indeed, the theoretical models of the psychopathic personality have become so abundant and incongruous with one another that the task of conceptualizing and measuring psychopathy has become a daunting one. Following suit, the existing measures of psychopathy (highly important tools for assessing risk for aggression and

violence) are wide-ranging and inconsistent with one another in item content and factor structure. Moreover, the vast majority of the items across psychopathy measures do not account for the conceptual and empirical overlap the construct has with other antagonistic personality traits, especially sadism. Although problematic, the measures themselves are not the sole issue – the theoretical models of psychopathy on which they were based are equally at fault.

Conceptualizing and measuring psychopathy. Several prominent models of psychopathy exist, all of which tend to categorize the construct's traits in terms of affective deficits and behavioral issues. Despite this common goal, multiple different measures of psychopathy have been developed for virtually every theoretical model. One of the first models of psychopathy, which spurred the development of the Hare's Psychopathy Checklist – Revised (the 'gold standard' of psychopathy assessment in forensic populations), originally proposed two general factors of traits (Hare, 1991). Factor 1 describes the interpersonal- and affect-based traits such as callousness and interpersonal manipulation, whereas Factor 2 describes the lifestyle-based traits such as impulsivity and antisocial behavior. Although since its conception, validation studies and factor analyses of the PCL-R (and related measures) have evinced three- and four-factor structures as well (Hare, 2003; Hare & Neumann, 2006). These different structures tend to simply separate Factor 1 into egocentric traits versus callous traits and separate Factor 2 into antisocial traits versus impulsivity. Essentially these different factor structures differ in *specificity* rather than *content*.

There is clearly much controversy surrounding which model of psychopathy is superior and captures the most essential and defining features of the construct. For

instance, some argue that the antisocial aspects of psychopathy are integral to the construct, whereas others oppose inclusion of these features in psychopathy assessment altogether, as they may in fact simply be downstream effects or byproducts of the 'core' personality features such as interpersonal manipulation and callousness (Thomson, 2019). This scholarly disagreement and inconsistency surrounding the conceptualization of psychopathy is also reflected in the development and use of self-report psychopathy measures. Two of the first self-report measures of psychopathy, adapted from the PCL-R for community and student populations, were Hare's Self-Report Psychopathy Scale (SRP) and Levenson's Self-Report Psychopathy (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995; Williams, Nathanson, & Paulhus, 2003). Both the SRP and LSRP have a two-factor structure capturing Interpersonal-Affective traits and Impulsive-Antisocial traits, reflecting the original structure of the PCL-R. The two measures differ at the facet level however. The SRP can be further deconstructed into four separate facets of traits, whereas the LSRP was originally designed with a two-factor structure (i.e., Primary and Secondary psychopathy). However, recent validation studies of the LSRP have determined that a three-factor (Egocentric, Callousness, Antisocial) structure is actually optimal, as evidenced by improved model fit compared to the two-factor structure (Christian, & Sellbom, 2016; Sellbom, 2011). This structure is also in line with the more recently developed Triarchic Model of psychopathy, which focuses less on criminality and more on personality and behavioral features of psychopathy (e.g., impulsivity, fearlessness; Berg, Lilienfeld, & Sellbom, 2017; Lilienfeld & Andrews, 1996; Lilienfeld et al., 2012). The Triarchic Model identifies three facets that parallel those of the LSRP facets. Boldness, similar to LSRP's Egocentric, is

characterized by thrill-seeking behavior and resilience to emotional distress (Drislane, Patrick, & Arsal, 2014; Patrick & Drislane, 2015). Meanness, virtually equivalent to LSRP's Callousness, can be defined by a deficit in empathy and cruelty towards others (Drislane, Patrick, & Arsal, 2014; Patrick & Drislane, 2015). And Disinhibition, similar to LSRP's Antisocial, can be characterized by impulsivity, hostility, and emotional dysregulation (Drislane, Patrick, & Arsal, 2014; Patrick & Drislane, 2015). The LSRP's three-factor model is able to capture the nuances of more complex models (e.g., four-, five-, or eight-factor models) within three easily comprehensible factors in one of the oldest and well-validated measures of psychopathy. For these reasons, this model seems to provide the most parsimonious, yet comprehensive definition of psychopathy to date.

Despite the strengths of the LSRP and its three-factor model of psychopathy, the relationship between psychopathic and sadistic traits remains a highly ambiguous aspect of this literature. That is, it is unclear whether sadism reflects a unique construct from psychopathy (and thus deserving of its own validated assessment tool) or if it is simply a facet of psychopathy. As this distinction has direct implications for the assessment of both constructs, it is an area in dire need of further research.

Sadism

The concept of sadism can be dated back to the French Revolutionary Era, but the term sadism originated from the writings (and eventual acts) of Marquis de Sade, which referred specifically to the sexual pleasure derived from causing others pain. In fact, for years it was unclear whether sadism existed at all because criminal offenders and other violent individuals were reticent to admit actually enjoying the acts they

committed (Baumeister, 1997). However, decades of research have demonstrated the existence of sadism across a wide variety of populations and has even been proposed to be one of the root causes of human evil (Baumeister, 1997; Foulkes, 2019).

Generally, sadism refers to a dimensional personality trait characterized by the derivation of pleasure from another's physical or psychological pain (Baumeister, 1997; Chester, DeWall, & Enjaian, 2019; Foulkes, 2019; O'Meara, Davies, & Hammond, 2011). Sadism, much like psychopathy, comes in many different forms (e.g., sexual sadism versus everyday sadism, direct versus indirect). Yet, theories and measures of sadism rarely take into account these various sub-types. Furthermore, sadistic tendencies are often viewed as a part of the psychopathic personality (or at least as a sub-facet of psychopathy) despite the lack of items that actually assess sadism across psychopathy measurement tools/. Moreover, the distinction between sexual sadism and everyday sadism, and their relationship with psychopathy, are not well delineated.

Sexual sadism. Historically, sexual sadism has been viewed strictly as a pathology, listed as a disorder in the Diagnostic and Statistical Manual (DSM), the manual used for diagnosing mental illnesses (American Psychiatric Association, 2013; Foulkes, 2019). First classified as a personality disorder, Sadistic Personality Disorder was removed after the third edition of the DSM (American Psychiatric Association, 2013; Foulkes, 2019). Sexual sadism has since been reinstated in the current edition of the DSM-5, classified as a paraphilic disorder (American Psychiatric Association, 2013; Foulkes, 2019). Despite this focus on sexual sadism as a pathology, it has become more widely accepted within the last few decades as a phenomenon that is not specific to forensic populations but that also exists within the general population (Foulkes, 2019;

Weierstall, & Giebel, 2017). After removing sexual sadism from the lens of psychopathology, studies estimate that approximately 20% of the general population has admitted to having sexual fantasies about causing pain to others and about 5% of the general population has reported engaging in sexual sadistic behavior (Foulkes, 2019) – both of which are likely to be conservative estimates. In contrast, a recent representative study of 215 US offenders found that about 5% of offenders exhibited definitive evidence of sexual sadism and about 8% showed some evidence (DeLisi et al., 2016). Despite the relative prevalence of sexual sadism in the general population, it remains a grossly understudied construct, in part due to lack of appropriate assessment tools. That is, the vast majority of the research on the construct has been conducted exclusively in forensic and clinical contexts using measures intended to capture aspects of the crime committed (e.g., evidence of gratuitous violence or wounding of victim). Therefore, of particular interest to the current study is the degree of overlap sexual sadism in the general population shares with its counterpart, everyday sadism, as well as with psychopathy (Foulkes, 2019).

Everyday sadism. Counter to the common misconception held for many years that sadism was specific to offenders or only applied to sexual contexts, a subclinical form of more commonplace sadistic tendencies has been identified (e.g., enjoyment of violent movies or video games, police/military brutality) and is now referred to as everyday sadism (Baumeister, 1997; Buckels, Jones, & Paulhus, 2013; Foulkes, 2019). Everyday sadism has been associated with a wide variety of aggressive and antisocial behaviors including bullying (van Geel, Goemans, Toprak & Vedder, 2017), online ‘trolling’ (Buckels, Trapnell, & Paulhus, 2014; March & Marrington, 2019), and provoked

and unprovoked white noise blasts (Buckels, Jones, & Paulhus, 2013). Despite this growth in the sadism literature in the recent past, everyday sadism remains a relatively enigmatic construct, for similar reasons as sexual sadism – namely, assessment issues.

Measuring sadism. Similar to psychopathy assessment, the current measures of sadism are not ideal and create difficulties in drawing conclusions. Much of this difficulty can be attributed to the lack of clarity regarding whether sadism is a unidimensional or multidimensional construct. That is, some measures of sadism, such as the Comprehensive Assessment of Sadistic Tendencies (CAST), assess separate factors of the construct (e.g., vicarious, physical, verbal). In this case, the vicarious sadism subscale assesses enjoyment of gratuitously violent movies or video games, whereas the physical and verbal sadism subscales assess enjoyment of causing physical harm to others (e.g., hitting someone) or verbally assaulting another person (e.g., making fun of peers), respectively. Yet, other sadism measures identify different factors of sadism. For example, the Assessment of Sadistic Personality (ASP) assesses unempathic traits (e.g., “I’d lie to someone to make them upset”), subjugation (e.g., “I never get tired of pushing people around”), and pleasure-seeking (e.g., “I enjoy humiliating others”) tendencies. Not all measures of sadism take into consideration this multifaceted nature of the construct. For instance, the Short Sadistic Impulse Scale (SSIS) uses only ten items to assess sadism as a *unidimensional* construct.

Validation studies on sadism measures are rare thus creating even more uncertainty over which measure and which factor structure is most appropriate to use. Perhaps the most glaring issue, however, is that many items included in sadism measures do not actually tap into the single most important defining feature of the

sadistic personality: the experience of hedonic pleasure in response to another being's pain or suffering (Foulkes, 2019). Further compounding these ambiguities in measurement is that the degree of overlap between sadism and psychopathy remains unclear (e.g., is this experience of hedonic pleasure unique to sadism?) and virtually impossible to definitively test with just one or two self-report measures. Moreover, sadism is often predictive of aggression and antisocial behavior *independent* of the variance it shares with other 'dark' personality traits, indicating that sadism may in fact be a distinct construct from these other personality constructs, particularly psychopathy. (Chabrol, Van Leeuwen, Rodgers, and Séjourné, 2009; Reidy, Zeichner, & Seibert, 2011). Yet, this is not reflected in current assessment tools as they either do not measure sadism as a separate construct or they do not assess it adequately (i.e., not actually capturing hedonic pleasure of others' pain). Furthermore, there is a lack of consensus regarding the structure of sadism (e.g., a multifaceted versus unitary construct), which may result in inaccurate assessment.

Overlap and Distinctions Between Psychopathy and Sadism

The Dark Triad is a constellation of traits that includes psychopathy, narcissism, and Machiavellianism (Furnham et al., 2013; Paulhus, 2014). In recent years, the Dark Triad has been expanded to include sadism, thus forming a Dark Tetrad (Johnson, Plouffe, & Saklofske, 2019). The Dark Triad and Dark Tetrad have been under a great deal of scrutiny due to the large amount of variance shared by their constituent traits, some suggesting that the four traits ultimately make up a single latent factor known as the "dark factor" or "D" (Moshagen, Zettler, & Hilbig, 2019). Yet, psychopathy tends to account for the vast majority of the shared variance, at least among the Dark Triad

(Vize, Collison, Miller, & Lynam, 2019). The degree of overlap shared between psychopathy and sadism is less clear. Although there is substantial overlap between psychopathy and sadism, there is also evidence to suggest that they are two distinct constructs (Foulkes, 2019; O'Connell & Marcus, 2019).

Psychopathy and sadism share many similarities (Figure 1), chief among these is the propensity for violence and other antisocial behaviors (Chester, DeWall, & Enjaian, 2019; DeLisi et al., 2016; Foulkes, 2019; Kaseweter, Rose, Bednarik, & Woodworth, 2019). Both of these personality constructs are also robustly linked unprovoked aggression (Reidy, Zeichner, & Seibert, 2011). In addition to behavioral similarities, there is also overlap in their personality profiles. Callousness, cruelty, and a lack of empathic distress are highly typical of both sadism and psychopathy (Baumeister, 1997; Kasewater, Rose, Bednarik, & Woodworth, 2020). These particular traits contribute to the high risk for aggressive behavior often observed in these individuals. Despite these similarities, there is also a substantial amount of evidence showing that sadism and psychopathy are overlapping but distinct constructs, often emerging as *independent* predictors of aggressive behavior (O'Connell & Marcus, 2019; Reidy, Zeichner, & Seibert, 2011). One likely explanation for this phenomenon is the underlying motivation for aggressive behavior for sadism versus psychopathy. That is, it is likely that people high in sadism harm others solely for the pleasure of doing so whereas people high in psychopathy may harm others to gain some external reward (e.g., money, status).

Among the distinctions that can be made between psychopathy and sadism is the affective state linked to aggressive behavior and the goal motivating the aggressive act. Individuals high in psychopathy are often willing to exert effort to perpetuate

aggressive acts if there is an opportunity to obtain an external reward (e.g., money, elevating status), whereas for individuals high in sadism, the reward is the aggressive act itself (Reidy, Zeichner, & Seibert, 2011). Additionally, a specific affective state is not necessarily linked to aggression in psychopathy in order for people high in this construct to perpetrate the aggressive act, whereas self-reported positive affect during acts of aggression is virtually invariably a core feature of sadism (Chester, DeWall, & Enjaian, 2019). Indeed, the experience of hedonic pleasure from another's suffering is the single most important aspect of the sadistic personality (Baumeister, 1997; Foulkes, 2019). In contrast, individuals high in psychopathy seem to be ambivalent or apathetic toward others pain. However, this distinction has yet to be established empirically. Moreover, the research that does exist on this topic focuses in large part on sexual sadism and incarcerated individuals (Darjee, 2019; Hare & Neumann, 2009; Mokros, Osterheider, Hucker, & Nitschke, 2011; Myers, Chan, Vo, & Lazarou, 2010). Given that modern research has demonstrated that neither psychopathy nor sadism exists in such a vacuum, it is necessary to better articulate the construct of sadism and how it relates to psychopathy. Furthermore, psychopathy is a well-defined construct with several valid measures that essentially assess the same general clusters of factors, whereas sadism is less well-defined and each existent measure of sadism operationalizes it slightly differently (e.g., single factor versus multidimensional). In order to accurately articulate

the overlap and differences between psychopathy and sadism, it is imperative to develop a better understanding of the sadism construct.

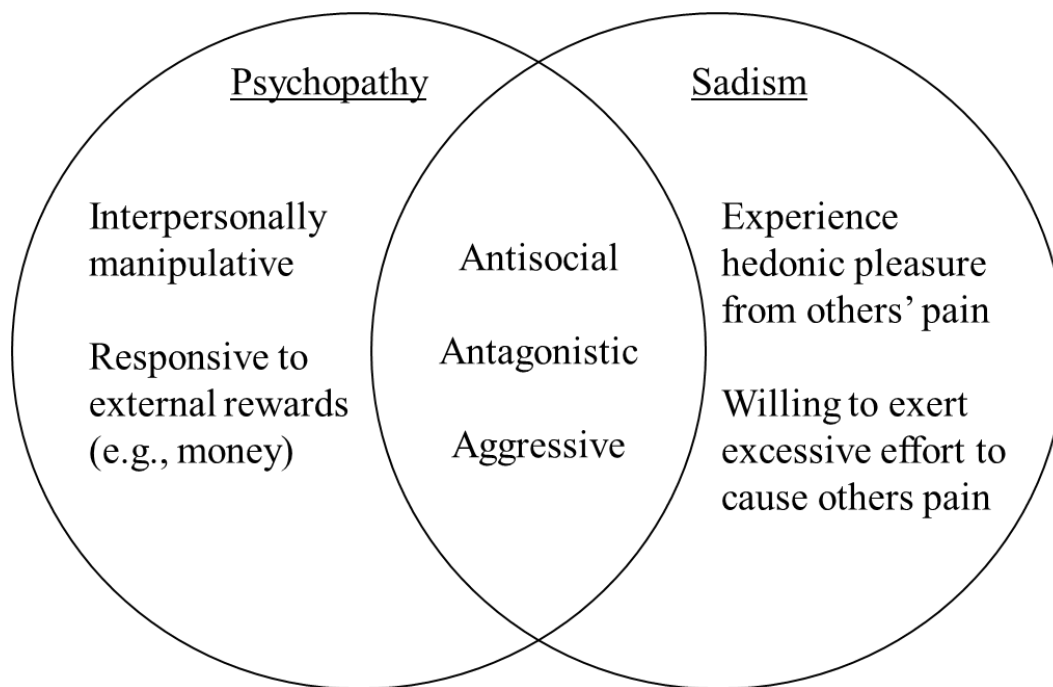


Figure 1. Venn diagram depicting the known conceptual similarities and differences between psychopathy and sadism.

Current Studies

The purpose of the current set of studies is to investigate the differences and commonalities between psychopathy and sadism at both the psychometric and behavioral levels. To that end, I propose two broad aims:

Aim 1a: Identify the defining features and factor structure of sadism.

Aim 1b: Identify the extent of the variance sadism shares with psychopathy.

Aim 2: Determine whether sadism can be distinguished from psychopathy via the underlying motivation for aggression.

Study 1: Identifying the Factor Structure of Sadism

Study 1 addressed the first set of aims (1a and 1b) outlined above. That is, the goal of Study 1 was to identify the defining features and factor structure of sadism as well as the extent of the variance it shares with psychopathy. Specifically, I predicted that sadism would evince a three-factor structure composed of direct physical sadism, sexual sadism, and indirect sadism. I further predicted that these sadism factors would exhibit positive but *weak* correlations with psychopathy factors, suggesting the presence of two distinct but related constructs. To test these hypotheses, I first conducted an online study in which a large sample of participants completed a battery of personality questionnaires (described below).

Method

Participants

Participants were 504 individuals (79.6% female; Age: $M = 19.40$, $SD = 1.14$, range = 18 - 21) recruited from an introductory psychology subject pool. Simulation studies and recommendations set forth by Meyers, Gamst, and Guarino (2016) indicate that due to the number of variables in the planned factor analysis and the number of expected factors, at least 500 participants were required to sufficiently power the analysis. Only participants who were at least 18 years old were recruited. No additional inclusion or exclusion criteria were stipulated.

Measures

Affective and Cognitive Empathy Measure (ACME). The ACME (Vachon, & Lynam, 2016) is a measure of trait empathy. The 36-item measure is divided into three subscales that assess different facets of empathy: cognitive empathy (e.g., “I usually understand why people feel the way they do.”), affective resonance (e.g., “It makes me

feel good to help someone in need.”), and affective dissonance (e.g., “I love watching people get angry.”). Items are rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The ACME will be used both as a measure of discriminant validity and convergent validity because sadism should be unrelated or negatively related to empathic distress (i.e., affective resonance) and cognitive empathy, yet positively related to affective *dissonance*.

Assessment of Sadistic Personality (ASP). The ASP (Plouffe, Saklofske, & Smith, 2017) is a 9-item measure that assesses three aspects of sadism: subjugation (e.g., “I never get tired of pushing people around”), pleasure-seeking (e.g., “Being mean to others can be exciting”), and unempathic (e.g., “I think about hurting people who irritate me”). Items are rated along a 5-point scale from strongly disagree to strongly agree.

Benign Masochism Scale. As a measure of convergent validity, we administered The Benign Masochism Scale (Rozin, Guilloty, Fincherz, Rozinx, Tsukayama, 2013). This is a 26-item measure that assesses individual differences in enjoyment of engaging in painful behaviors (e.g., eating hot sauce, watching sad movies). Participants are asked to rate each item according to how much they enjoy the given behavior along a 0 (not at all) to 100 (as much as I like anything) scale. The Masochism Scale will be used as a measure of convergent validity because masochistic tendencies should significantly correlate with sadistic tendencies but not with psychopathic tendencies.

Brief Aggression Questionnaire (BAQ). The 12-item Brief Aggression Questionnaire (Webster et al., 2014) will be used to assess trait aggression. The BAQ

has a four-factor structure: anger (e.g., “Sometimes I fly off the handle for no good reason”), hostility (e.g., “When people are especially nice, I wonder what they want”), physical aggression (e.g., “Given enough provocation, I may hit another person”), and verbal aggression (e.g., “When people annoy me, I may tell them what I think of them”). Items are rated along a 1 (strongly disagree) to 7 (strongly agree) scale. This will be used as a convergent validity measure as sadism should be strongly correlated with trait aggression.

Comprehensive Assessment of Sadistic Traits (CAST). The CAST is a widely used 18-item measure of sadistic traits (Buckels & Paulhus, 2013). The measure is categorized in terms of three types of sadistic tendencies: direct physical sadism (e.g., “I enjoy tormenting people”), direct verbal sadism (e.g., “I enjoy making jokes at the expense of others”), and vicarious sadism (e.g., “In video games, I like the realistic blood spurts”). Items are rated along a 7-point scale from strongly disagree to strongly agree.

International Personality Item Pool (IPIP-60). The IPIP-60 (Maples-Keller et al., 2010) is a condensed 60-item version of the original IPIP-NEO-300, a comprehensive measure of the Five Factor Model of personality. In the interest of brevity, I will only administer the 12-item Agreeableness subscale as a measure of convergent validity as there is substantial evidence to suggest that the Agreeableness-Antagonism trait domain is the common core of sadism and psychopathy.

Levenson Self-Report Psychopathy Scale (LSRP). The LSRP (Levenson, Kiehl, & Fitzpatrick, 1995) is a 26-item measure of psychopathic traits and tendencies. Participants rate each item along a 4-point Likert scale (1 = Strongly disagree to 4 =

Strongly agree). The measure is composed of two subscales: interpersonal-affective (originally called primary psychopathy; e.g., “I enjoy manipulating other people’s feelings”) and impulsive-antisocial (originally called secondary psychopathy; e.g., “I quickly lose interest in tasks I start”). The former assesses traits such as callousness and manipulation whereas the latter assesses traits more associated with sensation seeking and impulsivity (Levenson, Kiehl, & Fitzpatrick, 1995). More recent factor analyses of the LSRP have found that a 3-facet model including egocentric (10 items; e.g., “Looking out for myself is my top priority”), callousness (4 items; e.g., “Love is overrated”), and antisocial (5 items; e.g., “I find myself in the same kinds of trouble, time after time”) subscales tends to fit the data better (Salekin, Chen, Sellbom, Lester, & MacDougall, 2014). This 3-facet structure was employed in the current study.

Short Sadistic Impulse Scale (SSIS). The SSIS (O’Meara, Davies, & Hammond, 2011) is a 10-item measure that assesses sadistic tendencies. Items are rated along a 1 (strongly disagree) to 5 (strongly agree) scale (e.g., “I enjoy seeing people hurt”).

Spitefulness Scale. As a measure of convergent validity for the new sadism factors, we administered the Spitefulness Scale. This 17-item measure assesses individual differences in spitefulness (Marcus, Zeigler-Hill, Mercer, & Norris, 2014). Items are rated along a 1 (strongly disagree) to 5 (strongly agree) scale. We expected sadism to be positively associated with spitefulness, but did not have hypotheses regarding the sadism factors.

Triarchic Psychopathy Measure (Tri-PM). To examine whether our findings are specific to the measurement approach inherent to the LSRP, we also administered the

Tri-PM. The Tri-PM is a well-validated measure of psychopathy (Hall, Drislane, Patrick, Morano, Lilienfeld, & Poythress, 2014; Patrick, 2010) that specifically delineates three constructs central to the socially dysfunctional aspects of the disorder: boldness (e.g., “I would enjoy skydiving”), meanness (e.g., “I don’t mind if someone I dislike gets hurt”), and disinhibition (e.g., “I often act on immediate needs”). The 58-item measure are rated along a scale ranging from 1 (False) to 4 (True).

Procedure

After digitally signing an informed consent form, all participants completed a battery of personality questionnaires online via Qualtrics survey software. As the structure of items across all three sadism measures are already consistent with one another, they were not re-worded (e.g., “I have made fun of people so that they know I am in control” [ASP], “I was purposely mean to some people in high school” [CAST]). All sadism items were rated along the same 1 (strongly agree) to 5 (strongly disagree) scale. After completing the questionnaires, participants received a debriefing form explaining the purpose of the study and were granted course credit for their participation.

Statistical Analyses

To assess any missingness patterns in the data and determine whether data imputation would be necessary, Little’s MCAR test was conducted in SPSS. Little’s MCAR test evaluates the probability that data are missing completely at random (MCAR). The test was significant, $\chi^2(1121) = 1289.149$, $p < .001$, indicating that data were likely *not* MCAR. However, less than 10% of data were missing (3.4 – 5%, depending on the variable), therefore imputation was not employed.

Hierarchical Exploratory Factor Analysis

A “bass-ackwards” factor analysis (Goldberg, 2006; Waller, 2007) was conducted using the psych package (v. 1.9.12; Revelle, 2019) for R statistical software (version 3.6; R Core Team, 2015). The bass-ackwards (BA) analysis, also known as a hierarchical exploratory factor analysis, takes a top-down approach, running a series of exploratory factor analyses (EFAs) from 1 to n factors and organizes them in a hierarchical manner based on the factor correlations. The factor solutions were examined using a promax rotation of the factor loading matrix. Items with factor loadings below $|.40|$ or with cross-factor loadings within $|.20|$ were removed from further analysis.

Results

Descriptive Statistics

Descriptive statistics for all variables can be found in Table 1. Sadism factors 1 and 2 showed substantial skew. The aggregate sadism factor scores were log-transformed and the transformed versions were used in all subsequent analyses.

Table 1. Descriptive statistics for all variables in Study 1.

Variable	<i>N</i>	<i>M</i> (<i>SD</i>)	Range	Skew	α
ACME – Cognitive	479	3.88 (0.66)	1.33 – 5.00	-0.39	.88
ACME – Resonance	477	4.34 (0.64)	2.17 – 5.00	-1.02	.87
ACME – Dissonance	479	4.32 (0.74)	1.67 – 5.00	-1.15	.91
ASP – Unempathic	487	1.19 (0.37)	1.00 – 4.17	3.66	.76
ASP – Subjugation	487	1.35 (0.46)	1.00 – 4.17	2.13	.68
ASP – Pleasure Seeking	487	1.16 (0.38)	1.00 – 4.38	4.50	.88
BAQ – Physical	485	3.67 (1.64)	1.00 – 7.00	0.04	.77
BAQ – Verbal	485	4.28 (1.31)	1.00 – 7.00	-0.28	.62
BAQ – Anger	485	3.41 (1.00)	1.00 – 7.00	0.16	.69
BAQ – Hostility	485	4.27 (1.35)	1.00 – 7.00	-0.50	.64
BAQ Average	485	3.91 (0.98)	1.00 – 6.50	-0.33	.77
BMS – Masochism	487	2.64 (0.76)	1.00 – 5.00	0.03	.71
CAST – Verbal	487	1.87 (0.85)	1.00 – 4.50	0.81	.80
CAST – Physical	487	1.57 (0.58)	1.20 – 4.80	1.97	.72

CAST – Vicarious	487	1.96 (0.77)	1.00 – 4.57	1.04	.79
IPIP – Agreeableness	486	4.00 (0.54)	2.17 – 5.00	-0.60	.79
LSRP – Egocentricity	497	1.97 (0.51)	1.00 – 4.00	0.49	.80
LSRP – Callousness	497	1.65 (0.47)	1.00 – 3.25	0.50	.34
LSRP - Antisocial	497	2.27 (0.56)	1.00 – 4.00	0.34	.63
Sadism Factor 1	487	1.13 (0.33)	1.00 – 4.18	5.10 (3.24)	.90
Sadism Factor 2	487	1.55 (0.54)	1.22 – 4.56	2.59 (1.60)	.86
Sadism Factor 3	487	1.79 (0.81)	1.00 – 4.67	0.88	.81
Sadism Factor 4	487	1.78 (0.90)	1.00 – 5.00	1.18	.82
SS – Spitefulness	487	1.73 (0.45)	1.00 – 3.88	1.45	.79
SSIS – Sadism	487	1.51 (0.54)	1.10 – 4.40	2.32	.77
TPM – Disinhibition	490	1.85 (0.41)	1.10 – 3.25	0.63	.83
TPM – Meanness	490	1.66 (0.41)	1.00 – 3.05	0.74	.86
TPM – Boldness	490	2.46 (0.41)	1.21 – 3.84	-0.15	.78
VS – Vengeance	487	3.03 (1.03)	1.05 – 6.60	0.46	.92

Note. Log-transformed skewness values are noted in parentheses. *N* = sample size, *M*

= mean, *SD* = standard deviation, ACME = Affective and Cognitive Measure of

Empathy, ASP = Assessment of Sadistic Personality, BAQ = Brief Aggression

Questionnaire, CAST = Comprehensive Assessment of Sadistic Tendencies, LSRP =

Levenson's Self-Report Psychopathy Scale, BMS = Benign Masochism Scale, SS =

Spitefulness Scale, SSIS = Short Sadistic Impulse Scale, TPM = Triarchic Psychopathy

Measure, VS = Vengeance Scale.

Bass-Ackwards Factor Analysis

First, I conducted bivariate correlations on all individual sadism items from the CAST, ASP, and SSIS to identify those items that are excessively correlated ($r > .65$; Crowe, Lynam, & Miller, 2017). Items 10 and 11 from the ASP ($r = .65$), items 13 and 14 from the ASP ($r = .66$), items 2 and 3 ($r = .73$) from the SSIS, and items 2 and 4 from the SSIS ($r = .65$) showed excessive correlations and therefore the item from each of these pairs that showed the greatest number of redundancies (i.e., ASP item 10, ASP item 13, and SSIS item 2) was removed from further analysis (see Supplemental

Document 1 for full correlations). From the remaining items, I extracted one unrotated factor to determine how well the items loaded onto the underlying latent trait (i.e., Antagonism). I removed two additional items (CAST item 16 [-.13] and SSIS item 8 [-.15]) that did not load adequately onto this general Antagonism factor (factor loadings < 0.30), as this indicates unrepresentativeness of the underlying trait dimension (Crowe, Lynam, & Miller, 2017; Osborne, Costello, & Kellow, 2008).

To determine the number of factors to specify in the BA factor analysis, I employed a parallel analysis and examined the scree plot of eigenvalues (Horn, 1965). Horn's parallel analysis extracted four factors (Table 2, Figure 2). I then conducted the BA analysis using the number of factors derived from the parallel analysis (i.e., four factors) to determine the specific factor structure (Figure 3; Supplemental Document 2 Tables S1 – S4 for factor loadings at each level of the BA analysis). However, due to the small eigenvalue (1.01 where the retention threshold is 1.00) of the fourth factor, I also conducted a BA analysis specifying three factors. The results from both BA analyses are presented in Figures 3 and 4. The four-factor model demonstrated generally better fit compared to the three-factor model, but because the difference was marginal (e.g., RMSR difference of .01) I conducted follow-up confirmatory factor analyses and chi-squared difference tests, as well as examined the factors' correlations with other variables, to determine whether this was in fact the optimal model or if the better fit was due to model overspecification.

Table 2. Results from Horn's parallel analysis.

Component	Adjusted Eigenvalue	Unadjusted Eigenvalue	Estimated Bias
1	13.70	16.32	2.62
2	3.76	6.01	2.25

3	1.79	3.76	1.98
4	1.01	2.76	1.75

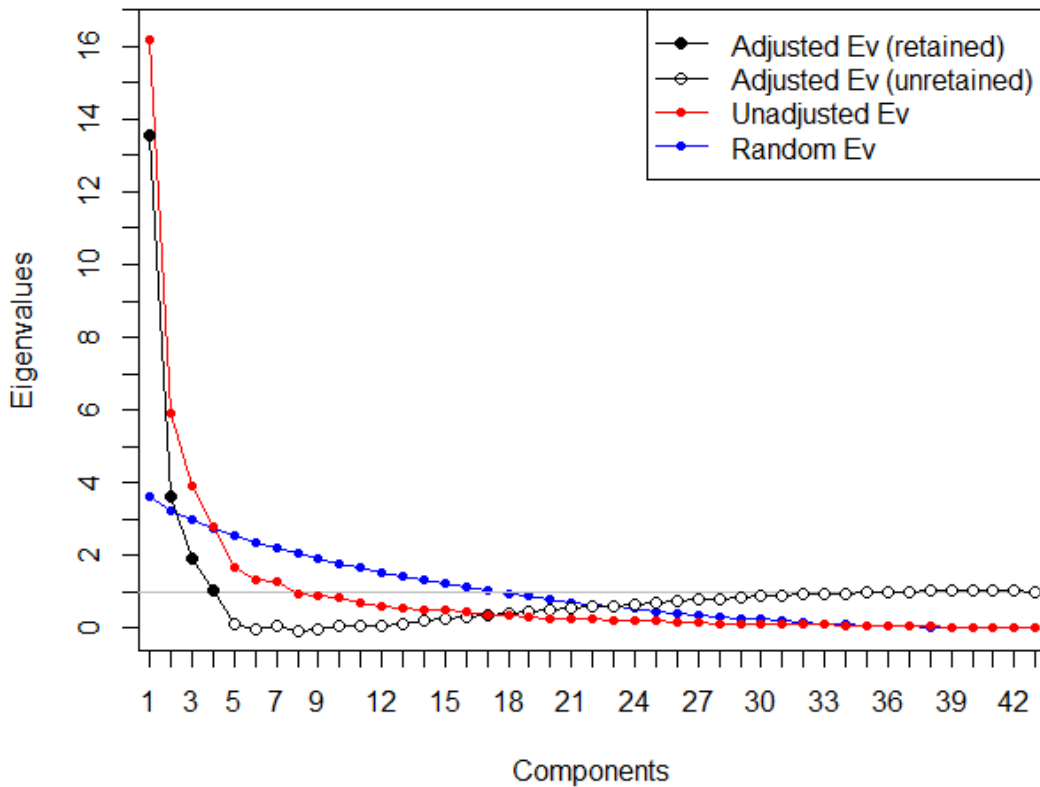


Figure 2. Scree plot of eigenvalues from Horn's parallel analysis. Ev = eigenvalues.

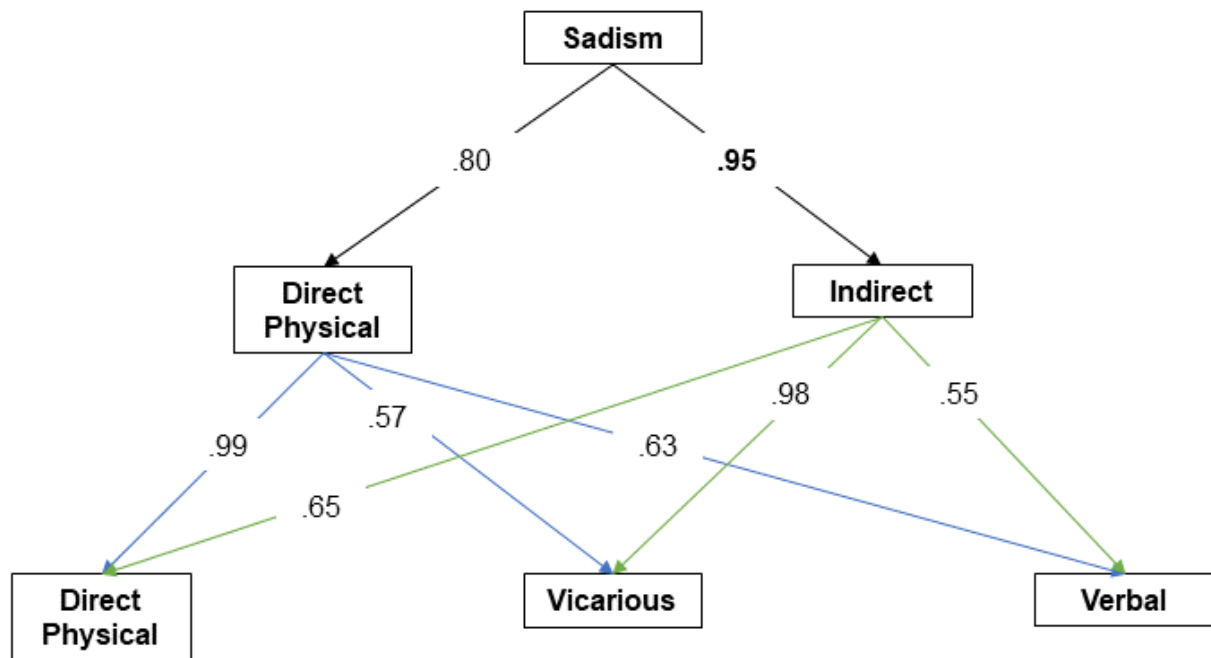


Figure 3. The results from the three-factor bassackwards (BA) analysis.

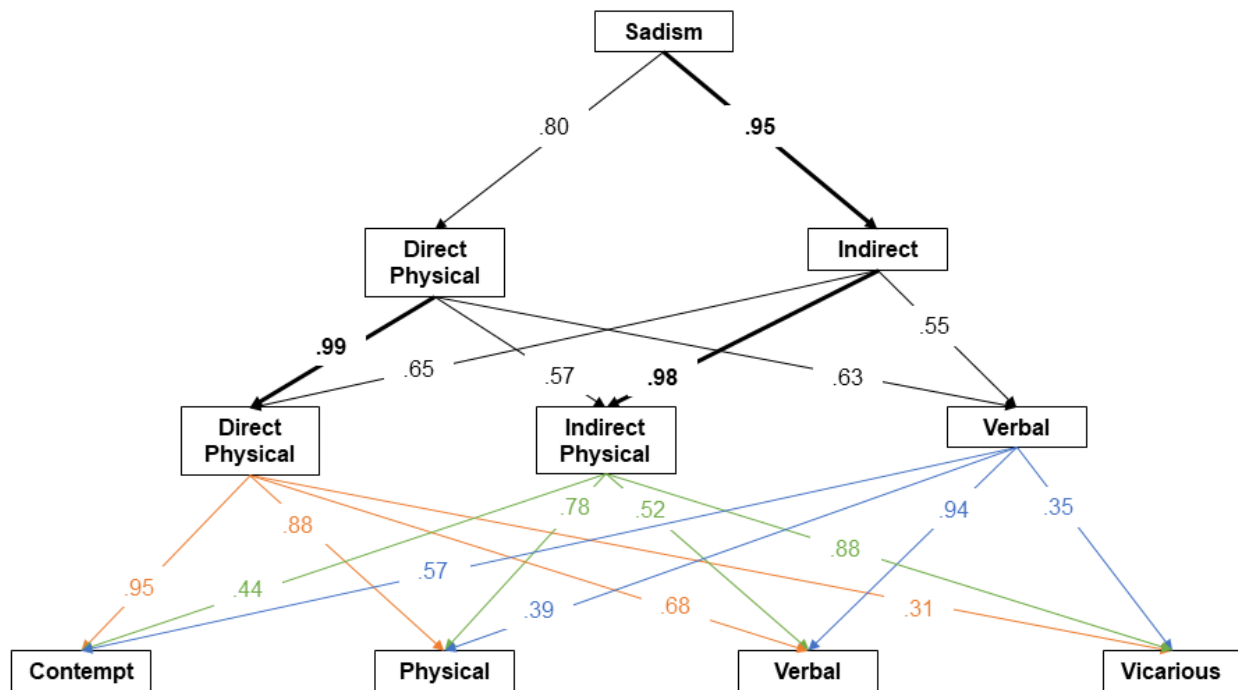


Figure 4. The results from the four-factor bassackwards (BA) analysis.

Confirmatory Factor Analysis. To determine how well the derived factor structure fit the data compared to other possible factor structures, I conducted confirmatory factor analyses (CFA) for the four-factor and three-factor models. The results of the CFAs revealed that the four-factor model fit the data best overall (Table 3). Results from a chi square difference test supported this conclusion (Table 4). Therefore, the four-factor structure was ultimately retained (Appendix J for full item list).

Table 3. Model fit statistics for the four-factor and three-factor sadism models.

Model	χ^2 (df)	CFI	TLI	AIC	BIC	RMSEA	SRMR
4 factors	1340.34 (428)	0.87	0.86	26185.87	26469.83	0.07	0.06
3 factors	1961.63 (461)	0.80	0.78	26886.37	27165.87	0.08	0.07

Note. RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean Square Residual, AIC = Akaike Inference Criterion, BIC = Bayesian Inference Criterion, CFI = Comparative Fit Index, TLI = Tucker-Lewis Index.

Table 4. Results of the chi-square difference tests for the four-factor and three-factor sadism models.

Model Comparison	χ^2 (df)	AIC	BIC	$\chi^2 \Delta$	df Δ	<i>p</i>
Four Factors	1340.30 (428)	26186	26470			
Three Factors	1961.60 (461)	26886	27166	621.29	33	<.001***

Note. AIC = Akaike Inference Criterion, BIC = Bayesian Inference Criterion, df = degrees of freedom.

The first factor was comprised of 11 items from the ASP (two from the Subjugation subscale, five from the Pleasure-Seeking subscale, and four from the Unempathic subscale). The second factor was a composition of seven SSIS items, one ASP item (Unempathic subscale), and one CAST item (nine items total). The third factor contained five items from the CAST (verbal sadism subscale). Finally, the fourth factor was comprised of five items from the CAST (vicarious sadism subscale). Reliability analyses indicated that these four factors showed generally improved reliability compared to the original sadism measures (Table 5). Full factor loadings and fit statistics from the CFA are reported in Supplemental Document 3.

Table 5. Reliability values (alphas and omegas) for the backwards (BA) analysis-derived sadism factors and the factors from the original measures.

	F1	F2	F3	F4	ASP (U)	ASP (S)	ASP (PS)	CAST (P)	CAST (Ve)	CAST (Vi)	SSIS
α	0.90	0.86	0.81	0.82	0.76	0.68	0.88	0.63	0.71	0.62	0.75
Ω	0.90	0.87	0.83	0.82	0.76	0.66	0.89	0.73	0.73	0.70	0.76
AVE	0.45	0.43	0.46	0.48	0.36	0.25	0.51	0.42	0.32	0.36	0.29

Note. F = factor, α = Cronbach's alpha, Ω = McDonald's omega, AVE = average variance extracted, ASP = Assessment of Sadistic Personality, U = Unempathic, S = Subjugation, PS = Pleasure Seeking, CAST = Comprehensive Assessment of Sadistic Tendencies, P = Physical, Ve = Verbal, Vi = Vicarious, SSIS = Short Sadistic Impulse Scale.

Validity Checks

To assess the convergent validity of the derived sadism factors I conducted bivariate correlations among the four sadism factors and several existing measures of sadism (the CAST, ASP, and SSIS). The four factors exhibited strong positive correlations with the sadism factors measured by the CAST, ASP, and SSIS, indicating good convergent validity (Figure 5). Sadism factor 3 exhibited a near-perfect correlation (.97) with the verbal sadism subscale of the CAST and only moderate correlations with the remaining measures of sadism, whereas sadism factor 4 showed a similar near-

perfect correlation (.96) with the vicarious sadism subscale of the CAST but moderate correlations with the remaining sadism measures.

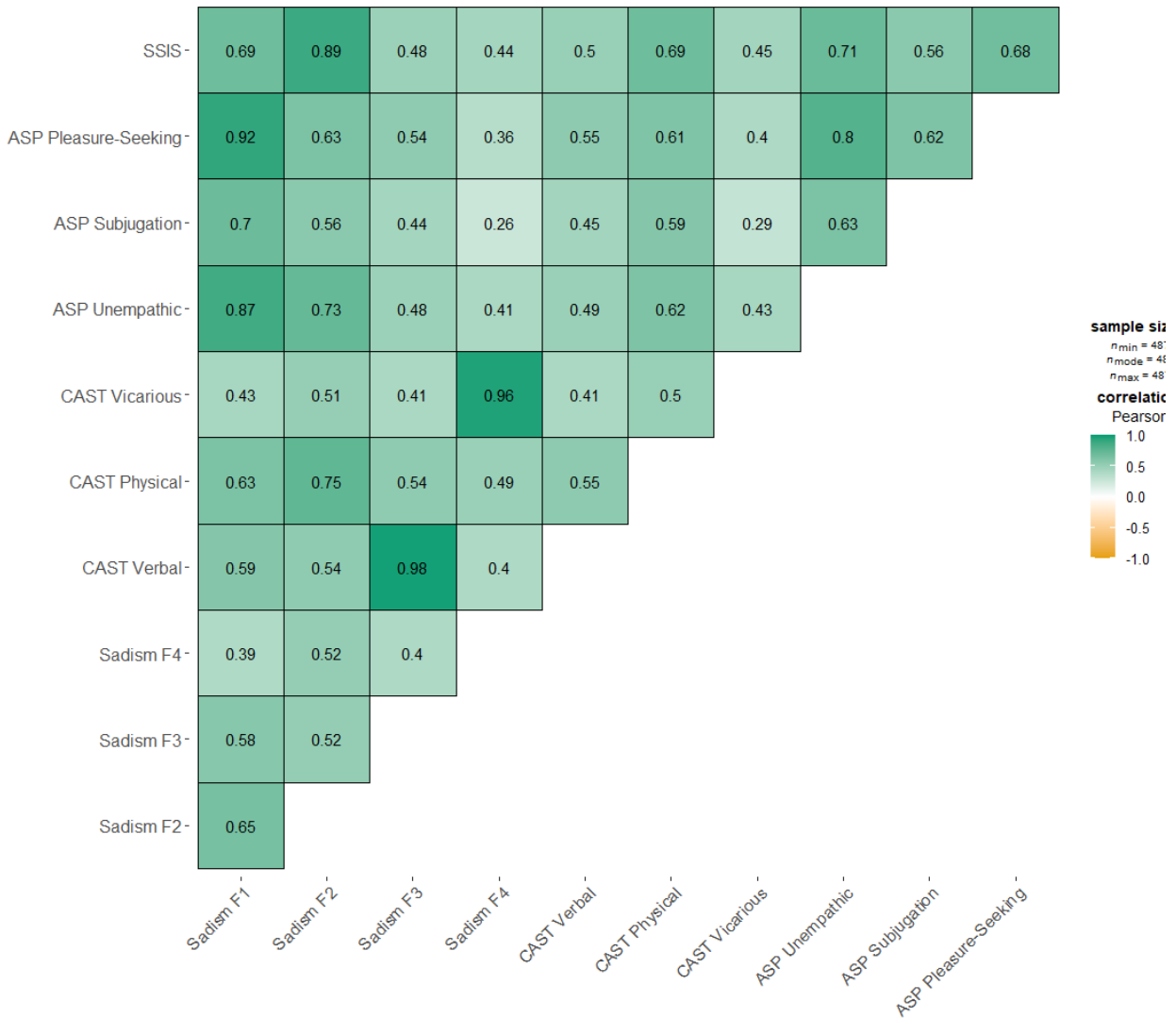
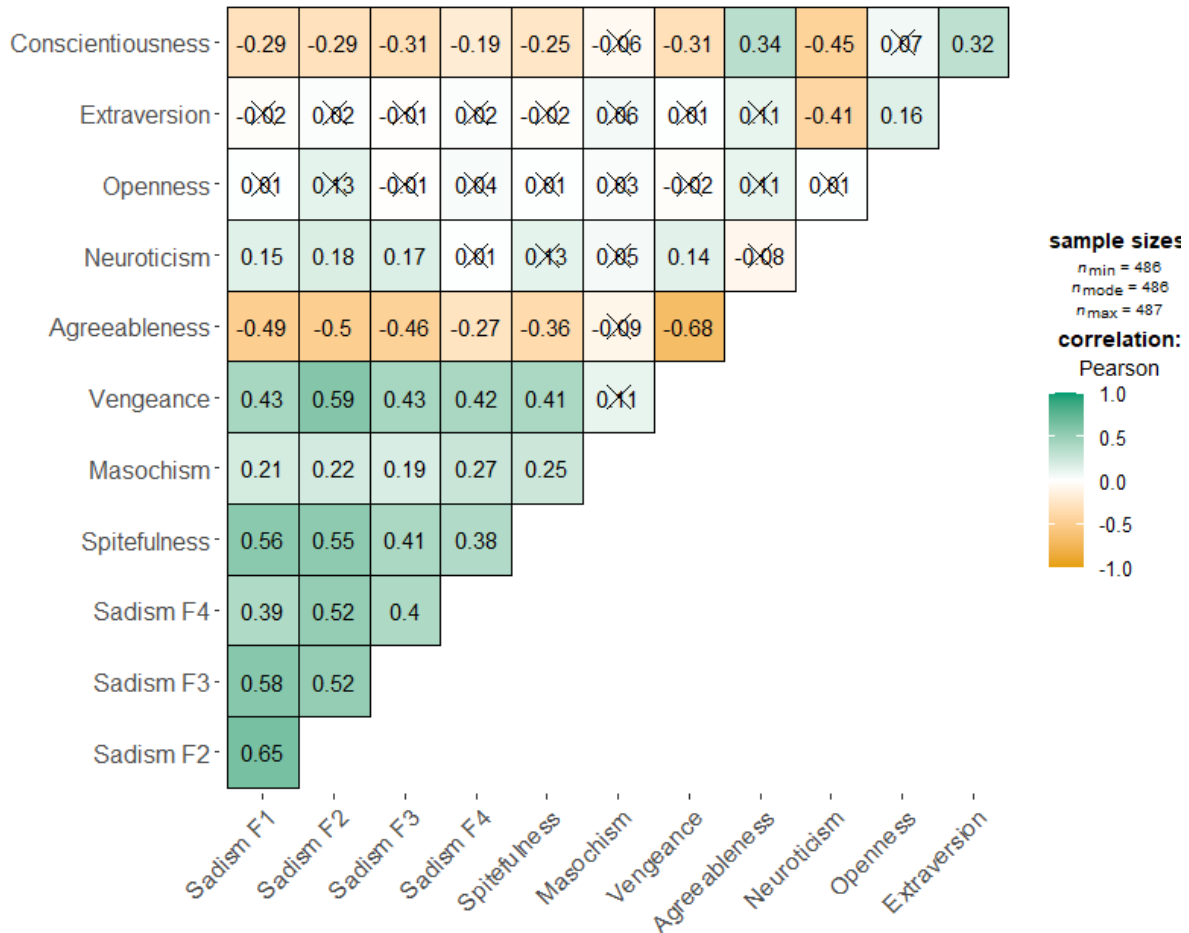


Figure 5. Bivariate correlations among the bassackwards (BA) analysis-derived sadism factors and the sadism factors determined by the CAST, ASP, and SSIS.

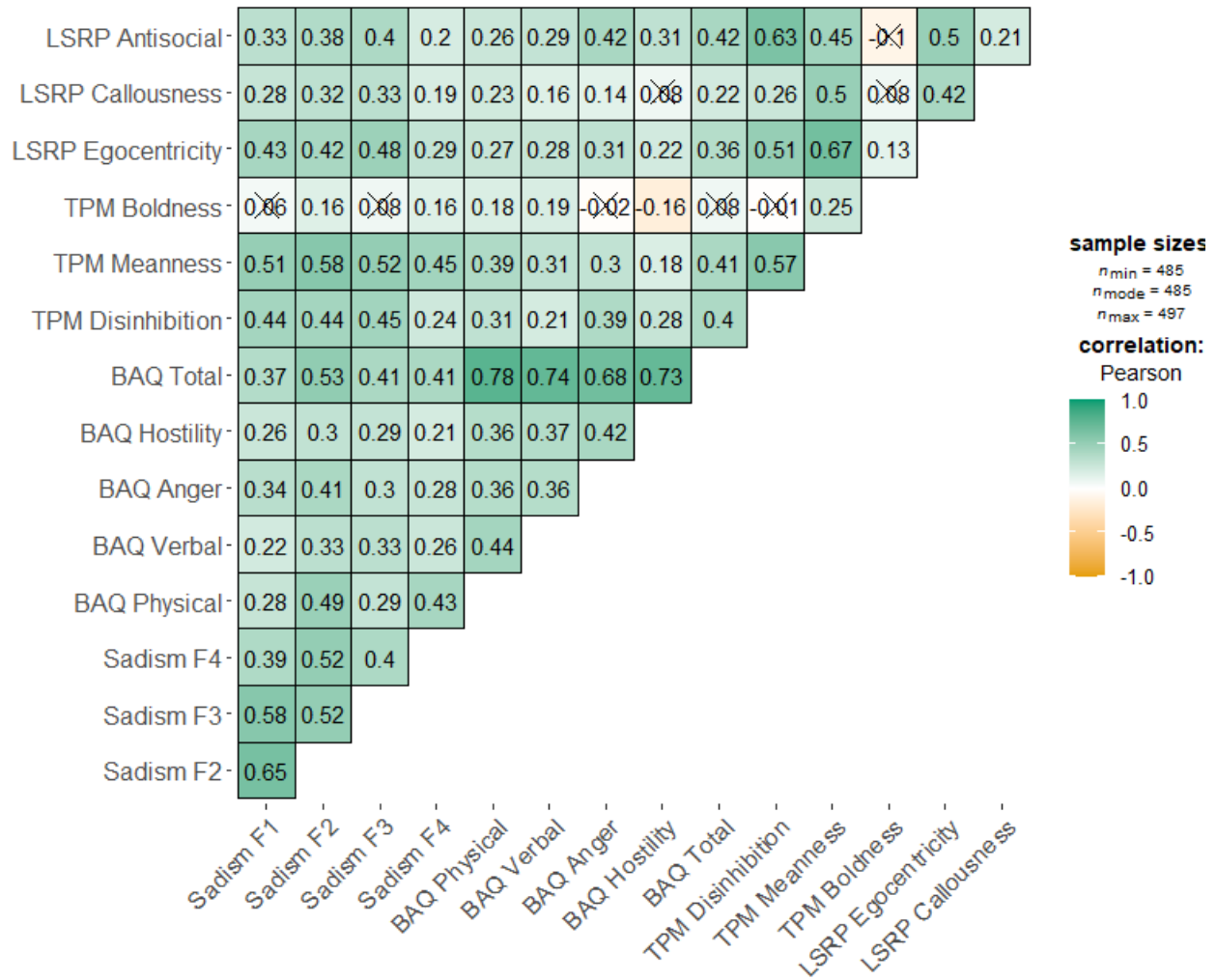
To assess the construct validity of the derived sadism factors I conducted bivariate correlations among the four factors and measures of aggression (BPAQ), psychopathy (LSRP and Tri-PM), spitefulness, benign masochism and FFM agreeableness (IPIP-60). As expected, all four of the sadism factors were significantly and positively correlated with physical aggression, verbal aggression, the anger and

hostility subscales of the BPAQ, spitefulness, and benign masochism, yet significantly *negatively* associated with agreeableness (Figures 6 and 7). Also as expected, all four sadism factors were significantly positively (albeit weakly) associated with the LSRP-specified psychopathy factors (i.e., egocentricity, callousness, and antisocial) as well as the Tri-PM derived psychopathy factors (i.e., boldness, meanness, and disinhibition) with only one exception (Figure 7). The first sadism factor was not significantly associated with the Tri-PM boldness psychopathy factor. Sadism factor three was also weakly (but significantly) correlated with boldness. The fourth sadism factor showed the weakest correlation with agreeableness.



X = non-significant at $p < 0.05$ (Adjustment: Holm)

Figure 6. Bivariate correlations between the four new sadism factors and measures of spitefulness, masochism, vengeance, and the Big Five Personality traits.

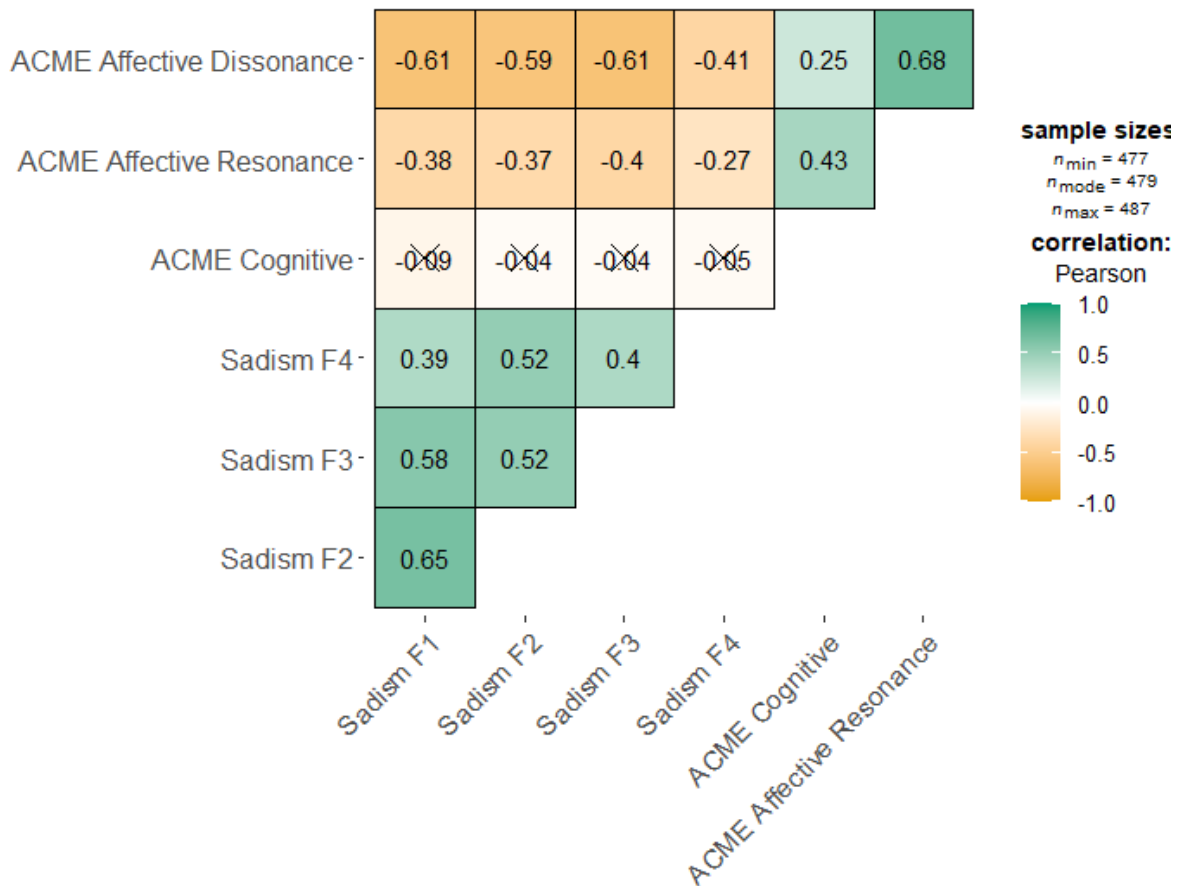


X = non-significant at $p < 0.05$ (Adjustment: Holm)

Figure 7. Bivariate correlations between the four new sadism factors and measures of psychopathy (Triarchic Personality Measure [TPM] and Levenson's Self-Report Psychopathy Scale [LSRP]) and trait aggression (Brief Aggression Questionnaire [BAQ]).

AN ANALYSIS OF PSYCHOPATHY AND SADISM

To assess the discriminant validity of the derived sadism factors I conducted bivariate correlations among the four sadism factors and the ACME, a measure of empathy. Cognitive empathy was weakly but significantly negatively correlated with the first sadism factor, but was *not* significantly correlated with the remaining three sadism factors. Contrary to expectations, both affective resonance and affective dissonance were *strongly* negatively correlated with all four sadism factors (Figure 8). The magnitude of these correlations differed such that sadism factor 3 evinced a stronger correlation with both affective resonance and affective dissonance.



X = non-significant at $p < 0.05$ (Adjustment: Holm)

Figure 8. Bivariate correlations among the bassackwards (BA) analysis-derived sadism factors and the empathy facets measured by the Affective and Cognitive Measure of Empathy (ACME).

Sentiment Analysis. To further examine the content of the derived factors I conducted an exploratory sentiment analysis on the items that comprised the four novel factors using the *syuzhet* (Jockers, 2015) package for R statistical software (version 3.6; R Core Team, 2015). Sentiment analysis is a classification tool that uses natural language processing and machine learning techniques to extract emotion or opinion related information from text (Jockers, 2015; Yadollahi, Shahraki, & Zaiane, 2017).

The predominant emotions captured by Factor 1 were anger, sadness, and to a lesser extent disgust (Figure 9, panel A). For Factor 2, anger was again the predominant emotion, but was followed by equal percentages of sadness and fear (Figure 9, panel B). The predominant emotions captured by Factor 3 were joy and anticipation, followed closely by trust (Figure 9, panel C). Last, Factor 4 was characterized mainly by joy, fear, and anticipation, in equal parts. These were closely followed by trust and anger (Figure 9, panel D).

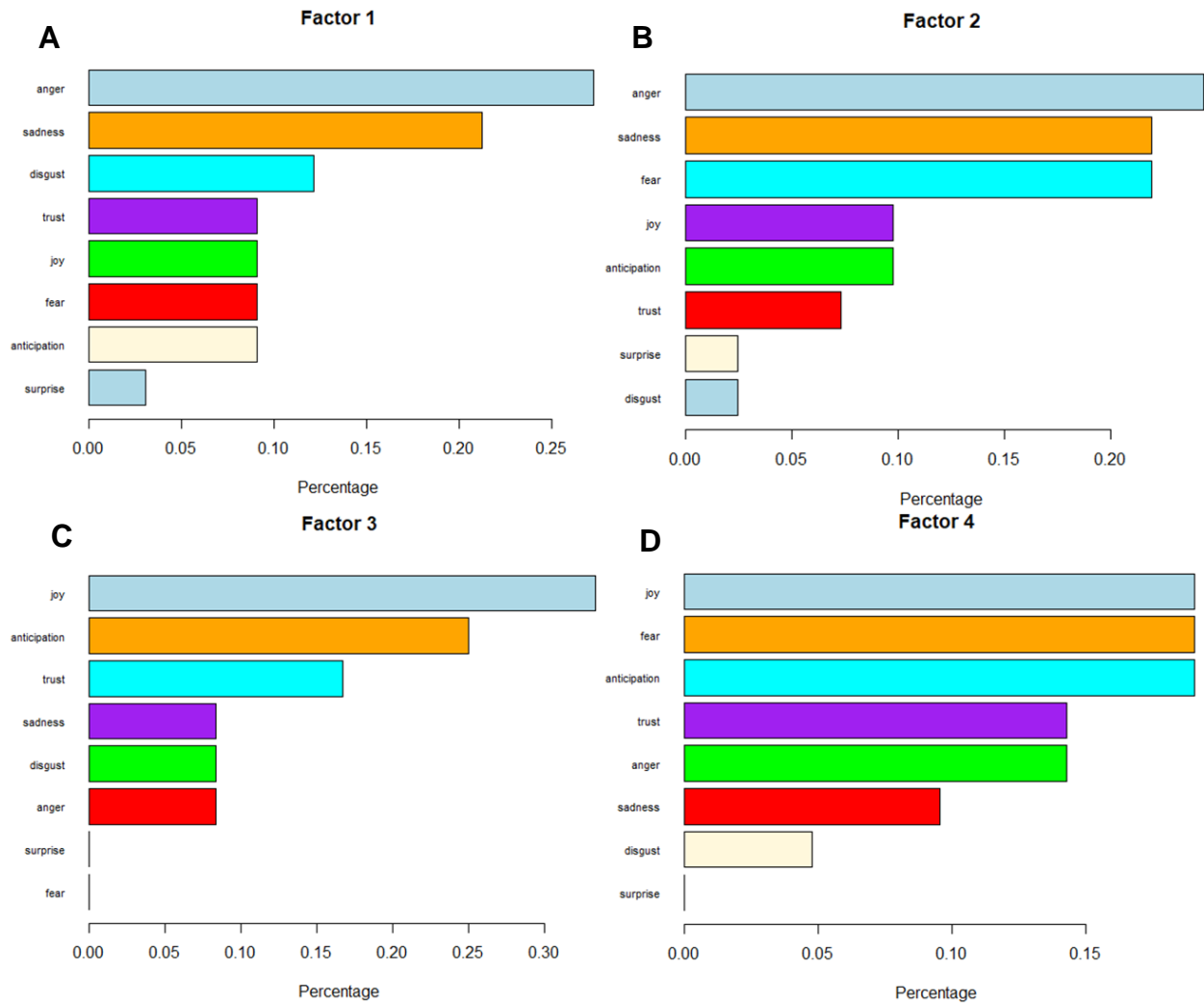


Figure 9. Sentiment analysis results for each of the four sadism factors. Bars indicate the percentage of each emotion captured by the backwards (BA) analysis-derived sadism factor 1 (panel A), factor 2 (panel B), factor 3 (panel C), and factor 4 (panel D).

Study 1 Discussion

The results of Study 1 partially supported my hypotheses. Specifically, I predicted a three-factor structure of sadism, yet a four-factor structure ultimately emerged. Follow-up CFA, correlations, and sentiment analyses suggested that these four factors were sufficiently distinct from one another and exhibited improved psychometric properties compared to the original sadism measures.

At the second level of the BA analysis (following the definition of the single factor at level one), two factors emerged whose item content and factor loadings indicated that they mapped onto the distinction between *direct sadism* and *indirect sadism*. At the third level of the BA analysis, the first factor remained intact (unchanged from level 2) but the indirect sadism factor branched out into two separate factors encapsulating *verbal sadism* and *vicarious sadism*. Finally, at the fourth and final level of the BA analysis, the verbal and vicarious remained unchanged from level 3, whereas the direct sadism factor branched into two factors resulting in a total of four factors.

The content of Factors 3 and 4 clearly suggested that they captured verbal sadism and vicarious sadism, respectively, as they were composed solely of the relevant items from the CAST. The exploratory sentiment analysis indicated that joy and anticipation were the primary emotions inherent to both of these factors, which aligns well with the major theoretical models of sadism emphasizing the importance of experiencing *hedonic pleasure* (Foulkes, 2019). Factor 4 was also distinguished by *fear*, a rather distressful emotion. This again makes sense as the experience of pleasure from others' distress lies at the core of sadism (Foulkes, 2019).

Factors 1 and 2 were less clearly defined. The item content of both of these factors showed marked anger and sadness, but were distinguishable by the presence of fear (in Factor 2) versus disgust (in Factor 1). These two factors were further differentiated by their relationships with other variables. Specifically, Factor 2 showed the strongest relationship with aggression (e.g., BAQ physical subscale, CAST physical subscale) and psychopathy (e.g., all three TriPM subscales), whereas Factor 1 was *not* associated with TriPM boldness. Factor 1 was also the only factor related (negatively) to

cognitive empathy. Factor 2 most closely resembled a physical sadism or general sadism factor, whereas the content and analyses of Factor 1 suggested that it may capture *contemptuous* sadism (i.e., enjoyment of hurting others because they possess a high degree of contempt for and disgust toward others). However, it is also possible that Factor 1 encapsulates an emotion regulation factor (i.e., causing others pain as a means to improve one's own emotional state). Future studies should attempt to replicate this factor structure and include measures of emotion regulation and dispositional contempt to better define this particular factor.

Furthermore, the results support my hypothesis that sadism is in fact a separate construct from psychopathy and should be measured as a separate multifactorial construct. Importantly, the correlations between the sadism factors and psychopathy factors were relatively weak. Given the strength (or lack thereof) of these correlations, it is clear that sadism and psychopathy likely represent *distinct* but related constructs. This claim is further buttressed by the different patterns of correlations the two constructs exhibited with other variables. Notably, all factors of psychopathy showed strong negative correlations with both affective and cognitive empathy (except the boldness factor, which was significantly *positively* related to cognitive empathy), whereas each of the sadism factors showed only moderate negative correlations with affective resonance but no correlation with cognitive empathy (except for Factor 1, which was weakly negatively associated with cognitive empathy). All sadism factors showed moderate to strong correlations with masochism and spitefulness, whereas psychopathy factors (as measured by both the LSRP and Tri-PM) showed weak or null correlations with these variables. Finally, and most convincingly, all four sadism factors

showed invariably strong correlations with trait aggression (physical, verbal, anger, and hostility subscales), whereas the correlations between trait aggression and the psychopathy facets (as measured by both the LSRP and Tri-PM) remained weak to moderate. Together, these results help to demonstrate the distinct cognitive and dispositional profiles inherent to psychopathy and sadism.

Study 2: Examining Behavioral Differences Between Psychopathy and Sadism

The primary aims of Study 2 were two-fold: 1) confirm the factor structure of the novel sadism factors derived in Study 1, and 2) to test the effect of instrumental (monetary) contingencies on aggressive behavior as a behavioral marker to distinguish between psychopathy and sadism. This will serve as additional behavioral evidence that sadism is a distinct construct from psychopathy.

Hypothesis 2a: Individuals higher in egocentric psychopathic traits will exhibit more aggressive behavior in the PSAP when there is an external reward (i.e., money) compared to when there is not this opportunity to benefit from aggression.

Egocentric traits, as compared to callousness and antisocial traits, are most closely related to the desire and motivation to increase or maximize one's own gains and/or status; people high in these traits will engage in virtually any behavior necessary to accomplish this.

Hypothesis 2b: Individuals higher in sadism will exhibit similar levels of aggression when there is *not* an external reward and when there is one, as the act of harming others is in itself a reward.

Method

Participants

Participants were 245 men and women recruited from the Virginia Commonwealth University (VCU) campus. To reduce expectancy effects, participants who had completed Study 1 were precluded from participating in Study 2. The sample size was determined using the Optimal Design Plus Empirical Evidence software (v. 3.01; Spybrook et al., 2011). Standardized effects for the relationships between sadism and aggression and psychopathy and aggression range from $\sim .20$ to $\sim .70$ depending on the measures used and scoring strategy employed (Chester, DeWall, & Enjaian, 2019; Reidy, Zeichner, & Seibert, 2011). Therefore, I used a moderate effect size (Cohen's $d = .40$) to conduct the power analysis. Two hundred and ten participants were needed to achieve moderate main effects ($.40$) with 80% power in a mixed multilevel design. Only participants who are at least 18 years old were recruited. No additional inclusion or exclusion criteria will be stipulated. Of the original 245 participants recruited, 25 individuals did not consent to data use and therefore were removed from the dataset, resulting in a final sample size of 220 participants (67% female; Age: $M = 18.73$, $SD = 0.96$, range = 18 – 21).

Measures

In addition to the measures discussed below, participants also completed the following self-report measures that were administered in Study 1: LSRP, CAST, SSIS, ASP, ACME, BAQ, and IPIP.

Conflict Tactics Scale 2 – Short Form (CTS2). As a discriminant validity check, participants completed the 20-item CTS2 (Straus, 1987). The CTS2 assesses the ways in which couples fight and settle disagreements (e.g., “I insulted or swore or shouted or yelled at my partner”). Items were rated accordingly to how frequently the behavior or

situation occurred within the previous year from 0 (this has never happened) to 6 (more than 20 times in the past year). Participants may select 7 if the behavior or situation has happened but not within the past year. Several methods of scoring the CTS2 are commonly employed, however for the purposes of the present study, variety scores were calculated as these have previously shown the most consistent and normally distributed results as compared to other scoring methods (sum and frequency; Shorey, Brasfield, Febres, Cornelius & Stuart, 2012).

Justice Sensitivity Inventory (JSI). As a measure of discriminant validity, I administered the 40-item JSI (Schmitt, Baumert, Gollwitzer, & Maes, 2010). The JSI assesses four aspects of justice sensitivity: victim sensitivity (e.g., “It bothers me when someone gets something they don’t deserve”), observer sensitivity (e.g., “It bothers me when others receive something that ought to be mine”), beneficiary sensitivity (e.g., “It disturbs me when I receive what others ought to have”), and perpetrator sensitivity (e.g., “I cannot stand the feeling of exploiting someone”). Items were rated along a 0 (not at all) to 5 (exactly) scale.

Positive and Negative Affect Schedule (PANAS). To control for general positive and negative affect, I administered the 20-item PANAS (Watson, Clark, & Tellegan, 1988). Participants rated, along a 1 (very slightly or not at all) to 5 (extremely) scale, the degree to which they have experienced various affective states in the present moment. The positive affect sub-scale includes items such as “excited”, whereas the negative affect sub-scale includes items such as “distressed”.

Victim Suffering Scale (VSS). As a manipulation check to assess perceptions of victim suffering during the aggression task, participants completed the VSS (Chester,

DeWall, & Enjaian, 2019). The VSS is an 8-item measure rated along a 1 (Strong Disagree) to 7 (Strongly Agree) scale (example item: “The points that I deducted from my opponents in the computer task really hurt them”).

Modified Point Subtraction Aggression Paradigm. The Point Subtraction Aggression Paradigm (PSAP) is a well-validated and widely used measure of aggressive behavior (Cherek, 1981). Participants received instructions that they were competing in a reaction-time game against 12 different same-sex opponents who are ostensibly also VCU students. In reality, participants were playing against the computer with pre-programmed wins and losses. The level of provocation varied across the 12 ostensible opponents (e.g., Opponent 1 always stole points, Opponent 2 always protected their own points). Four opponents were high provocation opponents (deducted points from the participants), four were low provocation opponents (protected their points), and four were mid-range provocation opponents (earned points). The order of opponents was randomized across participants. The task was structured in this way in order to reduce the possibility of participants engaging in purely retaliatory aggression or behavior simply aimed at avoiding future point deductions. By having participants compete against several different opponents, all of whom administered different levels of provocation, it was more difficult for participants to keep track of who has “wronged” them. Moreover, by structuring the task this way we were able to statistically control for provocation.

Participants were given three button-press options: press ‘1’ ten times to earn points, press ‘2’ ten times to deduct points from their opponent, or press ‘3’ ten times to protect their own points from deductions by their opponent in the subsequent trial.

Similarly, participants were told that their opponents were choosing from the same options (Figure 10). In the present study, the 50 PSAP trials occurred in two blocks. In one of these blocks (25 trials), participants received no further instructions. In the other block of 25 trials, participants received instructions that for each trial, they can potentially earn \$1.00 (in addition to the course credit they would receive) and if they win at least half of the trials then they will receive the money they have accrued throughout the task. However, if any of their opponents wins half of the trials then that opponent receives the money instead. The order of the trials was randomized across participants (full task instructions are presented in Appendix N).

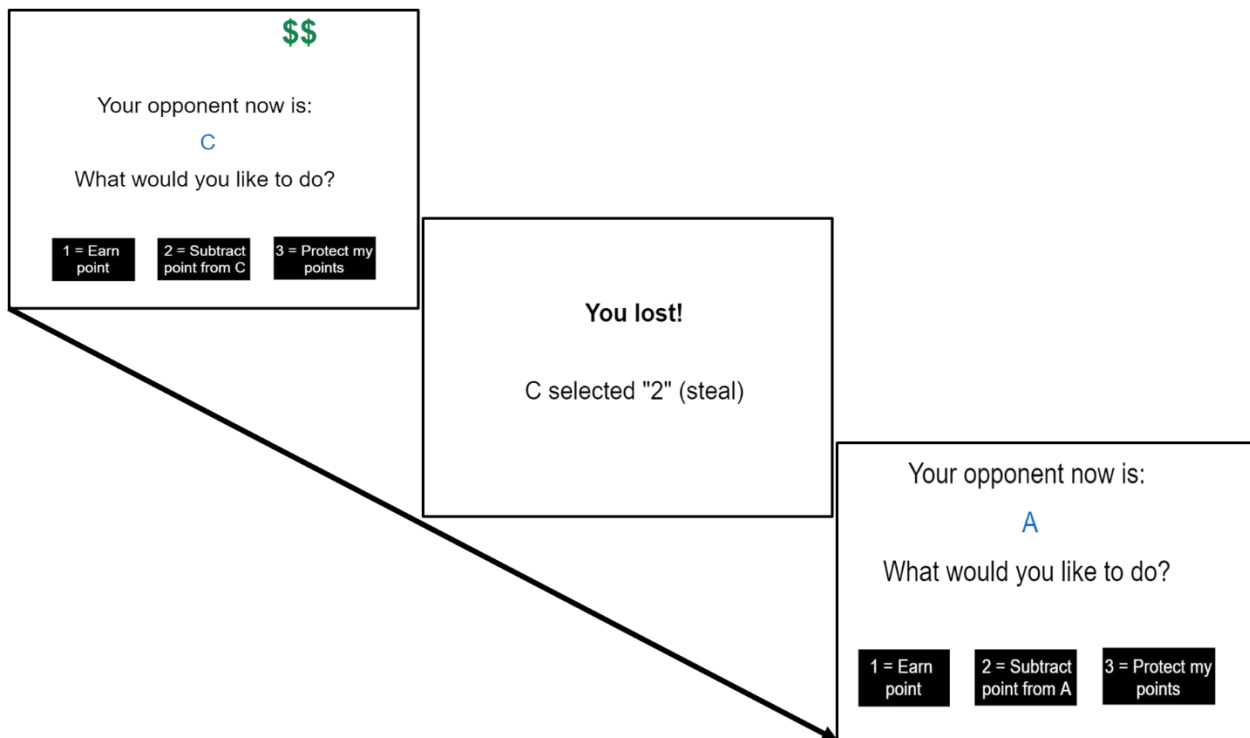


Figure 10. Setup of the Modified Point Subtraction Aggression Paradigm that participants completed. The green dollar sign (\$) only appeared in trials offering the monetary incentive.

Procedure

The study took place completed online via the Qualtrics online survey platform. After indicating their consent on a digital informed consent form, participants completed the PSAP. To increase the realism of the task, participants first entered their first initial and received instructions that this would be how their opponents would identify them during the task and that they in turn would also see their opponents' first initial. After completing the PSAP, participants completed a battery of personality questionnaires. Last, participants viewed a debriefing form and indicated their consent (or non-consent) on a data use consent form before exiting the online survey platform.

Statistical Analyses

As in Study 1, Little's MCAR test was conducted in SPSS to assess any missingness patterns in the data. The test was not significant, $\chi^2(391) = 331.167$, $p=.987$, suggesting the data were likely MCAR, and the amount of missing data across all variables used in the current study was less than 10% (with the exception of the CTS [54.3%]¹), therefore imputation was not employed.

PSAP Aggression

PSAP aggression was defined as the percentage of 'steal' responses relative to the total number of responses made (n steals/50 trials), which is a commonly used method of calculating PSAP aggression (Geniole, Carré, & McCormick, 2011; Geniole, Cunningham, Keyes, Busseri, & McCormick, 2015; Geniole, MacDonell, & McCormick, 2017). This metric was not used in the main analyses as multilevel modelling (MLM) allows for the use of the raw data, rather than an aggregate score (Chester, 2019).

¹ Only participants who answered 'Yes' to the question "Are you currently in a relationship?" (46% in the current study) were given the opportunity to complete the CTS, therefore the remaining ~54% appeared as 'missing data'.

Therefore, for the main MLM analyses all individual responses made by participants across all 50 trials were entered into the models as the outcome variable. All models were estimated using maximum likelihood estimation (ML).

Moderation via Multilevel Modelling

As the primary aim of Study 2 was to assess whether sadism (as defined by the BA analysis from Study 1) could be distinguished from psychopathy via the underlying motivation for aggression (Aim 2), two binomial logistic multilevel models (MLM) were employed using the lme4 package for R statistical software (Bates, Maechler, Bolker, & Walker, 2015). As the dependent variable had three possible outcomes (PSAP response choice: earn, protect, steal), I first had to recode the response choice variable into a binary outcome (0 = no steal, 1 = steal)². Random intercepts were specified for all models.

I chose an MLM approach for two primary reasons. First and foremost, it does not assume independence of observations and is therefore ideal for modelling nested data (e.g., trials of a task). Relatedly, MLM allows for the use of the raw data, rather than an aggregate score, and thus is able to retain and model both within and between person variability.

The first set of MLMs modelled condition (external reward present [coded as '1'] vs. no external reward [coded as '0']) at level 1 as the within-person independent variable, and psychopathy factor scores (as measured by the LSRP) at level 2 as the between-person continuous independent variable. The second set of MLMs modelled

² I also conducted the MLM analyses using a multinomial logistic HLM approach in SPSS in order to retain the original three categories of the outcome variable (and thus better assess nuances in PSAP responding). These results were largely the same as the results from the binomial approach reported here and can be found in Appendix O.

condition (external reward present vs. no external reward) at level 1 as the within-person independent variable, and sadism (using the BA analysis-derived factors from Study 1) at level 2 as the between-person continuous independent variable. In both sets of MLMs, response choice during the PSAP served as the outcome variable. I assessed (1) effects of each predictor on PSAP scores and (2) cross-level interaction effects between each significant predictor and condition (reward versus no reward) on PSAP scores. The full equation for these models appears below.

$$\log \left[\frac{P(\text{PSAP response})}{1-P(\text{PSAP response})} \right] \sim N(\alpha_{j[i],k[i]} + \beta_1(\text{condition}), \sigma^2)$$

$$\alpha_j \sim N(\gamma_0^\alpha + \gamma_1^\alpha(\text{factor}) + \gamma_2^\alpha(\text{condition} \times \text{factor}), \sigma_{\alpha_j}^2), \text{ for id } j = 1, \dots, J$$

$$\alpha_k \sim N(\mu_{\alpha_k}, \sigma_{\alpha_k}^2), \text{ for trial } k = 1, \dots, K$$

Results

Manipulation Check

Visual inspection of a histogram depicting the distribution of VSS responses suggested that participants generally did not perceive their opponents to be incurring actual harm during the PSAP (Figure 11). A one-sample t-test supported this conclusion, suggesting that the average response on the VSS was significantly *below* the midpoint of the scale (3.5 on a 7-point scale), $t(217) = -17.08, p < .001, 95\% CI [1.97, 2.28]$. Nonetheless, VSS scores were significantly positively related to PSAP aggression, $r(218) = .13, p = .05, 95\% CI [0.00, 0.26]$.

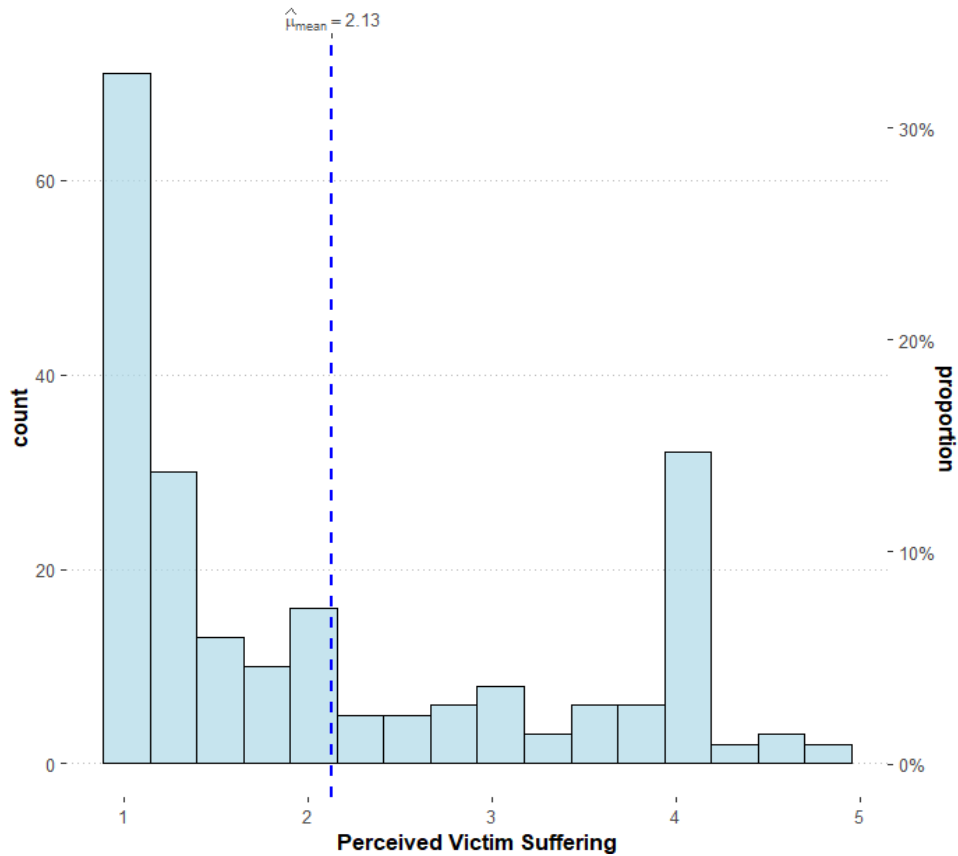


Figure 11. Histogram depicting the distribution of responses on the Victim Suffering Scale (VSS).

Descriptive Statistics and Correlations

Descriptive statistics for all study variables are reported in Table 6. As expected, virtually all sadism scores were substantially skewed. The only exceptions were the verbal and vicarious subscales of the CAST and factors 3 and 4 from the BA analysis-derived factors. For those that showed skew, I log-transformed the aggregate sadism scores and used these log-transformed versions of the sadism variables in all subsequent analyses.

Table 6. Descriptive statistics for all variables in Study 2.

Variable	<i>N</i>	<i>M</i>	<i>SD</i>	Min	Max	Skew	α
PSAP Aggression	219	0.27	0.14	0.00	0.94	0.51	.87
ACME Cognitive	218	3.69	0.57	2.08	4.67	-0.24	.68

ACME Dissonance	218	4.22	0.74	2.08	5.00	-0.83	.90
ACME Resonance	218	4.18	0.64	2.08	4.92	-0.80	.87
Agreeableness (IPIP)	219	3.99	0.53	1.83	4.92	-0.85	.77
ASP Pleasure Seeking	219	1.23	0.49	1.00	4.13	3.41	.91
ASP Subjugation	219	1.40	0.52	1.00	3.83	2.23	.73
ASP Unempathic	219	1.23	0.48	1.00	4.50	3.67	.87
BAQ Physical	219	3.86	0.78	2.67	7.00	0.83	.78
BAQ Verbal	219	4.24	1.31	1.00	7.00	-0.16	.65
BAQ Anger	219	3.42	1.09	1.00	7.00	0.67	.60
BAQ Hostile	219	4.08	1.43	1.00	7.00	-0.26	.70
CAST Verbal	219	2.42	0.67	1.17	4.33	0.54	.78
CAST Physical	219	1.43	0.67	1.00	4.40	2.21	.74
CAST Vicarious	219	2.07	0.79	1.14	4.43	0.79	.73
CTS Variety Total	100	6.40	3.02	2.00	20.00	2.22	.86
CTS Physical Perpetrator	100	0.27	0.85	0.00	5.00	4.04	.82
CTS Physical Victim	100	0.39	0.95	0.00	5.00	3.20	.78
CTS Psych Perpetrator	100	0.83	0.80	0.00	3.00	0.66	.45
CTS Psych Victim	100	0.96	0.85	0.00	3.00	0.46	.43
CTS Negotiation	100	3.95	0.26	2.00	4.00	-5.60	.36*
JSI Victim	217	3.15	0.76	1.00	4.90	-0.72	.86
JSI Observer	216	3.74	0.75	1.00	5.00	-1.01	.89
JSI Beneficiary	216	3.46	0.84	1.00	5.00	-0.56	.91
JSI Perpetrator	217	4.04	0.91	1.00	5.00	-0.94	.95
LSRP - Egocentricity	219	2.01	0.52	1.00	4.00	0.55	.81
LSRP - Callous	219	1.73	0.52	1.00	3.50	0.71	.46
LSRP - Antisocial	219	2.13	0.47	1.20	3.60	0.44	.36
PANAS - Positive	219	1.93	0.81	1.00	4.60	0.98	.90
PANAS - Negative	219	1.54	0.67	1.00	3.70	1.42	.88
Sadism factor1	219	0.06	0.11	0.00	0.61	4.25 (2.89)	.93
Sadism factor2	219	0.11	0.14	0.00	0.68	2.49 (1.43)	.86
Sadism factor3	219	2.32	0.64	1.17	4.50	0.63	.40
Sadism factor4	219	1.87	0.93	1.00	4.80	0.94	.83
SSIS	219	1.48	0.61	1.00	4.90	2.47	.83
VSS	218	2.13	1.19	1.00	4.75	0.70	.94

Note. PSAP = Point Subtraction Aggression Paradigm, ACME = Affective and Cognitive

Empathy Measure, ASP = Assessment of Sadistic Personality, BAQ = Brief Aggression

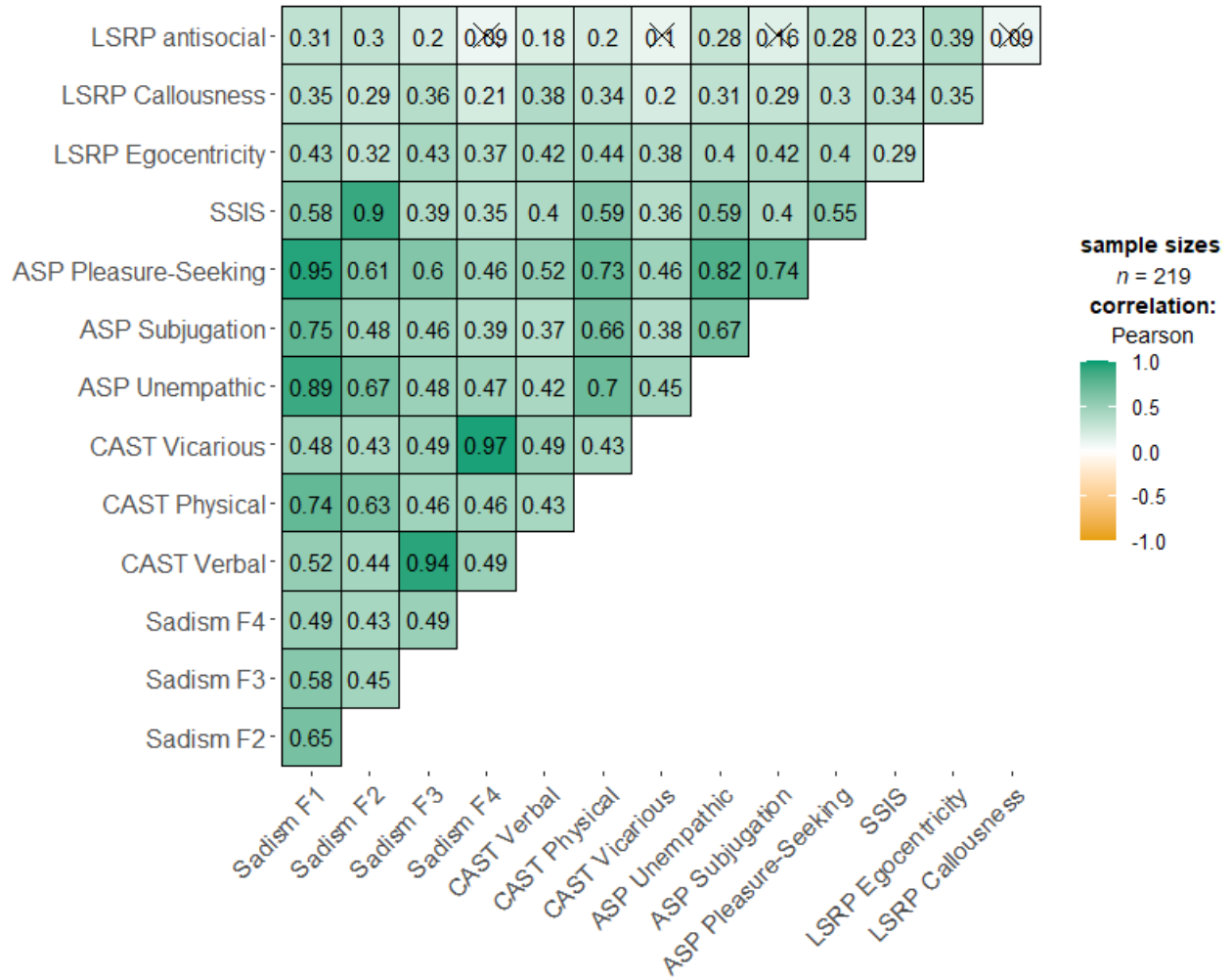
Questionnaire, CAST = Comprehensive Assessment of Sadistic Tendencies, CTS =

Conflict Tactics Scale, JSI = Justice Sensitivity Inventory, LSRP = Levenson's Self-

Report Psychopathy Scale, PANAS = Positive and Negative Affect Schedule, SSIS =

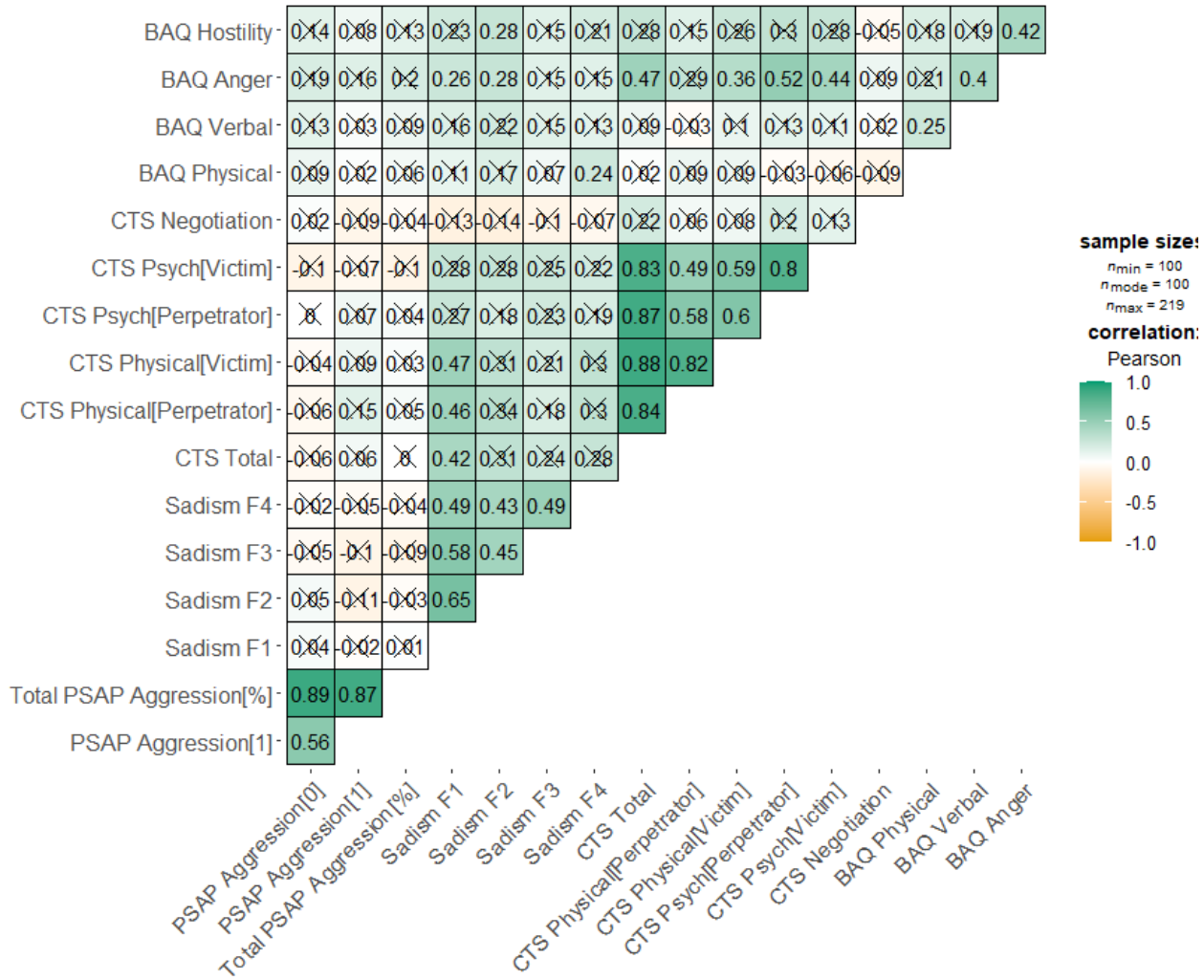
Short Sadistic Impulse Scale, VSS = Victim Suffering Scale. *Reliability estimate for the negotiation subscale of the CTS was .87 when using the raw scores rather than variety scores.

Bivariate correlations among the psychopathy and sadism factors are displayed in Figure 12. The pattern of correlations between the BA analysis-derived sadism factors, sadism factors from the original measures, and psychopathy factors remained largely the same as in Study 1. Figure 13 shows the bivariate correlations between PSAP aggression and other aggression variables (the BAQ and CTS). PSAP aggression was significantly associated with the anger subscale of the BAQ as well as total aggression (i.e., the average of all four BAQ subscales) but was not associated with any of the other aggression variables. Figure 14 shows the bivariate correlations between PSAP aggression and measures of justice sensitivity (the JSI) and general positive and negative affect (the PANAS).



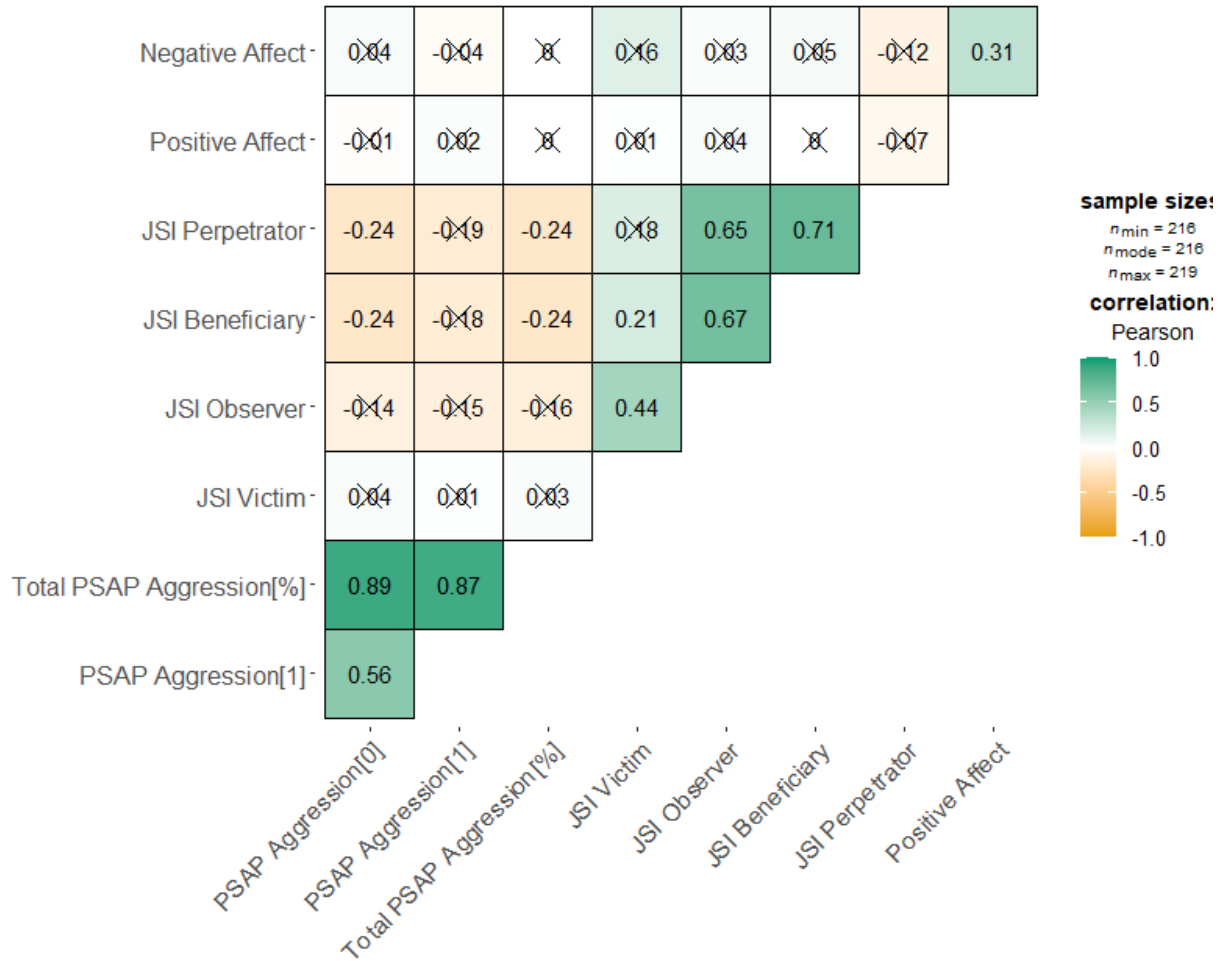
X = non-significant at $p < 0.05$ (Adjustment: Holm)

Figure 12. Bivariate correlations among the psychopathy and sadism facets.



X = non-significant at $p < 0.05$ (Adjustment: Holm)

Figure 13. Bivariate correlations among aggression during the Point Subtraction Aggression Paradigm (PSAP) and aggression as measured by the Brief Aggression Questionnaire (BAQ) and Conflict Tactics Scale (CTS).



X = non-significant at $p < 0.05$ (Adjustment: Holm)

Figure 14. Bivariate correlations between aggression during the Point Subtraction Aggression Paradigm (PSAP) and measures of justice sensitivity (JSI) and general affect (PANAS).

Confirmatory Factor Analysis

In contrast to findings in Study 1, the CFA of the four-factor BA analysis-derived sadism model did not fit the data well, $\chi^2(465) = 4834.73$, $CFI = .76$, $TLI = .73$, $AIC = 12880.56$, $BIC = 13102.71$, $RMSEA = .11$, $SRMR = .11$. The alternative three-factor model was a poorer fit to the data. However, the internal reliability estimates for all factors except for Factor 3 were high (Table 7).

Table 7. Reliability estimates for the four backwards (BA) analysis-derived sadism factors in the Study 2 sample.

	F1	F2	F3	F4	Total
α	0.93	0.86	0.40	0.83	.91
ω	0.93	0.86	0.62	0.83	.93
AVE	0.56	0.45	0.42	0.50	.47

Note. α = Cronbach's alpha, Ω = McDonald's omega, AVE = average variance

extracted.

Motivation Underlying Aggression

Across participants, trials, and condition, participants generally chose more 'earn' responses compared to 'steal' or 'protect' responses, $\chi^2(2) = 834.68, p < .001$. The frequency with which participants chose to steal or protect did not differ from one another, $\chi^2(1) = 2.99, p = 0.08$. These patterns remained consistent when separated by condition (Figure 15).

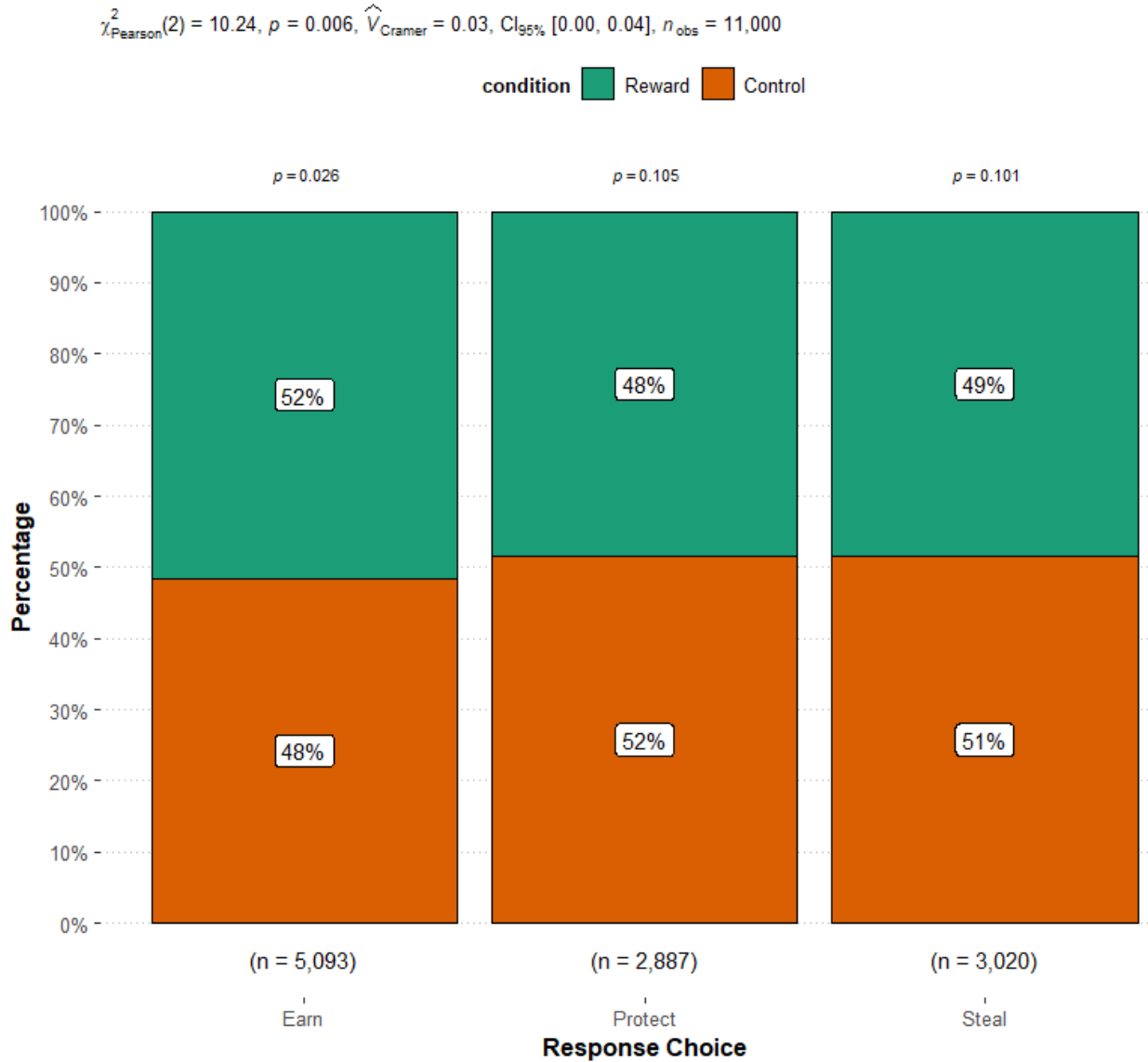


Figure 15. The frequency of each type of response choice made by participants during the PSAP.

Psychopathy. The egocentricity and antisocial facets significantly predicted increased likelihood of aggressive responding during the PSAP (Figures 16 and 17), whereas the main effect for the callousness facet was not significant (Table 8). Contrary to my hypothesis, there was not a significant interaction between condition and egocentricity predicting aggression.

Table 8. Results from the multilevel model examining the effects of experimental condition and psychopathy factors on response choice during the Point Subtraction Aggression Paradigm (PSAP).

Parameter	Log-Odds	SE	95% CI	p
(Intercept)	-1.78	0.31	[-2.39, -1.17]	< .001
Condition	-0.08	0.05	[-0.17, 0.01]	.084
egocentricity	0.43	0.12	[0.19, 0.67]	< .001
callousness	-0.04	0.12	[-0.27, 0.20]	.752
antisocial	0.31	0.13	[0.06, 0.56]	.016
Condition * egocentricity	-0.07	0.09	[-0.25, 0.10]	.426
Condition * callousness	-0.04	0.09	[-0.22, 0.13]	.613
Condition * antisocial	-0.06	0.10	[-0.25, 0.12]	.501

Note. Condition was coded as follows: 0 = No reward, 1 = Reward.

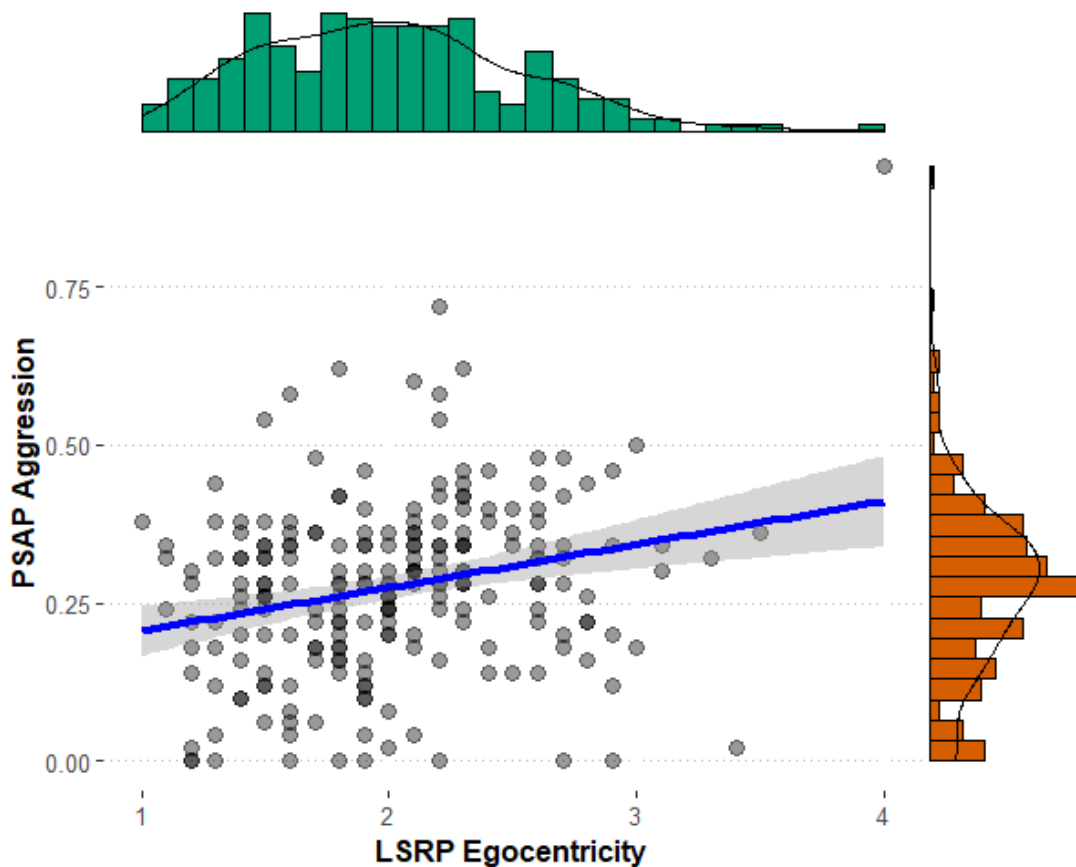


Figure 16. Scatterplot depicting the significant positive relationship between the egocentricity facet of psychopathy (as measured by the Levenson’s Self-Report

Psychopathy Scale [LSRP]) and aggression during the Point Subtraction Aggression Paradigm (PSAP).

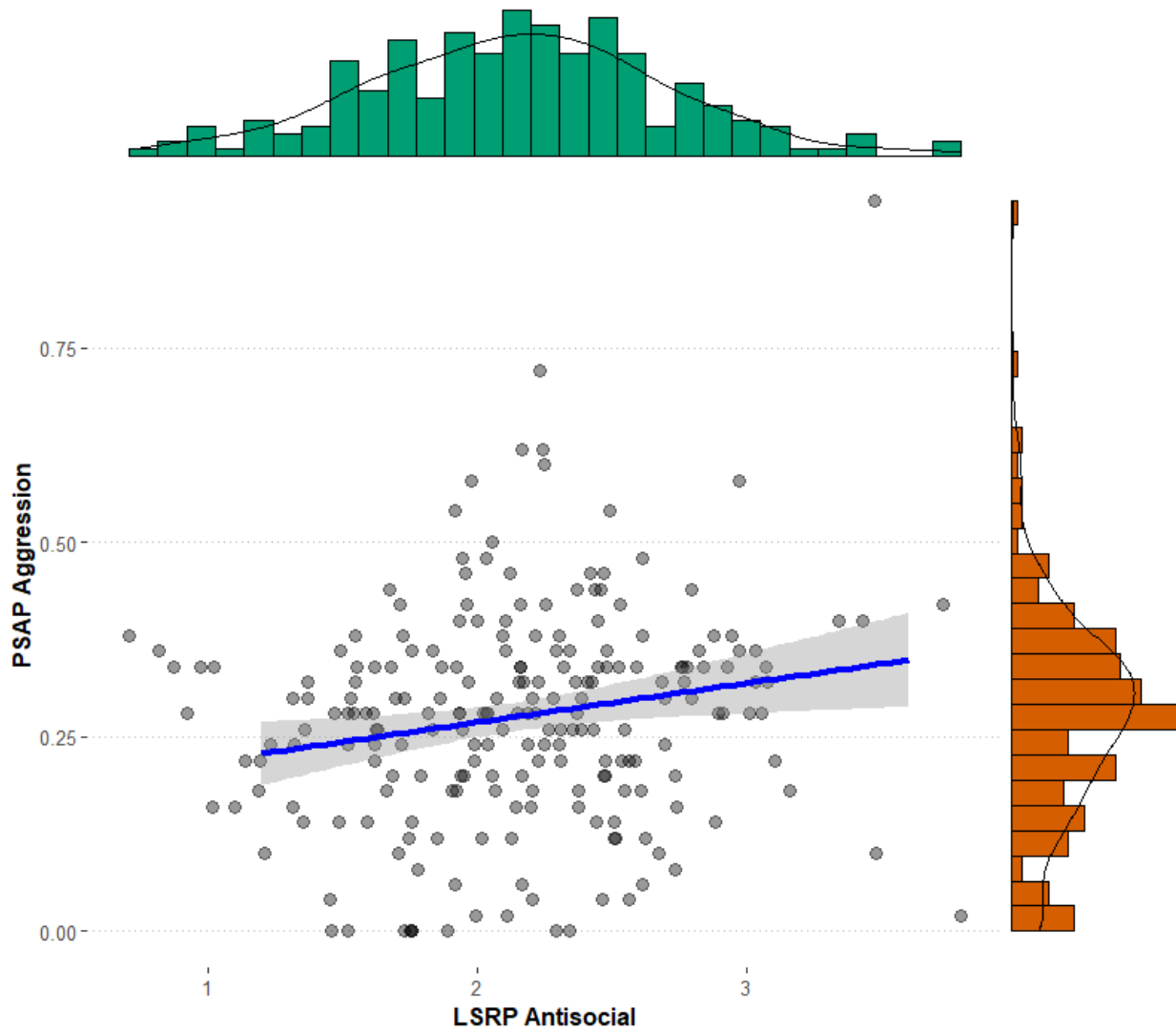


Figure 17. Scatterplot depicting the significant positive relationship between the antisocial facet of psychopathy (as measured by the Levenson’s Self-Report Psychopathy Scale [LSRP]) and aggression during the Point Subtraction Aggression Paradigm (PSAP).

Sadism. Contrary to my hypothesis, none of the four sadism factors were significant predictors of aggressive responding during the PSAP³ (Table 9). However, there was a significant interaction between Factor 2 and condition such that higher sadism Factor 2 scores predicted *lower* likelihood of aggressive responding in the reward condition of the PSAP but not in the control condition (Figure 18). None of the other three sadism factors exhibited interaction effects.

Table 9. Results from the multilevel model examining the effects of experimental condition and sadism factors on response choice during the Point Subtraction Aggression Paradigm (PSAP).

Parameter	Log-Odds	SE	95% CI	<i>p</i>
(Intercept)	-0.62	0.25	[-1.10, -0.13]	.013
Condition	-0.08	0.05	[-0.17, 0.01]	.081
Factor 1	0.40	0.72	[-1.01, 1.80]	.578
Factor 2	0.15	0.54	[-0.92, 1.21]	.787
Factor 3	-0.15	0.10	[-0.35, 0.05]	.132
Factor 4	9.28e-03	0.07	[-0.13, 0.15]	.899
Condition*Factor 1	-0.20	0.41	[-1.00, 0.61]	.631
Condition*Factor 2	-0.70	0.31	[-1.31, -0.09]	.025
Condition*Factor 3	-5.83e-03	0.07	[-0.14, 0.13]	.931
Condition*Factor 4	-0.01	0.05	[-0.11, 0.08]	.820

Note. Condition was coded as follows: 0 = No reward, 1 = Reward.

³ The results from this analysis using the sadism subscales from the original measures were also null. Additionally, after removing participants who did not believe the harm being done was real (i.e., Victim Suffering Scale scores > 1), these results still remain unchanged.

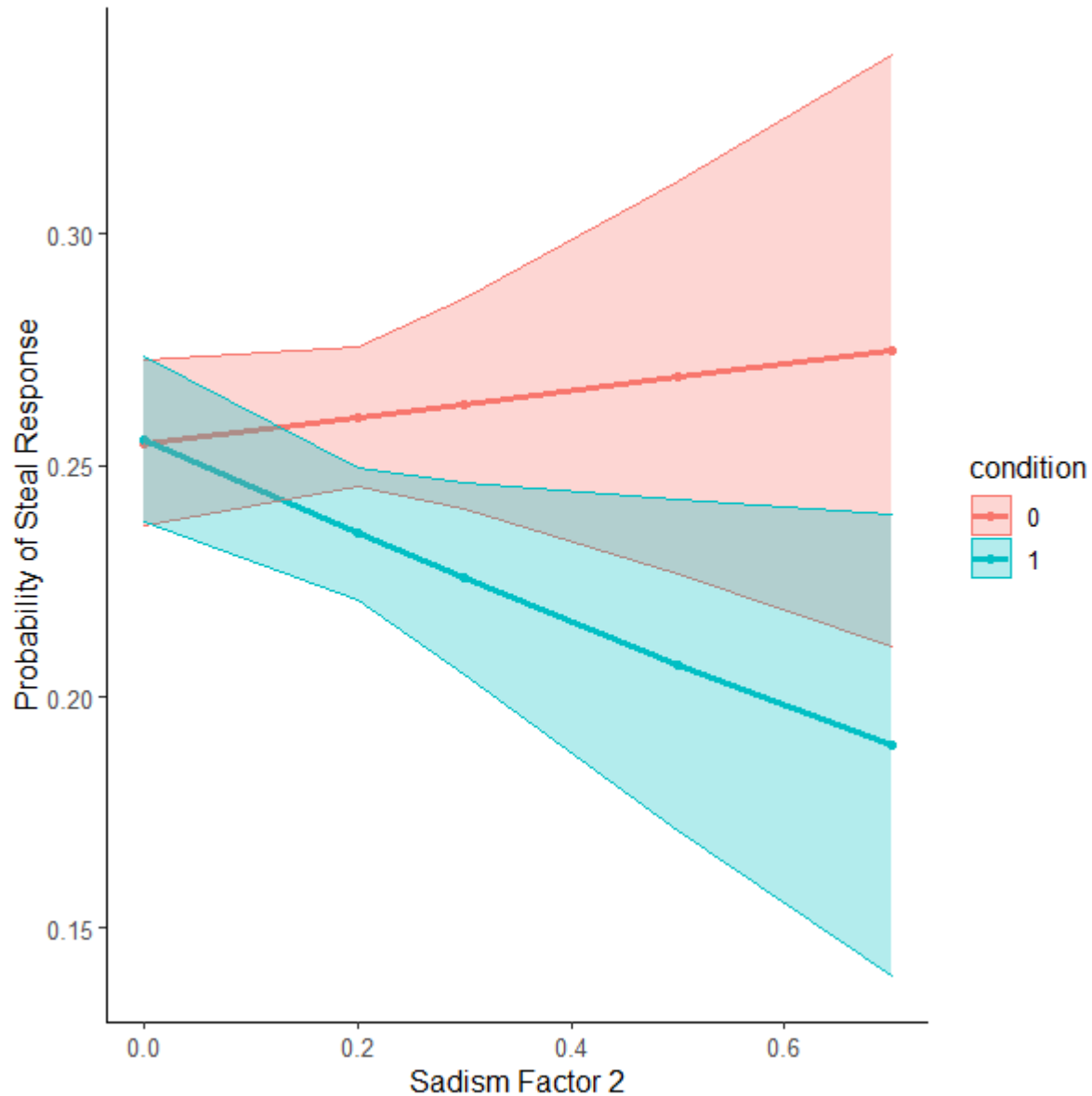


Figure 18. The interaction between sadism Factor 2 and the probability of selecting a 'steal' response (i.e., aggressive responding) during each condition of the Point Subtraction Aggression Paradigm (PSAP). *Note.* Condition was coded as follows: 0 = No reward, 1 = Reward.

Study 2 Discussion

The aims of Study 2 were two-fold: 1) confirm the factor structure of sadism identified in Study 1 and 2) identify a behavioral marker to distinguish between the

constructs of psychopathy and sadism. The results from the CFA did not support Aim 1 such that the model fit was relatively poor compared to Study 1. However, the internal consistency estimates for each of the sadism factors (except Factor 3) remained quite good and in fact remained superior to estimates for sadism factors from the original measures as in Study 1. It is currently unclear why the CFA in Study 2 showed poor fit but future studies should attempt to replicate this factor structure in larger and more diverse samples (e.g., forensic).

Results from Study 2 partially supported the hypotheses underlying the second aim. Specifically, psychopathy and sadism did evince different patterns of correlations with various measures of aggression (behavioral and self-report). However, in contrast to hypotheses, the relationship between egocentricity and aggression was not moderated by monetary incentive to aggress. Also contrary to hypotheses, none of the sadism factors were significant predictors of aggression during the PSAP (regardless of the measure used). VSS scores were significantly related to greater PSAP aggression, however the effect was weak at best and the distribution of VSS responses was generally quite low. This suggests that the most likely explanation for the null main results is that participants did not actually perceive their opponents to be incurring actual harm during the PSAP. Given that sadism is primarily characterized by the enjoyment of *causing harm* to others and *seeing harm* being done to others, it is possible that the harmful stimulus used in Study 2 (i.e., point/money deductions) was simply not strong enough to provide such an intrinsic reward to those high in sadism. Future studies should attempt to replicate these results using other behavioral measures of aggression (e.g., the Taylor Aggression Paradigm, Voodoo Doll Task).

General Discussion

Psychopathy and sadism are major public health issues because of their robust connection to antisocial behavior and aggression (Foulkes, 2019; Kiehl & Hoffman, 2011; Reidy et al., 2015). For this reason, it is imperative that we have valid and reliable methods of conceptualizing, measuring, and distinguishing between these constructs. The present dissertation project attempted to address these issues at two different levels of analysis with two overarching aims: (1) Identify the factor structure and nomological network of sadism and (2) identify a behavioral marker that can distinguish psychopathy from sadism (i.e., engaging in aggressive behavior for external reward versus pleasure).

The primary objective of Study 1 in the current project was to articulate the sadism construct itself and to identify the extent of the overlap it shares with psychopathy. The results supported my hypothesis that sadism is in fact a distinct construct from psychopathy, which also aligns with recent work examining sadism in relation to the Dark Triad and Dark Tetrad in that sadism possesses unique features from other 'dark' traits, including psychopathy (Johnson, Plouffe, & Saklofske, 2019; Paulhus, 2014). However, in contrast to these models, rather than being a unitary construct, sadism actually exhibited a four-factor structure with generally good psychometric properties. These results have important implications for practice as they have the potential to improve and facilitate accurate clinical diagnostic procedures and risk assessment procedures. Specifically, it may be beneficial and more informative to assess psychopathy and sadism separately as they likely predict risk differentially. Although there are several scales that assess sadism to various extents, currently there

is no 'gold standard' measure of sadism as there is for psychopathy, especially for clinical and forensic populations. Future studies should work toward the goal of creating and validating such a measure by adding additional content (e.g., more verbal/vicarious items, sexual sadism items) and attempting to replicate the factor structure identified in the current study. Furthermore, future research should further investigate the distinctions between psychopathy and sadism as each construct relates to clinical diagnoses and risk for aggressive or other antisocial behaviors, as well as how these relationships differ across population types (e.g., forensic versus community).

Arguably more important than differentiating sadism from psychopathy psychometrically is the ability to distinguish between the two constructs at a *behavioral* level. That is, identifying specific behaviors that can differentiate between psychopathic traits from sadistic traits can substantially improve the ability to develop *early* intervention strategies and *effective* rehabilitation techniques. Identifying such a behavioral marker was the primary goal of Study 2 in the present project. Although the sadism and psychopathy factors evinced slightly different correlational patterns with aggressive responding during the PSAP, my hypotheses were ultimately not supported. The egocentricity and antisocial facets of psychopathy significantly predicted more frequent aggressive responding but there were no significant interaction effects. Additionally, sadism was generally not significantly associated with aggressive responding during the PSAP, however, sadism Factor 2 significantly predicted *fewer* aggressive PSAP responses during the reward condition. That is, when presented with the opportunity to earn additional external rewards for engaging in aggressive behavior, individuals high in sadism Factor 2 behaved *less* aggressively compared to when these

rewards were not offered. Although these results were not entirely consistent with my hypotheses, together with the results from Study 1 they nonetheless can provide several valuable insights to existing theories of antagonistic personality traits as well as implications for future research and clinical/forensic work on personality assessment. Across both studies, sadism and psychopathy consistently produced different patterns of associations with a variety of other variables (e.g., empathy, trait and behavioral aggression, masochism). In addition to that between-construct variability, there was also *within* construct variability such that the facets within each of the two constructs produced slightly different patterns of relationships from one another. Some scholars have argued that Antagonism (the Big Five Model of personality) or Honesty-Humility (HEXACO model) lies at the core of the Dark Triad/Tetrad, and that these 'dark' traits such as psychopathy and sadism ultimately do not contribute unique features (Hodson et al., 2018; Vize, Miller, & Lynam, 2019; Vize, Collison, Miller, & Lynam, 2020). The assertion that Antagonism is critical to defining psychopathy and sadism, and represents the umbrella under which these constructs fall, may indeed be an accurate and valid one. However, the results from the current set of studies suggest that the *distinctions* between the individual underlying antagonistic traits are equally important, especially when predicting aggressive and other antisocial behaviors.

Limitations and Future Directions

The current studies have important implications for theory and practice, yet they were not without limitations. The participant samples for both studies were undergraduate students from VCU, therefore the range of psychopathy and sadism scores were limited. Future studies should attempt to replicate these results in forensic,

clinical, and objectively successful (e.g., doctors, CEOs) populations to determine whether the results hold across population types and to investigate potential boundary conditions (e.g., are the underlying motivations for aggression in psychopathy and sadism consistent across populations).

Second, the aggression task employed in Study 2 (PSAP) was not an ideal test of the study's hypotheses for two reasons. Primarily, the task was administered completely online rather than in the more controlled setting of the laboratory, which renders the believability of the cover story questionable (i.e., twelve different opponents on the study page at the same time). As the participants were not probed for suspicion, it is currently unclear how or whether believability impacted the results. The online format also increases the ease with which participants can skip instructions or misunderstand the task instructions, and therefore may not have completed the task as it was intended. The additional limitation to using the PSAP was that it had to be modified for the purposes of this study (see Methods and Appendix N), therefore the validity of the task is in question. Future work should focus on validating this and other versions of the PSAP to broaden its use and applicability (Chester & Lasko, 2019). Further, given these limitations, it is imperative to establish the distinction between psychopathy and sadism using measures that are more objective. Specifically, identifying a biological marker that is present for sadistic individuals but not psychopathic ones may provide a useful way of distinguishing the two constructs at a *biological* level. Future studies should employ neuroimaging and additional psychophysiological methods (e.g., EMG, EEG) to identify biological patterns (e.g.,

neurological or neuromuscular activation) specific to individuals high in sadistic versus psychopathic traits.

Additionally, the BA analysis from Study 1 was conducted using only items from existing measures of sadism, which limited the ability to assess other potential facets of sadism (e.g., sexual sadism) not currently captured by the CAST, ASP, or SSIS. Future studies should develop novel items *in addition* to the items already established by existing measures and conduct further analyses to refine and validate the measure of sadism developed in Study 1 of this project.

Conclusions

Psychopathy and sadism are two clusters of personality traits that pose a major risk for general interpersonal aggression and criminal recidivism. Yet the degree to which these constructs overlap and predict aggressive behavior (individually and together) is poorly understood. The results of the current project lend support to the notion that psychopathy and sadism are *independent*, but correlated, constructs and should be treated as such. Furthermore, these results have the potential to expand the scientific understanding of the similarities between and unique features of these antagonistic personality traits, which can facilitate the improvement of clinical and forensic assessment procedures and intervention strategies. Specifically, treatments and interventions that target the intrinsically rewarding aspects of harming others may be ideal. Finally, the results from these studies should serve as a catalyst for desperately needed research on the *biological* correlates of the sadistic personality and the ways in which these differ from those of psychopathy.

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Appendix A
Affective and Cognitive Measure of Empathy (ACME)

Instructions: Rate items on a scale from 1 (Strongly disagree) to 5 (Strongly agree).

- 1 I have a hard time reading people's emotions
- 2 I think it's fun to push people around once and a while
- 3 I can tell when someone is afraid
- 4 It's obvious when people are pretending to be happy
- 5 I love watching people get angry
- 6 I enjoy seeing strangers get scared
- 7 It makes me feel good to help someone in need
- 8 I get excited to give someone a gift that I think they will enjoy
- 9 I usually understand why people feel the way they do
- 10 When my friends are having a good time I often get angry
- 11 People who are cheery disgust me
- 12 I don't worry much about hurting people's feelings
- 13 I don't really care if other people feel happy
- 14 I have a hard time figuring out what someone else is feeling
- 15 I can tell when people are about to lose their temper
- 16 I can usually predict how someone will feel.
- 17 I don't really care if people are feeling depressed
- 18 I like making other people uncomfortable
- 19 I get a kick out of making other people feel stupid
- 20 When my friends get angry I often feel like laughing
- 21 Sometimes I enjoy seeing people cry
- 22 Other people's feelings don't bother me at all
- 23 I feel awful when I hurt someone's feelings
- 24 Other people's misfortunes don't bother me much
- 25 I can usually tell how people are feeling
- 26 Sometimes it's funny to see people get humiliated
- 27 If I could get away with it, there are some people I would enjoy hurting
- 28 If I see that I am doing something that hurts someone, I will quickly stop
- 29 I often try to help people feel better when they are upset
- 30 I enjoy making others happy
- 31 I am not good at understanding other people's emotions
- 32 People have told me that I'm insensitive
- 33 I can usually guess what's making someone angry
- 34 People don't have to tell me when they're sad, I can see it in their faces
- 35 I find it hard to tell when someone is sad
- 36 I admit that I enjoy irritating other people

Scoring:

Cognitive Empathy (COG) = 1r, 3, 4, 9, 14r, 15, 16, 25, 31r, 33, 34, 35r

Affective Resonance (RES) = 7, 8, 12r, 13r, 17r, 22r, 23, 24r, 28, 29, 30, 32r

Affective Dissonance (DIS) = 2r, 5r, 6r, 10r, 11r, 18r, 19r, 20r, 21r, 26r, 27r, 36r

Appendix B
Assessment of Sadistic Personality (ASP)

Instructions: Please rate each of the following statements according to how well it applies to you from 1 (Not at all) to 5 (Definitely).

1. I have made fun of people so that they know I am in control. (Subjugation)
2. People do what I want them to because they are afraid of me. (Subjugation)
3. When I tell people what to do, they know to do it. (Subjugation)
4. I never get tired of pushing people around. (Subjugation)
5. I would hurt somebody if it meant that I would be in control. (Subjugation)
6. I control my friends through intimidation. (Subjugation)
7. When I mock someone, it is funny to see them get upset. (Pleasure-seeking)
8. Being mean to others can be exciting. (Pleasure-seeking)
9. When I get annoyed, tormenting people makes me feel better. (Pleasure-seeking)
10. I have hurt people close to me for enjoyment. (Pleasure-seeking)
11. I enjoy humiliating others. (Pleasure-seeking)
12. I get pleasure from mocking people in front of their friends. (Pleasure-seeking)
13. I think about harassing others for enjoyment (Pleasure-seeking)
14. I have cheated others because I enjoy it. (Pleasure-seeking)
15. I think about hurting people who irritate me. (Unempathic)
16. I'd lie to someone to make them upset. (Unempathic)
17. I have stolen from others without regard for the consequences. (Unempathic)
18. Making people feel bad about themselves makes me feel good. (Unempathic)
19. I am quick to humiliate others. (Unempathic)
20. I have tormented others without feeling remorse. (Unempathic)

Appendix C
Benign Masochism Scale (BMS)

Instructions: Please rate each of the following statements according to the extent to which you agree or disagree from 1 (Strongly Disagree) to 5 (Strongly Agree).

1. My favorite roller coaster is the scariest I can put up with.
2. My favorite level of mouth burn from chili is about the highest level I can stand, before it gets too painful.
3. My favorite massage is the most painful one I can stand
4. My favorite stinky cheese is about the stinkiest cheese I can stand
5. My favorite disgusting cartoon is the most disgusting one that I can stand to read.
6. The saddest music I like best is about as sad as I can stand.
7. The saddest story/novel I like best is about as sad as I can stand
- 8.

Appendix D

Comprehensive Assessment of Sadistic Traits (CAST)

Instructions: Please indicate how much you agree with each statement as it describes you along a 1 (strongly disagree) to 7 (strongly agree) scale.

Direct - Verbal

1. I was purposely mean to some people in high school.
2. I enjoy making jokes at the expense of others.
3. I have purposely tricked someone and laughed when they looked foolish.
4. When making fun of someone, it is especially amusing if they realize what I'm doing.
5. Perhaps I shouldn't have, but I never got tired of mocking certain classmates.
6. I would never purposely humiliate someone.

Direct - Physical

1. I enjoy physically hurting people.
2. I enjoy tormenting people.
3. I have the right to push certain people around.
4. I have dominated others using fear.
5. I enjoy hurting my partner during sex (or pretending to).

Vicarious

1. In video games, I like the realistic blood spurts.
2. I love to watch YouTube clips of people fighting.
3. I enjoy watching cage fighting (or MMA), where there is no escape.
4. I sometimes replay my favorite scenes from gory slasher films.
5. There's way too much violence in sports.
6. I enjoy playing the villain in games and torturing other characters.
7. In professional car-racing, it's the accidents that I enjoy most.

Appendix E
International Personality Item Pool (IPIP)-60

Instructions: Please rate each of the following statements according to the extent to which you feel it is true for you from 1 (Strongly Disagree) to 5 (Strongly Agree).

1. Worry about things.
2. Get stressed out easily.
3. Get angry easily.
4. Lose my temper.
5. Often feel blue.
6. Dislike myself.
7. Find it difficult to approach others.
8. Am easily intimidated.
9. Rarely overindulge.
10. Am able to control my cravings.
11. Remain calm under pressure.
12. Am calm even in tense situations.
13. Make friends easily.
14. Act comfortably with others
15. Love large parties.
16. Avoid crowds.
17. Take charge.
18. Try to lead others.
19. Am always busy.
20. Am always on the go.
21. Love excitement.
22. Seek adventure.
23. Have a lot of fun.
24. Love life.
25. Have a vivid imagination.
26. Love to daydream.
27. Believe in the importance of art.
28. Do not like art.
29. Experience my emotions intensely.
30. Am not easily affected by my emotions.
31. Prefer to stick with things that I know.
32. Don't like the idea of change.
33. Avoid philosophical discussions.
34. Am not interested in theoretical discussions.
35. Tend to vote for liberal political candidates.
36. Believe in one true religion.
37. Trust others.
38. Believe that others have good intentions.
39. Cheat to get ahead.
40. Take advantage of others.

41. Love to help others.
42. Am concerned about others.
43. Insult people.
44. Get back at others.
45. Believe that I am better than others.
46. Think highly of myself.
47. Sympathize with the homeless.
48. Feel sympathy for those who are worse off than myself.
49. Handle tasks smoothly.
50. Know how to get things done.
51. Like to tidy up.
52. Leave a mess in my room.
53. Tell the truth.
54. Break my promises.
55. Work hard.
56. Set high standards for myself and others.
57. Carry out my plans.
58. Have difficulty starting tasks.
59. Make rash decisions.
60. Act without thinking.

Appendix F

Levenson's Self-Report Psychopathy Scale (LSRP)

Instructions: Listed below are a number of statements. Each represents a commonly held opinion and there are no right or wrong answers. You will probably disagree with some items and agree with others. Please read each statement carefully and circle the number which best describes the extent to which you agree or disagree with each statement, or the extent to which each statement applies to you.

1 = Disagree strongly, 2 = Disagree somewhat, 3 = Agree somewhat, 4 = Agree strongly

1. I am often bored.
2. In today's world, I feel justified in doing anything I can get away with to succeed.
3. Before I do anything, I carefully consider the possible consequences.
4. My main purpose in life is getting as many goodies as I can.
5. I quickly lose interest in tasks I start.
6. I have been in a lot of shouting matches with other people.
7. Even if I were trying very hard to sell something, I wouldn't lie about it.
8. I find myself in the same kinds of trouble, time after time.
9. I enjoy manipulating other people's feelings.
10. I find that I am able to pursue one goal for a long time.
11. Looking out for myself is my top priority.
12. I tell other people what they want to hear so that they will do what I want them to do.
13. Cheating is not justifiable because it is unfair to others.
14. Love is overrated.
15. I would be upset if my success came at someone else's expense.
16. When I get frustrated, I often "let off steam" by blowing my top.
17. For me, what's right is whatever I can get away with.
18. Most of my problems are due to the fact that other people just don't understand me.
19. Success is based on survival of the fittest; I am not concerned about the losers.
20. I don't plan anything very far in advance.
21. I feel bad if my words or actions cause someone else to feel emotional pain.
22. Making a lot of money is my most important goal.
23. I let others worry about higher values; my main concern is with the bottom line.
24. I often admire a really clever scam.
25. People who are stupid enough to get ripped off usually deserve it.
26. I make a point of trying not to hurt others in pursuit of my goals.

Appendix G
Short Sadistic Impulse Scale (SSIS)

1. I enjoy seeing people hurt.
2. I would enjoy hurting someone physically, sexually, or emotionally.
3. Hurting people would be exciting.
4. I have hurt people for my own enjoyment.
5. People would enjoy hurting others if they gave it a go.
6. I have fantasies which involve hurting people.
7. I have hurt people because I could.
8. I wouldn't intentionally hurt anyone.
9. I have humiliated others to keep them in line.
10. Sometimes I get so angry I want to hurt people.

Appendix H Spitefulness Scale

Instructions: Please rate each of the following statements according to how well it applies to you from 1 (Not at all) to 5 (Definitely).

1. It might be worth risking my reputation in order to spread gossip about someone I did not like.
2. If I am going to my car in a crowded parking lot and it appears that another driver wants my parking space, then I will make sure to take my time pulling out of the parking space.
3. I hope that elected officials are successful in their efforts to improve my community even if I opposed their election.
4. If my neighbor complained that I was playing my music too loud, then I might turn up the music even louder just to irritate him or her, even if meant I could get fined.
5. If I had the opportunity, then I would gladly pay a small sum of money to see a classmate who I do not like fail his or her final exam.
6. There have been times when I was willing to suffer some small harm so that I could punish someone else who deserved it.
7. I would rather no one get extra credit in a class if it meant that others would receive more credit than me.
8. If I opposed the election of an official, then I would be glad to see him or her fail even if their failure hurt my community.
9. I would be willing to take a punch if it meant that someone I did not like would receive two punches.
10. I would be willing to pay more for some goods and services if other people I did not like had to pay even more.
11. If I was one of the last students in a classroom taking an exam and I noticed that the instructor looked impatient, I would be sure to take my time finishing the exam just to irritate him or her.
12. If my neighbor complained about the appearance of my front yard, I would be tempted to make it look worse just to annoy him or her.
13. I would take on extra work at my job if it meant that one of my co-workers who I did not like would also have to do extra work.
14. I would be happy receiving extra credit in a class even if other students received more points than me.
15. Part of me enjoys seeing the people I do not like fail even if their failure hurts me in some way.
16. If I am checking out at a store and I feel like the person in line behind me is rushing me, then I will sometimes slow down and take extra time to pay.
17. It is sometimes worth a little suffering on my part to see others receive the punishment they deserve.

Appendix I Triarchic Psychopathy Measure (Tri-PM)

Instructions: This questionnaire contains statements that different people might use to describe themselves. Each statement is followed by four choices (see below). The meaning of these four different choices is as follows:

4 = True, 3 = Somewhat True, 2 = Somewhat False, 1 = False

For each statement, select the choice that describes you best. There are no right or wrong answers; just choose the answer that best describes you.

1. I'm optimistic more often than not.
2. How other people feel is important to me.
3. I often act on immediate needs.
4. I have no strong desire to parachute out of an airplane.
5. I've often missed things I promised to attend.
6. I would enjoy being in a high-speed chase.
7. I am well-equipped to deal with stress.
8. I don't mind if someone I dislike gets hurt.
9. My impulsive decisions have caused problems with loved ones.
10. I get scared easily.
11. I sympathize with others' problems.
12. I have missed work without bothering to call in.
13. I'm a born leader.
14. I enjoy a good physical fight.
15. I jump into things without thinking.
16. I have a hard time making things turn out the way I want.
17. I return insults.
18. I've gotten in trouble because I missed too much school.
19. I have a knack for influencing people.
20. It doesn't bother me to see someone else in pain.
21. I have good control over myself.
22. I function well in new situations, even when unprepared.
23. I enjoy pushing people around sometimes.
24. I have taken money from someone's purse or wallet without asking.
25. I don't think of myself as talented.
26. I taunt people just to stir things up.
27. People often abuse my trust.
28. I'm afraid of far fewer things than most people.
29. I don't see any point in worrying if what I do hurts someone else.
30. I keep appointments I make.
31. I often get bored quickly and lose interest.
32. I can get over things that would traumatize others.
33. I am sensitive to the feelings of others.
34. I have conned people to get money from them.

35. It worries me to go into an unfamiliar situation without knowing all the details.
36. I don't have much sympathy for people.
37. I get in trouble for not considering the consequences of my actions.
38. I can convince people to do what I want.
39. For me, honesty really is the best policy.
40. I've injured people to see them in pain.
41. I don't like to take the lead in groups.
42. I sometimes insult people on purpose to get a reaction from them.
43. I have taken items from a store without paying for them.
44. It's easy to embarrass me.
45. Things are more fun if a little danger is involved.
46. I have a hard time waiting patiently for things I want.
47. I stay away from physical danger as much as I can.
48. I don't care much if what I do hurts others.
49. I have lost a friend because of irresponsible things I've done.
50. I don't stack up well against most others.
51. Others have told me they are concerned about my lack of self-control.
52. It's easy for me to relate to other people's emotions.
53. I have robbed someone.
54. I never worry about making a fool of myself with others.
55. It doesn't bother me when people around me are hurting.
56. I have had problems at work because I was irresponsible.
57. I'm not very good at influencing people.
58. I have stolen something out of a vehicle.

Appendix J
Four-Factor Model Sadism Item List

Factor	Item	Original Measure (Subscale)
F1	1. I would hurt someone if it meant I would be in control.	ASP (S)
	2. I control my friends through intimidation.	ASP (S)
	3. When I mock someone, it is funny to see them get upset.	ASP (P)
	4. When I get annoyed, tormenting people makes me feel better.	ASP (P)
	5. I enjoy humiliating others.	ASP (P)
	6. I get pleasure from mocking people in front of their friends.	ASP (P)
	7. I have cheated others because I enjoy it.	ASP (P)
	8. I'd lie to someone to make them upset.	ASP (U)
	9. I have stolen from others without regard for the consequences.	ASP (U)
	10. Making people feel bad about themselves makes me feel good.	ASP (U)
	11. I am quick to humiliate others.	ASP (U)
F2	1. I enjoy physically hurting people.	CAST (physical)
	2. I think about hurting people who irritate me.	ASP (U)
	3. I enjoy hurting my partner during sex (or pretending to).	CAST (physical)
	4. Hurting people would be exciting.	SSIS
	5. I have hurt people for my own enjoyment.	SSIS
	6. People would enjoy hurting others if they gave it a go.	SSIS
	7. I have fantasies which involve hurting people.	SSIS
	8. I have hurt people because I could.	SSIS
	9. Sometimes I get so angry I want to hurt people.	SSIS
F3	1. I was purposely mean to some people in high school.	CAST (verbal)
	2. I enjoy making jokes at the expense of others.	CAST (verbal)
	3. I have purposely tricked someone and laughed when they looked foolish.	CAST (verbal)
	4. When making fun of someone, it is especially amusing if they realize what I'm doing.	CAST (verbal)
	5. Perhaps I shouldn't have, but I never got tired of mocking certain classmates.	CAST (verbal)
F4	1. In video games, I like the realistic blood spurts	CAST (vicarious)
	2. I love to watch YouTube clips of people fighting.	CAST (vicarious)
	3. I enjoy watching cage fighting (or MMA), where there is no escape.	CAST (vicarious)
	4. I sometimes replay my favorite scenes from gory slasher films.	CAST (vicarious)

5. I enjoy playing the villain in games and torturing other characters. CAST (vicarious)

Note. F = Factor, ASP = Assessment of Sadistic Personality, CAST = Comprehensive Assessment of Sadistic Tendencies, SSIS = Short Sadistic Impulse Scale, S = Subjugation, P = Pleasure-Seeking, U = Unempathic.

Appendix K Conflict Tactics Scale 2 (CTS2)

1. Are you currently in a romantic relationship? [*If no, skips all questions; if yes, continues*]

Instructions: No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just have spats or fights because they are in a bad mood, are tired or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when you have differences. Please type how many times you did each to these things in the past year, and how many times your partner did them in the past year. If you or your partner did not do one of these things in the past year, but it happened before that, select "7". If it never happened, select "0".

How often did this happen?

- 0 = This has never happened
- 1 = Once in the past year
- 2 = Twice in the past year
- 3 = 3-5 times in the past year
- 4 = 6-10 times in the past year
- 5 = 11-20 times in the past year
- 6 = More than 20 times in the past year
- 7 = Not in the past year, but it did happen before

1. I explained my side or suggested a compromise for a disagreement with my partner
2. My partner explained his or her side or suggested a compromise for a disagreement with me
3. I insulted or swore or shouted or yelled at my partner
4. My partner insulted or swore or shouted or yelled at me
5. I had a sprain, bruise, or small cut, or felt pain the next day because of a fight with my partner
6. My partner had a sprain, bruise, or small cut or felt pain the next day because of a fight with me
7. I showed respect for, or showed that I cared about my partner's feelings about an issue we disagreed on
8. My partner showed respect for, or showed that he or she cared about my feeling about an issue we disagreed on
9. I pushed, shoved, or slapped my partner
10. My partner pushed, shoved, or slapped me
11. I punched or kicked or beat-up my partner
12. My partner punched or kicked or beat-me-up
13. I destroyed something belonging to my partner or threatened to hit my partner
14. My partner destroyed something belonging to me or threatened to hit me
15. I went see a doctor (M.D.) or needed to see a doctor because of a fight with my partner

16. My partner went to see a doctor (M.D.) or needed to see a doctor because of a fight with me
17. I used force (like hitting, holding down, or using a weapon) to make my partner have sex
18. My partner used force (like hitting, holding down, or using a weapon) to make me have sex
19. I insisted on sex when my partner did not want to or insisted on sex without a condom (but did not use physical force)
20. My partner insisted on sex when I did not want to or insisted on sex without a condom (but did not use physical force)

Appendix L

Justice Sensitivity Inventory (JSI)

Instructions: People react quite differently in unfair situations. How about you? First, we will look at situations to the advantage of others and to your own disadvantage.

- 1 It bothers me when others receive something that ought to be mine.
- 2 It makes me angry when others receive a reward that I have earned
- 3 I cannot easily bear it when others profit unilaterally from me
- 4 It takes me a long time to forget when I have to fix others' carelessness
- 5 It gets me down when I get fewer opportunities than others to develop my skills
- 6 It makes me angry when others are undeservingly better off than me
- 7 It worries me when I have to work hard for things that come easily to others
- 8 I ruminate for a long time when other people are treated better than me
- 9 It burdens me to be criticized for things that are overlooked with others
- 10 It makes me angry when I am treated worse than others

Instructions: Now, we will look at situations in which you notice or learn that someone else is being treated unfairly, put at a disadvantage, or used.

- 11 It bothers me when someone gets something they don't deserve
- 12 I am upset when someone does not get a reward he/she has earned
- 13 I cannot easily bear it when someone unilaterally profits from others
- 14 It takes me a long time to forget when someone else has to fix others' carelessness
- 15 It disturbs me when someone receives fewer opportunities to develop his/her skills than others
- 16 I am upset when someone is undeservingly worse off than others
- 17 It worries me when someone has to work hard for things that come easily to others
- 18 I ruminate for a long time when someone is treated nicer than others for no reason
- 19 It gets me down to see someone criticized for things that are overlooked with others
- 20 I am upset when someone is treated worse than others

Instructions: Now, we will look at situations that turn out to your advantage and to the disadvantage of others.

- 21 It disturbs me when I receive what others ought to have
- 22 I have a bad conscience when I receive a reward that someone else has earned
- 23 I cannot easily bear it to unilaterally profit from others
- 24 It takes me a long time to forget when others have to fix my carelessness
- 25 It disturbs me when I receive more opportunities than others to develop my skills
- 26 I feel guilty when I am better off than others for no reason
- 27 It bothers me when things come easily to me that others have to work hard for
- 28 I ruminate for a long time about being treated nicer than others for no reason
- 29 It bothers me when someone tolerates things with me that other people are being criticized for

30 I feel guilty when I receive better treatment than others

Instructions: Finally, we will look at situations in which you treat someone else unfairly, discriminate against someone, or exploit someone.

31 It gets me down when I take something from someone else that I don't deserve

32 I have a bad conscience when I deny someone the acknowledgment he or she deserves

33 I cannot stand the feeling of exploiting someone

34 It takes me a long time to forget when I allow myself to be careless at the expense of someone else

35 It disturbs me when I take away from someone else the possibility of developing his or her potential

36 I feel guilty when I enrich myself at the cost of others

37 It bothers me when I use tricks to achieve something while others have to struggle for it

38 I ruminate for a long time when I treat someone less friendly than others without a reason

39 I have a bad conscience when I criticize someone for things I tolerate in others

40 I feel guilty when I treat someone worse than others

Appendix M
Positive and Negative Affect Schedule (PANAS)

Instructions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. Indicate to what extent you feel this way right now, that is, at the present moment from 1 (Very Slightly) to 5 (Not at All).

- | | |
|-----------------------------|----------------|
| _____ 1. Interested _____ | 11. Irritable |
| _____ 2. Distressed _____ | 12. Alert |
| _____ 3. Excited _____ | 13. Ashamed |
| _____ 4. Upset _____ | 14. Inspired |
| _____ 5. Strong _____ | 15. Nervous |
| _____ 6. Guilty _____ | 16. Determined |
| _____ 7. Scared _____ | 17. Attentive |
| _____ 8. Hostile _____ | 18. Jittery |
| _____ 9. Enthusiastic _____ | 19. Active |
| _____ 10. Proud _____ | 20. Afraid |

Scoring:

Positive Affect Score: Add the scores on items 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19.

Negative Affect Score: Add the scores on items 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20.

Appendix N

Modified Point Subtraction Aggression Paradigm (PSAP) Instructions

In this task, you will be participating with 12 other players. The other players will have a similar computer set-up and are also completing the task remotely.

When each session starts, the options “1”, “2”, and “3” will appear on the screen as well as a button press counter and the first letter of your opponent’s name.

You may only choose to press one of these options per session and each one has a different effect on your or your opponent’s points.

Pushing the “1” key on your keyboard will cause the press counter to start counting how often you push “1”. Pushing “1” 10 times will add 1 point to your total score if you press it faster than your opponent.

You will receive feedback regarding whether you won or lost and the selection your opponent made during that trial and then see the buttons and counter again, at which point you can continue to press “1” or switch to “2” or “3”.

If you push “2” the press counter will again start counting how often you push “2”. After you push “2” 10 times 1 point will be subtracted from the other players total score if you are faster.

You will again receive feedback about your outcome and your opponent’s behavior and return to the original screen.

If you subtract points from the other player, they will NOT be added to your score. If you press the “3” 10 times, your point counter will be protected from point subtractions initiated by the other player for the round.

In some rounds of the game, a green dollar sign (\$\$) symbol will appear on the screen in the top right corner. This indicates that for this round, you can earn \$1.00 in addition to SONA credit if you accrue more total points than your opponents at the end of the game.

During these rounds you still have the option to subtract any money that your opponent has accrued or to protect the money that you have earned up to that point.

If you are ready to begin, press the SPACE button.

Appendix O
Study 2 Multinomial Multilevel Model Results

Results from the multinomial multilevel model examining the effects of experimental condition and psychopathy factors on response choice during the Point Subtraction Aggression Paradigm (PSAP).

Outcome	Parameter	Coefficient	SE	95% CI	p
Protect	(Intercept)	-0.98	0.38	(-1.71, -0.24)	.009
	condition	-0.12	0.05	(-0.21, -0.02)	.018
	egocentricity	0.14	0.15	(-0.15, 0.43)	.353
	callousness	0.03	0.14	(-0.24, 0.30)	.822
	antisocial	0.04	0.15	(-0.26, 0.33)	.810
	condition * egocentricity	-0.14	0.10	(-0.33, 0.06)	.172
Steal	(Intercept)	-1.32	0.36	(-2.02, -0.62)	< .001
	condition	0.12	0.05	(-0.22, -0.03)	.013
	egocentricity	0.46	0.14	(0.18, 0.74)	< .001
	callousness	-0.21	0.13	(-0.47, 0.05)	.107
	antisocial	0.12	0.14	(-0.17, 0.40)	.423
	condition * egocentricity	-0.13	0.10	(-0.31, 0.06)	.193

Note. 'Outcome' refers to participant choices during the PSAP (Coded 0 = 'Earn points', 1 = 'Protect points', 2 = 'Steal points from opponent'). Reference category = Earn.

Results from the multinomial multilevel model examining the effects of experimental condition and sadism factors on response choice during the Point Subtraction Aggression Paradigm (PSAP).

Outcome	Parameter	Coefficient	SE	95% CI	p
Protect	(Intercept)	.50	0.27	(-0.03, 1.03)	.064
	condition	-.12	0.05	(-0.22, -0.02)	.017
	Factor 1	1.28	0.83	(-0.35, 2.91)	.123
	Factor 2	.12	0.60	(-1.06, 1.30)	.844
	Factor 3	-.39	0.11	(-0.61, -0.16)	.001
	Factor 4	-.10	0.08	(-0.26, 0.07)	.243
	condition*Factor 3	-.012	.07	(-0.16, 0.14)	.877
Steal	(Intercept)	.32	.27	(-.21, .84)	.236
	condition	-.12	.05	(-.22, -.03)	.012
	Factor 1	1.20	.83	(-.42, 2.83)	.146
	Factor 2	.05	.60	(-1.12, 1.22)	.937
	Factor 3	-.32	.11	(-.54, -.09)	.005
	Factor 4	-.06	.08	(-.23, .10)	.472
	condition* Factor 3	-.001	.07	(-0.14, 0.14)	.994