MECHANISMS OF SUBCLINICAL SADISM

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Thesis submitted to the University of Nottingham for the degree of

Doctor of Forensic Psychology

Submitted for Examination:

August 2022

Thesis Abstract

Background: Individual differences are important predictors of behaviour, attitudes, and outcomes. 'Dark personalities' are socially aversive, yet non-pathological personality traits found within the general population. They can adapt, flourish, and act within socially acceptable boundaries within society, but are associated with antagonistic and harmful behaviour. Subclinical Sadism encompasses a unique element that justifies its inclusion in the dark personality cluster – its intrinsic pleasure of another's suffering.

Aims: This thesis aimed to integrate and synthesise existing research on the relationship between sadistic traits and aggressive behaviour; examine factors (temperamental traits) that predispose an individual to developing sadistic traits; investigate potential underlying mechanisms of sadism (emotional processing); consider what factors (excitation transfer) might increase sadistic traits; and explore lifestyle mechanisms (sensational interests) that might contribute to everyday sadism.

Methods: A psychometric critique was completed to evaluate the Varieties of Sadistic Tendencies (VAST; Paulhus & Jones, 2015) assessment, to understand if this was a valid and reliable measure of sadism to undertake the empirical research. A systematic review and meta-analysis were completed to evaluate the relationship between sadism and aggression within the general population. The first empirical study employed a cross-sectional design to examine the relationship between dark personality traits, physiological self-regulatory systems (Reinforcement Sensitivity Theory; Gray, 1972), and emotional responses to audio-visual stimuli. The second empirical study employed a cross-sectional design to examine the relationship between sadism and sensational interests, and an experimental design to explore the effects of Excitation Transfer (Zillman, 1971).

Results: A meta-analysis using 57 effect sizes from 48 studies revealed a pooled correlation coefficient of .35 (95% CI = 0.29, 0.40) between sadism and aggression. The VAST was evaluated as a robust psychometric measure and deemed appropriate to undertake the empirical research. In empirical study one, bootstrapped correlational analyses found a negative correlation between sadism and BIS-Anxiety and FFFS-Fear, and a positive correlation with BAS-Drive. Correlational analyses found a positive correlation between sadism and experiencing enjoyment in response to violent stimuli. In empirical study two, a bootstrapped hierarchical multiple regression found that up to 26% of the variance in sadism could be predicted from sensational interests. Bootstrapped paired-samples t-tests found no significant increases in sadism or sensational interest scores, in the experimental condition designed to increase physiological arousal.

Conclusions: The results from the systematic review conclude that sadism is important in understanding a range of aggressive behaviours that occur in the general population. Findings within empirical study one, suggest that there may be temperamental predispositions to developing sadistic traits; according to RST, sadism could be understood as a high-approach low-avoidance temperamental trait. Findings also support preliminary evidence of aberrations in the emotional processing of individuals with increased sadistic traits. Findings within empirical study two suggest that sensational interests contribute to the profile of individuals with elevated sadistic traits. The influence of excitation transfer on sadism requires further exploration. This thesis concludes that in order to develop interventions aimed at reducing the risk of harmful behaviour, further research on subclinical sadism is warranted.

Authorship Declaration

The contents of this thesis have been reviewed by my academic supervisors:

Dr Vincent Egan, Associate professor in Forensic Psychology Practice

Dr Elizabeth Paddock, Assistant Professor of Forensic Psychology

There are no other authors in the contents of this thesis.

Acknowledgements

I would firstly like to thank both of my supervisors over the last four years. Dr Vincent Egan – I am very grateful for the continued support you have provided, your support, knowledge and guidance has been invaluable. Dr Lizzie Paddock – Thank you very much for your support, guidance, and encouragement.

I would like to thank my parents – I have your genes and you have raised me, so you definitely need some credit! Thank you to the family members that supported me financially – you know who you are! Without help in funding, this would never have been possible!

Thank you, Grandma, for your encouragement and support, I hope this makes you proud. I wish Grandad could have been here to see me to the end; I hope he is proud that I have continued the PhD legacy (even though it's not physics!)!

Thank you to my partner for putting up with my stress and for remaining with me since I started this doctorate . . . you have been very supportive.

Thank you to my best friend who I met a long time ago during my undergraduate; as always, you have been wonderful.

Finally, thank you to my GP Dr R., I have experienced a difficult last few years with my physical health, and I am grateful for the support you have provided.

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Glossary of Sadism Terms

Sadism[1] - The term sadism is defined as "the tendency to enjoy causing, or simply observing, others' suffering" (Paulhus et al., 2021, p. 2018).

Trait Sadism – The construal of sadism as a dimensional personality construct (normal personality variable) – "in contrast to earlier clinical and forensic conceptions" (Paulhus & Jones, 2015, p.583).

Subclinical Sadism – The term subclinical sadism is defined as "the tendency to enjoy causing, or simply observing, others' suffering" (Paulhus et al., 2021, p. 2018) within non-clinical and non-forensic populations.

Everyday Sadism – The term everyday sadism has been defined as "largely acceptable forms of subclinical sadism that are prevalent in modern culture" (Paulhus, 2016, p. 110).

Soft Sadism[2] – A term used by Pinker (2011) indicating that milder versions of sadistic acts remain "evident in contemporary human societies" (as cited in Paulhus, 2016, p. 109).

Direct Sadism - As measured by the Varieties of Sadistic Tendencies (VAST; Paulhus et al., 2011; Paulhus & Jones, 2015), direct sadism refers to the "enjoyment of harming others physically or verbally" (Paulhus & Jones, 2015, p. 584).

Vicarious Sadism - As measured by the Varieties of Sadistic Tendencies (VAST; Paulhus et al., 2011; Paulhus & Jones, 2015), vicarious sadism refers to the "enjoyment of observing others being harmed" (Paulhus & Jones, 2015, p. 584).

[1] Please note that the terms 'sadism', 'trait sadism', 'subclinical sadism' , and 'everyday sadism' are used interchangeably throughout the literature and this thesis.

[2] Please note that within this thesis, this term was used only as a syntax term in the systematic searches.

Physical Sadism - As measured by the Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels, 2018), physical sadism refers to the "enjoyment of physical cruelty toward others" (p. 20).

Verbal Sadism - As measured by the Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels, 2018), verbal sadism refers to the "enjoyment of the humiliation of others and the perpetration of psychological cruelty" (p. 20).

Vicarious Sadism - As measured by the Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels, 2018), vicarious sadism refers to the "enjoyment of . . . violent media consumption" (p. iii).

Sadistic Personality - "The term sadistic personality describes a person who humiliates others, shows a longstanding pattern of cruel or demeaning behaviour to others, or intentionally inflicts physical, sexual, or psychological pain or suffering on others . . . for pleasure and enjoyment" (O'Meara et al., 2011, p. 523).

Sadistic Personality Disorder - At present, there is no clinical diagnosis available for sadism; the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) and International Statistical Classification of Diseases and Related Health Problems (ICD-10; World Health Organisation, 1992) recognise paraphilic sexual sadism, but there is no current coding for sadism as a general, non-sexual concept (O'Meara et al., 2011). At one time Sadistic Personality Disorder (SPD) was included in the appendix of the revised DSM-III-R (American Psychological Association, 1980) but was later removed in the DSM-IV (American Psychological Association, 2000).

Preface

This thesis comprises of six chapters, with four linked components: a psychometric critique; a systematic review and meta-analysis; and two empirical research studies. Chapter One is the introductory chapter. It provides an overview of theoretical models within personality and individual differences literature, focusing on trait theories and biological theories of personality, and considering how antagonistic traits are operationalised.

Chapter One then introduces the 'Dark Triad' of personality, providing a brief overview of subclinical psychopathy, subclinical narcissism, and Machiavellianism. This section considers debates regarding: whether dark personality traits are equivalent in non-clinical samples and if they should be studied individually; what makes a personality trait 'dark'; and what is the common variable amongst dark personality traits. Next, the 'Dark Tetrad' of personality and the concept of subclinical sadism is introduced. It is this fourth dark personality trait that is the focus of this thesis.

Chapter Two presents a psychometric critique of the Varieties of Sadistic Tendencies (VAST) assessment, a measure used to examine trait-like proclivity towards sadistic behaviour. This chapter evaluates whether this tool is a valid and reliable method of measuring subclinical sadism. A measure of sadism that is valid and reliable, is an important enabler of the empirical studies presented in Chapter Four and Five, that address the overall aims of the thesis. A systematic review and meta-analysis, examining the relationship between subclinical sadism and aggressive behaviour, is presented in Chapter Three. This is an important chapter which assesses empirical evidence as to whether subclinical sadism is predictive of harmful behaviour within the general population.

Chapter Four presents the primary empirical study. The aim of this chapter is to develop knowledge regarding the underlying mechanisms of sadism. It aims to extend research which has examined the emotional processing of individuals with increased sadistic traits. This study uses Reinforcement Sensitivity as a theoretical framework to examine whether there are temperamental predispositions to developing sadistic traits.

Chapter Five presents the secondary empirical study. The aim of this chapter is to understand what factors may increase sadistic traits and make antisocial cognitions more consciously available in persons who are temperamentally inclined to this disposition. To examine this, Excitation Transfer Theory is used as a theoretical framework. Furthermore, this chapter examines the relationship between increased sadistic traits and sensational interests, considering what environmental factors may reinforce and increase sadistic tendencies.

Finally, Chapter Six synthesises the results presented throughout the thesis. It reflects on sadism as a continuum of interest, by considering 'everyday' manifestations of subclinical sadism, to manifestations of harmful interpersonal behaviour. The implications of the information presented within this thesis are discussed, and future directions within the field of subclinical sadism are considered. Overall, this thesis highlights the importance of studying this dark personality trait.

Please note that Chapter Three and Chapter Four have been already published:

Thomas, L., & Egan, V. (2022). A systematic review and meta-analysis examining the relationship between everyday sadism and aggression: Can subclinical sadistic traits predict aggressive behaviour within the general population? *Aggression and Violent Behavior*, 101750.

Thomas, L., & Egan, V. (2022). Subclinical sadism: Examining temperamental predispositions and emotional processing. *Personality and Individual Differences,* 196, 111756.

Chapter One

Introduction to Thesis

1. Introduction

1.1 Models of Personality Structure

Research in personality and individual differences aims to explore how people vary psychologically and develop theories to explain differences in behaviour (Cooper, 2021). An important advancement in personality psychology was the development of trait theories. This approach has been used to identify fundamental dimensions of personality, develop measurements of personality, and compare individual differences within models of personality structure (Coster & McCrae, 1998). This has enabled the ability to systematically organise a breadth of empirical findings within personality research (John & Srivastava, 1999; McCrae & Costa, 2008). Whilst there are several trait theories (Cattell, 1946; Tupes & Christal, 1961/1992), this chapter will provide an overview of established models relevant to this thesis. Furthermore, this chapter will consider how antagonistic traits are operationalised within these models of personality (Lynam & Miller, 2019).

1.1.1 The Big-Five Factor Structure

An established representation of personality attributes is the five-factor structure (Goldberg, 1990). To develop this taxonomy, lexical researchers initially examined what personality adjectives were commonly used in the English language (Allport & Odbert, 1936), and Norman (1967) later reduced these trait descriptors into clusters. Factor analysis was subsequently used to summarise and sort these variables into categories of related traits (Goldberg, 1990; McCrae & Costa, 2008; Saucier & Goldberg, 1998). Through this process, Goldberg (1990) proposed an alternative description of personality, the Big-Five factor structure. As presented in Table 1, this model included five factors of personality: Surgency, Agreeableness,

Conscientiousness, Emotional Stability, and Intellect. Within Table 1, antagonistic traits are primarily placed on the negative pole of the Agreeableness personality factor.

Table 1

Personality Factors identified using the 75 Norman Categories (Goldberg, 1990, p. 1220-1221)[3]

Personality Factor	Positive Pole	Negative Pole
Surgency	Spirit, Talkativeness, Sociability, Spontaneity, Boisterousness, Adventure, Energy, Conceit, Vanity, Indiscretion, Sensuality	Lethargy, Aloofness, Silence, Modesty, Pessimism, Unfriendliness
Agreeableness	Trust, Amiability, Generosity, Agreeableness, Tolerance, Courtesy, Altruism, Warmth, Honesty	Vindictiveness, Ill humour, Criticism, Disdain, Antagonism, Aggressiveness, Dogmatism, Temper, Distrust, Greed, Dishonesty
Conscientiousness	Industry, Order, Self-discipline, Evangelism, Consistency, Grace, Reliability, Sophistication, Formality, Foresight, Religiosity, Maturity, 'Passion-lessness', Thrift	Negligence, Inconsistency, Rebelliousness, Irreverence, Provinciality, Intemperance
Emotional Stability	Durability, Poise, Self-reliance, Callousness, Candour	Self-pity, Anxiety, Insecurity, Timidity, Passivity, Immaturity
Intellect	Wisdom, Originality, Objectivity, Knowledge, Reflection, Art	Imperceptivity,

[3] Table information adapted from "Table 2: The 75 Norman Categories: Factor Loadings From Varimax Rotations of Principal Components and Principal Factor", L. R. Goldberg, 1990, Journal of Personality and Social Psychology, 59(6). Copyright 1990 by the American Psychological Association, Inc.

1.1.2 The Five-Factor Model of Personality

Following Goldberg (1990), a second model of trait personality was developed – the Five-Factor Model (FFM; McCrae & Costa, 1992). The personality factors and associated adjectives used to define each factor are presented in Table 2. Building on Goldberg's (1990) methodology, factors in the FFM were operationalised through the NEO Personality Inventory (NEO-PI; Costa & McCrae, 1985). It was evidenced that many personality inventories were associated with NEO-PI domains and could be accommodated within the FFM. Within both five factor models, the construct of antagonism is located on the negative pole of agreeableness. Lynam and Miller (2019) note that that the opposing antagonistic traits that fall on the negative pole of agreeableness, could be considered as sceptical, cunning, exploitative, oppositional, arrogant, and callous.

Table 2

Personality factors and associated adjectives in the FFM of Personality (McCrae & Costa, 1992, p.178-179)[4]

Personality Factor	Adjectives used to define high scores on each factor
Openness	Artistic, curious, imaginative, insightful, original, wide interests
Conscientiousness	Efficient, organised, planful, reliable, responsible, thorough
Extraversion	Active, assertive, energetic, enthusiastic, outgoing, talkative
Agreeableness	Appreciative, forgiving, generous, kind, sympathetic, trusting
Neuroticism	Anxious, self-pitying, tense, touchy, unstable, worrying

[4] Table information adapted from "Table 1: Examples of Adjectives, Q-Sort Items, and Questionnaire Scales Defining the Five Factors", R. R. McCrae & O. P. John, 1992, Journal of Personality, 60(2). This article lies in the public domain because it was written for and funded by the federal government.

1.1.3 The HEXACO Model of Personality

Following development of the FFM, further lexical studies of personality structure were undertaken in different languages, identifying a sixth dimension of personality structure (Ashton & Lee, 2008). The identified factor was Honesty-Humility, encompassing traits such as sincerity and fairness, on a continuum with conceit and greed (Ashton & Lee, 2008). Using cross-sectional research, Ashton and Lee (2008) identified traits and facets that were best represented across different cultures. From these investigations, the HEXACO was developed, and six domains of human personality dispositions[5] were constructed. Summaries of scale descriptions are presented in Table 3.

Similar to the FFM, antagonistic traits can be found on the negative pole of the agreeableness and honesty-humility scale. In addition to this, the HEXACO Personality Inventory-Revised (Lee & Ashton, 2018) has added a new facet labelled the Altruism (versus Antagonism) scale, which assesses individuals who are "not upset by the prospect of hurting others" (HEXACO, Scale Descriptors, p.1).

Table 3

Scale descriptions of Domain-Level Scales and Facet-Level Scales in the HEXACO (Lee & Ashton, 2009)[6]

Domain-Level Scales	High Scores	Low Scores
Honesty-Humility	Avoid manipulation of others for personal gain, little temptation to break rules,	Flatter others for personal gain, inclined to break rules, motivated by

[5] See https://hexaco.org/scaledescriptions for full descriptions of all HEXACO scales.

[6] Table information adapted from "Scale Descriptions", K. Lee & M. C. Ashton, 2009, https://hexaco.org/scaledescriptions. Copyright 2009 by Kibeom Lee, Ph.D., & Michael C. Ashton, Ph.D.

	uninterested in material gain, feel no special entitlement.	material gain, sense of self-importance.
Emotionality	Fear of physical danger, anxiety to life stressors, require emotional support, empathise with others.	Not deterred by risk of harm, experience little anxiety, less need to share concerns, feel emotionally detached from others.
eXtraversion	Feel positive about self, confident leading others, enjoy social occasions and interactions, enthusiastic and energetic.	Consider self as unpopular, dislike social attention, indifferent to social occasions, feel less energetic and optimistic.
Agreeableness	Forgiving of others, lenient when judging others, will compromise and cooperate with others, can control their temper.	Hold grudges against those who have harmed them, critical of others, rigid in changing their viewpoint, feel anger in response to mistreatment.
Conscientiousness	Manage time well, work in a disciplined way to achieve goals, aim to be accurate, and are careful when making decisions.	Unconcerned with an orderly environment, avoid difficult tasks and goals, are satisfied if there are errors, and make decisions on impulse.
Openness to Experience	Enjoy the beauty of art and nature, inquisitive, use their imagination, and are interested in unusual ideas.	Unimpressed by works of art, little curiosity in knowledge, avoid creativity, and little attraction towards unconventional or radical ideas.

1.1.4 The Three Factor Model of Personality

Moving beyond statistical approaches to identify dimensions of personality structure, Eysenck (1967) studied clinical and experimental literature and provided a neurophysiological explanation for differences in personality. Eysenck (1967) proposed that individual differences were a result of variability in cortical arousal and the limbic system. Associated with this variability, two personality dimensions, extroversion (vs introversion) and neuroticism (vs stability), were proposed. Table 4 provides a summary of these personality dimensions, as well as their suggested neurophysiological underpinnings (Cooper, 2021; Mitchell & Kumari, 2016).

Table 4

Personality Dimensions within Eysenck's (1967) PEN Model of Personality

Personality Dimension	Associated with:	Neurophysiological Explanation
Extraversion	Positive affect, engagement with the external world, increased sociability, talkative, energetic, assertive.	Variability in Cortical Arousal (An under aroused nervous system requiring more stimulation from the outside world).
Neuroticism	Negative affect, emotional instability, low stress tolerance, low tolerance for aversive stimuli, frequent experience of anxiety, fear, envy, frustration, jealousy, loneliness.	Variability in the level of activity within the limbic system. (Increased reactivity of the limbic system contributing to strong emotional reactions to environmental stimuli).

In 1975, Eysenck and Eysenck added a third personality dimension to account for psychiatric diagnoses - Psychoticism (vs normality). Within this model, elevated psychoticism scores were indicative of a propensity towards aggressiveness, impulsivity, manipulation, risk-taking, and irresponsibility (Eysenck, 1996). Considering the neurophysiological explanation for this dimension, Eysenck suggested that individuals high in psychoticism had higher levels of the hormone testosterone (Ashton, 2018). Eysenck's final 'PEN'[7] model included three independent dimensions of personality, which could be measured by the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975). Eysenck's psychoticism dimension has been found to be negatively correlated with conscientiousness and agreeableness in the FFM, and therefore the antagonistic traits can be located in high psychoticism scores (Lynam & Miller, 2019). Overall, Eysenck and Eysenck (1975) reported that a three-factor model of personality provided an efficient way to capture individual differences underpinned by biological processes, without the need for more elaborative models.

1.2. Biological Theories of Personality

1.2.1 Reinforcement Sensitivity Theory

Building on Eysenck's biological approach to defining dimensions of personality, Gray (1970) proposed changes to the neuroticism and extraversion axes, as well as their underlying neurophysiological mechanisms (Corr, 2004). Based on animal learning research[8], Gray (1970) proposed that differences in personality were related to differences in: the conceptual nervous system, levels of arousal, and an individual's reinforcement history (Cooper, 2021).

[7] 'PEN' – Psychoticism, Extraversion, Neuroticism.
[8] Ethical issues of conducting this type of research are acknowledged and highlighted.

Gray (1970) identified three components of the nervous system: the Behavioural Approach System[9] (BAS); Behavioural Inhibition System (BIS); and the Flight-Fight System (FFS). As presented in Figure 1, Gray (1970; 1972a; 1972b; 1981) proposed that two additional axes representing personality factors, should be added to Eysenck's (1967) theory: one which represented sensitivity to reward (BAS Sensitivity) and one which represented sensitivity to punishment (BIS and FFS sensitivity). Gray's (1970; 1982; 1987) Reinforcement Sensitivity Theory (RST) proposed that individuals presenting with increased impulsivity would be more sensitive to environmental cues of reward (increased BAS sensitivity), and individuals presenting with increased anxiety would be more sensitive to cues of punishment (increased BIS/FFS sensitivity).

RST was later revised by Gray and McNaughton (2000). Summarising changes in the revised model, the FFS (fight-flight system) incorporated a third component of 'freeze' and was relabelled the Fight-Flight-Freeze System (FFFS). The FFFS accounted for the experience of 'fear' in response to threatening stimuli, and an associated 'freeze' response. The function of the FFFS was also changed – it was proposed that the FFFS evaluated responses to aversive stimuli (conditioned and unconditioned) rather than the BIS. The BIS was assigned a new role - to resolve conflict when environmental cues were suggestive of both reward and threat (Bijttebier et al., 2009). With regards to the BAS, Gray and McNaughton (2000) proposed that this would become activated in response to positively valanced stimuli, both conditioned and unconditioned.

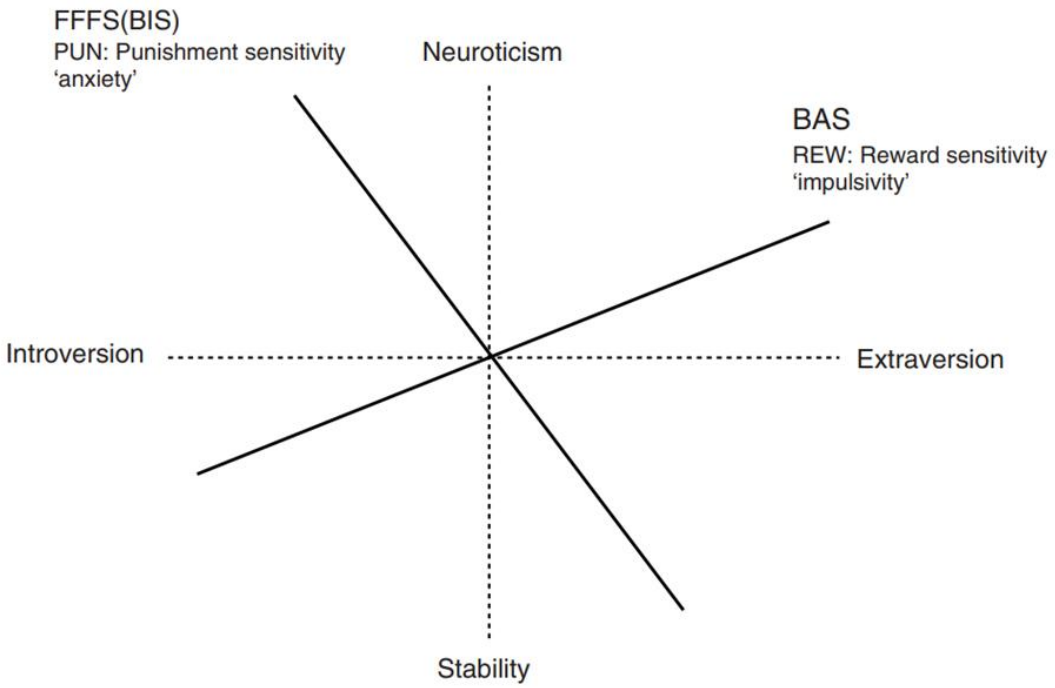
In more recent versions of RST (McNaughton & Corr, 2004; McNaughton & Corr 2008; Corr & McNaughton, 2012), the BIS is reported to be activated by both environmental cues

[9] BAS will be used interchangeably for Behavioural Approach System (**Gray, 1970**) and updated term Behavioural Activation System (Fowles, 1980).

of safety and escape from punishment. It was also recognised that punishment can be equivalent to non-reward (e.g., no reward from the environment is punishment), and reward can be equivalent to unexpected non-punishment (e.g., the reward is not being punished) (Cooper, 2021). With regards to the FFFS, Corr (2008) proposed that the response would be influenced by how far away the threat was and this was labelled "defensive distance" (p. 14). Finally, in more recent versions of RST, it was noted that there was an "initial valuation stage" where stimuli are categorized as "rewarding" or "punishing" and "it is then the contingencies of the situation that determine activation of the FFFS, BIS and BAS" (Cooper et al. 2017, p. 65).

Figure 1

Transformation of Eysenck's[10] (1967;1975) dimensions of personality by Gray (1970; 1982; 1987)[11]



[10] Note: Eysenck's psychoticism dimension is noted as BAS in this model.

[11] Figure 1 taken from "Figure 1.1: Position in factor space of the fundamental punishment sensitivity and reward sensitivity (unbroken lines) and the emergent surface expressions of these sensitivities i.e., Extraversion (E) and Neuroticism (N) (Broken lines)", A. D. Pickering, P. J. Corr, & J. A. Gray, 1999, Personality and Individual Differences, 26(2), 357–365. Copyright 2020 by American Psychological Association, Inc.

1.2.2 The RST Model of Personality

The RST model of personality proposes that differences in biological systems of approach and avoidance give rise major personality traits (Corr, 2015). In sum, differences in the nervous system will provoke different levels of arousal, different feelings (anxiety, or pleasure) and different responses (avoid or approach) to environmental stimuli (Bijttebier et al., 2009). As such, Gray (1987) posited that this theory could capture differences in personality, i.e., how someone presents, behaves, and experiences emotions in different environments (Cooper, 2021).

1.2.3 RST and Aggression

RST also offers a perspective of how and why certain personality traits are predictive of antagonistic or aggressive behaviour (Corr, 2008; Parker et al., 2022). RST suggests that individual differences in aggressive behaviour are influenced by the BAS, BIS and FFFS, which as discussed, evaluate stimuli in the environment, generate emotion, and motivate behavioural responses. Corr (2008) explained that aggressive behaviour may result from increased sensitivity in the BAS and subsequent strong attraction to reward cues, "thus decreasing the attentional capacity . . . to process information indicative of a potential problem with a prepotent response" (p. 409). Or, aggressive behaviour may result from a hypoactive BIS, causative of "impaired processing of information that is indicative of conflict involving a current or prepotent goal" (p. 409). Furthermore, a hyperactive BAS and hypoactive BIS is likely to result in increased disinhibition and impaired self-regulation (Newman & Wallace, 1993). Overall, RST describes its association with goal-driven persistence, impulsivity, and self-control - all factors related to aggressive behaviour (Bacon et al., 2018).

1.3 The Dark Side of Personality

How might psychologists understand why some people behave in more antisocial and antagonistic ways than do others? Paulhus and Williams (2002) were the latest persons attempting to clarify the literature on socially aversive, yet non-pathological personalities. Among the socially aversive personalities cited by Kowalski (2001), they noted subclinical psychopathy, subclinical narcissism, and Machiavellianism as especially prominent, and highlighted their existence in the general population. Dark personality research has emphasised that, like other dispositional traits, these traits exist on a continuum, ranging from clinical disorders under the supervision of clinical and/or forensic services, to subclinical presentations within broader community samples (Paulhus et al. 2021).

Paulhus and Williams (2002) tested whether subclinical manifestations of psychopathy, narcissism, and Machiavellianism were equivalent in non-clinical and non-forensic samples. They found that these personality traits showed "substantial variance" in non-clinical samples (Paulhus et al., 2021, p. 208). They suggested that whilst these traits shared a common core of low agreeableness, they were distinct constructs which, to varying degrees, entailed a socially malevolent character with "behaviour tendencies toward self-promotion, emotional coldness, duplicity, and aggressiveness" (p. 557).

Paulhus and Williams (2002) highlighted the central character elements of each personality trait thus: psychopathy[12] is characterised by "high-impulsivity and thrill-seeking, along with low empathy and anxiety" (p. 557); narcissism[13] involves "grandiosity, entitlement, dominance and superiority"[14] (p. 557); and Machiavellianism is associated with behaving in a

[12] The term psychopathy is used to describe subclinical psychopathy.
[13] The term narcissism is used to described subclinical narcissism.
[14] Elements that remain from the clinical diagnosis.

cold and manipulative manner. They subsequently integrated these concepts into the term 'Dark Triad' - "a constellation of three conceptually distinct but empirically overlapping personality variables" within non-clinical samples (Furnham et al., 2013, p. 199).

Research spanning over the last two decades has since aimed to "catalogue and understand subclinical manifestations of the Dark Triad traits" in a wide variety of behaviours and attitudes (Jonason & Dinić, 2021, p. 397). Dinić and Jevremov (2021) completed a bibliometric analysis of 505 journal articles, analysing trends of Dark Triad research across 17 years. The following research themes were highlighted: understanding Dark Triad traits in relation to established models of personality (Big Five Model; FFM; HEXACO); understanding Dark Triad traits from an evolutionary perspective, with a focus on life history theory; and considering psychometric approaches to measuring Dark Triad traits.

1.3.1 Are Dark Triad Traits Indistinguishable?

Some researchers advocate that psychopathy, narcissism, and Machiavellianism are not distinguishable due to their overlapping features and positive correlations between each trait (Furnham et al., 2013). As such, some recommend that Dark Triad traits should be studied as one construct (Furnham et al., 2013). Theories that could support this approach include circumplex research, trait theory, and evolutionary perspectives (Jones & Paulhus, 2011).

Circumplex research provides a 2-factor structural model (Interpersonal Circumplex) to examine individual differences by plotting two aspects that underlie social interactions: communion (connecting with others) and agency (striving for superiority) (Wiggins, 1979). Research which has plotted Dark Triad traits on the interpersonal circumplex has located them within the high-agency low-communion quadrant (Jones & Paulhus, 2011). This quadrant is associated with callous behaviour to achieve personal gain at the expense of

connectedness with others (Wiggins, 1979). Jones and Paulhus (2011) note that whilst dark traits fall within the same quadrant, a two-dimensional structure does not capture differences between the constructs.

Considering trait research, some researchers have concluded that Dark Triad traits are already captured within established models of personality. For example, within five factor models, Dark Triad traits have been consistently correlated with low agreeableness and conscientiousness (Furnham et al., 2013), and within the six-factor model, the Dark Triad has been negatively correlated with honesty-humility (Jones & Paulhus, 2011). However, as noted by Screiber and Marcus (2020) whilst dark traits are related to established personality models, they cannot be fully integrated within them.

Rather than view Dark Triad traits as pathological, some evolutionary theorists have suggested that behaviour associated with these traits are evolved adaptive strategies. As such, some theorists have suggested that as dark personality traits are adaptive, they should be understood as a single construct (Mealy, 1995). Using a life history perspective (Wilson, 1975), the Dark Triad's exploitative interpersonal style may be reflective of a fast life history, defined as focused on multiple mating and immediate outcomes (Jonason et al., 2017). Whilst fast life strategies are strategic responses to the environment that benefit the individual, they often impact society and other individuals. Fast life strategies, for example, have been associated with permissible attitudes towards causal sex, more sexual partners, and aggressive and antisocial behaviour (McDonald et al., 2012). Whilst Dark Triad traits have been argued to adopt a fast life history strategy, researchers have suggested that a more nuanced evolutionary view is required to explain each dark trait (Furnham et al., 2013).

1.3.2 The 'Dark Core' of Dark Personality

Whilst a significant amount of Dark Triad research has been completed, Kowalski et al. (2021) noted that one of the main challenges within dark personality research has been that scholars "recommend the inclusion or exclusion of traits within the dark cluster, without a priori theoretical criteria for what defines a dark trait" (p. 6). In other words, it is unclear as to what defines a 'dark' trait, and therefore what criteria warrant a traits inclusion or exclusion within the dark personality cluster. Other negative traits potentially justify inclusion, rather than the arbitrary constructs included within the Dark Triad. To clarify such criteria, there have been several suggestions as to what might constitute the 'dark core' of Dark Triad traits, i.e., the common variable that causes dark traits to overlap.

To examine the 'dark core', the location of Dark Triad traits within existing taxonomies of personality has been studied. Jakobwitz and Egan (2006) proposed that Dark Triad traits could be explained by the FFM of personality, noting that they could largely be described in terms of low agreeableness. With regards to the HEXACO model, Lee and Ashton (2005) reported strong negative correlations between the Dark Triad and honestly-humility dimension, and Paulhus (2014) reported that low scores on the honesty-humility dimension linked all Dark Triad traits together. More recently, a meta-analysis completed by Muris et al. (2017) found that Dark Triad traits were predominantly related to the negative pole of the honesty-humility dimension.

Another common variable across the dark traits is callousness (Jones and Paulhus, 2010). Jones and Figueredo (2013) reported that callousness and interpersonal manipulation (two facets of the primary psychopathy[15] and specific features of antagonism) were common

[15] Primary psychopathy: subclinical psychopathy as measured by the Self-Report Psychopathy Scale (SRP; Paulhus et al., in press) which has been validated in non-forensic samples.

amongst Dark Triad traits. They also noted that low honesty-humility and a lack of empathy would capture the same dark core and result in antagonistic behaviour. Kowalski et al. (2021) expanded on this finding, reporting that it is the combination of both callousness and interpersonal manipulation that results in 'deliberate malevolence' - the essence of dark personality.

Callousness refers to a lack of empathy, which has also been proposed as the common core of dark traits (Jones & Paulhus, 2010; Paulhus, 2014). Empathy is a multidimensional construct (Davies, 1983), often delineated into two facets, cognitive empathy, and affective empathy. Cognitive empathy refers to the ability to "encompass a comprehension of other people's experience" and affective empathy as the ability to "vicariously experience the emotional experience of others" (Reiners et al., 2011, p. 85).

Several studies have examined Dark Traits and their association with empathy (Heym et al., 2019). Pajavic et al. (2018) found that all Dark Triad traits were negatively associated with affective empathy. They surmised that deficits in affective empathy may enable an individual to engage in antagonistic and exploitative behaviour. Similarly, Turner et al. (2019) found that all dark traits were negatively associated with emotional empathy, defined as the ability to have an awareness of and experience other's emotions. It is noteworthy, however, that whilst research indicates lack of empathy as a shared dark core, each dark trait has varying associations with affective and cognitive empathy.

Different empathic deficits within psychopathy, narcissism, and Machiavellianism have been explored using a multidimensional model of empathy developed by Reiners et al. (2011). Using this model, Heym et al. (2019) found that the Dark Triad shared at least one deficit in affective empathy – peripheral responsivity, defined as an affective response in a

detached context (for example, remaining emotionally detached when watching a film). This highlights the importance of studying dark traits in relation to specific facets of affective and cognitive empathy. Overall, whilst the Dark Triad share empathy deficits, each trait is associated with varying empathy deficits and strengths, which contribute to their social strategy and associated risks of causing harm to others for self-advancement (Jonason & Krause, 2013).

1.3.3 The 'Antagonistic Core' of Dark Personality

Drawing findings together, there is evidence that suggests deliberate malevolence, captured by the combination of callousness (lack of empathy) and interpersonal manipulation, low agreeableness, and low honesty-humility, could account for the shared variance amongst the Dark Triad. A recent study by Vize et al. (2020) aimed to assess which traits identified as the Dark Core, accounted for the most shared variance amongst the Dark Triad. Findings confirmed that agreeableness, honesty-humility, and callousness and interpersonal manipulation held the most shared variance.

Interpreting these findings, Vize et al. (2020) suggested that these traits fall under the umbrella of Antagonism; a construct found on the opposite pole of agreeableness, and a trait related to callousness, immorality, grandiosity, distrustfulness, and combativeness (Lynam & Miller, 2019). In sum, Vize et al. (2020) suggested that dark personality traits are manifestations of antagonism. They noted that recognising antagonism as the common core would provide a straightforward explanation, as well as connecting dark personality traits to broader personality research (i.e., established FFM of Personality where antagonism is the opposite pole of agreeableness).

Following Vize et al.'s (2020) findings, Dinić et al. (2021) examined several candidates for the Dark Core. Results indicated that the pathological trait of antagonism[16] "constituted the best candidate for the Dark Core, sharing 96% of the total variance with dark traits" (p. 10). Furthermore, they noted that callousness, a facet of the antagonism measure, shared the highest variance amongst dark traits, supporting previous research which identified callousness as the common core. Summarising findings, Dinić et al. (2021) suggested the 'Antagonistic Triad' as an alternative, including: psychopathy (callousness), narcissism (grandiosity), and Machiavellianism (deceitfulness).

1.4 The 'Dark Tetrad' of Personality

In 2009, the Dark Triad was extended, with Chabrol et al. adding sadistic traits to the Dark Triad, and examining these in a non-forensic and non-clinical sample of adolescents. Findings indicated that Dark Triad traits were moderately correlated with sadistic traits[17], and that when controlling for callous-unemotional traits[18], sadistic traits remained predictive of delinquent behaviour in males under 18 years of age. Chabrol et al. (2009) suggested that sadism was an overlapping, but distinct construct which warranted further exploration within non-clinical samples. Whilst sadism was positively correlated with callousness, it held a unique aspect which was predictive of antagonistic behaviour.

1.5 Sadism

The term 'sadism' was introduced as a medical term in the late 19th century by Krafft-Ebing, a German Psychiatrist who introduced the term to describe individuals who gained pleasure

[16] Pathological Antagonism measured by the Antagonism scale from the Personality Inventory for the DSM-5 (PID-5; Krueger et al., 2012)
[17] Sadistic traits were measured using The Hurting Scale (O'Meara et al., 2004)
[18] Callous-unemotional traits were measured by the Affective Subscale on the Youth Psychopathic traits Inventory (Andershed et al., 2007)

from other's suffering (Bulut, 2017). At present, there is no clinical diagnosis available for sadism; the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) and International Statistical Classification of Diseases and Related Health Problems (ICD-10; World Health Organisation, 1992) recognise paraphilic sexual sadism, but there is no current coding for sadism as a general, non-sexual concept (O'Meara et al. 2011). At one time Sadistic Personality Disorder (SPD) was included in the appendix of the revised DSM-III-R (American Psychological Association, 1980) but was later removed in the DSM-IV (American Psychological Association, 2000), primarily due to concerns that the diagnosis would be misused legally by excusing cruel behaviour (Bulut, 2017). There were also concerns that the diagnosis could pathologize and stigmatise individuals, resulting in abusive treatment within secure settings, as well as interference with treatment interventions (Spitzer et al., 1991; Fiester & Gay, 1991). The diagnosis of SPD required four out of the eight criteria to be met, none of which included sexual sadism. Instead, the criteria, presented in Table 5, focused on power and domination of others (DSM-III-R; APA, 2000).

Table 5

DSM-III-R Diagnostic Criteria for Sadistic Personality Disorder[19]

A. A pervasive pattern of cruel, demeaning and aggressive behaviour, beginning by early adulthood, as indicated by the repeated occurrence of at least four of the following:

(1) Has used physical cruelty or violence for the purpose of establishing dominance in a relationship (not merely to achieve some non-interpersonal goal, such as striking someone in order to rob him or her)

(2) Humiliates or demeans people in the presence of others

[19] Table information taken from the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM-III-R), 1987, Diagnostic and Statistical Manual of Mental Disorders (3rd ed., revised). Copyright by American Psychiatric Association.

(3) Has treated or disciplined someone under his or her control unusually harshly (e.g., a child, student, prisoner, or patient)

(4) Is amused by, or takes pleasure in, the psychological or physical suffering of others (including animals)

(5) Has lied for the purpose of harming or inflicting pain on others (not merely to achieve some other goal)

(6) Gets other people to do what he or she wants by frightening them (through intimidation or even terror)

(7) Restricts the autonomy of people with whom he or she has a close relationship (e.g., will not let spouse leave the house unaccompanied or permit teen-age daughter to attend social functions)

(8) Is fascinated by violence, weapons, martial arts, injury, or torture

B. The behaviour in A has not been directed toward only one person (e.g., spouse, one child) and has not been solely for the purpose of sexual arousal (as in Sexual Sadism).

The term sadism has been frequently misunderstood. Historical accounts of sadism have described cruel and torturous acts committed by individuals for sexual pleasure (Plouffe et al. 2022) and more recently, sensationalistic offences have received significant media attention (Paulhus & Dutton, 2016). This media and populist coverage appears to have contributed to the "public equation of sadism with criminal sexual sadism" (Paulhus & Dutton, 2016, p. 110). Within the psychological literature, O'Meara et al. (2011) reported that the term sadism has frequently been "vaguely defined and . . . inconsistently applied" (p. 523), and until recently, the term sadism has been associated with criminal behaviour and sexual sadomasochism, and only considered within the context clinical and forensic settings. But the concept is far broader than that.

1.6 The Concept of Subclinical Sadism

In 2011, O'Meara et al. completed an extensive review of the literature surrounding sadism. In doing so, the following definition for 'sadistic personality' was developed: "The term sadistic personality describes a person who humiliates others, shows a longstanding pattern of cruel or demeaning behaviour to others, or intentionally inflicts physical, sexual, or psychological pain or suffering on others in order to assert power and dominance or for pleasure and enjoyment" (p. 523). They recognised that sadistic personality was a dimensional construct, existing on a "continuum of interest, ranging from relatively benign sadistic attitudes[20] to more pathological behavioural expressions" (p. 523). In response, they developed the Short Sadistic Impulse Scale (SSIS), a now widely used tool to measure sadistic inclination outside of the forensic or clinical setting.

Following the development of the SSIS, Buckels et al. (2013)[21] recruited participants from the general population and devised an experimental study to assess the utility of the measure in predicting sadistic behaviour. In Buckels et al.'s (2013) first study, increased sadistic traits were associated with choosing a 'bug killing task', instead of a 'pain-tolerance' or 'toilet cleaning task', and results indicated that elevated sadism scores were associated with more reported pleasure when killing bugs[22]. In the second study, a white-noise-aggression paradigm was used to assess sadistic behaviour (Buckels et al, 2013). Results indicated that increased sadistic traits were associated with increasing the level of aggression

[20] O'Meara et al. (2011) noted that benign sadistic attitudes are strong-willed and assertive, rather than domineering, belligerent and aggressive. Benign sadistic attitudes may manifest in behaviour that is goal orientated, hard-working, competitive, independent, strong leadership.
[21] Buckels et al. (2013) is the published version of Buckels (2012).
[22] Ethics: It is important to note that no bugs were harmed during this experimental study.

towards the innocent person when they were unable to fight back. Sadism was the only dark trait that predicted this (Buckels et al. 2013).

In both studies, sadism was a unique predictor of sadistic choice even when other dark traits were controlled for. In response to these results, Buckels et al. (2013) reported that sadism was a unique construct that reflected an appetite for cruelty. They emphasised that the phenomenon of sadism goes beyond the "instrumental aggression of psychopaths" and "callous narcissistic entitlement", to a "pleasure-driven form of aggression" (Buckels et al., 2013, p. 7). In sadism, aggression was motivated by intrinsic pleasure of another's suffering, and it is this characteristic that distinguishes sadism from other dark traits.

1.6.1 Subclinical Sadism as a Dark Personality trait

Subclinical Sadism is now defined as "the tendency to enjoy causing, or simply observing, others' suffering" (Paulhus et al., 2021, p. 208); it is this unique element, not covered by the Dark Triad, that justifies its inclusion in the dark personality cluster. Sadism is underpinned by the same 'dark core' as other personality traits, which theoretically justifies its inclusion. Empirical research has since evidenced sadism's association with the perennial bases of the Dark Triad: low agreeableness (Book et al. 2016), low honesty-humility (Book et al. 2016), impaired empathy (Paulhus, 2014); callousness and interpersonal manipulation (Anderson & Marcus, 2019; Međedović & Petrović, 2015). Hence, overall, the construct of sadism shares the same dark core with the other members but adds a unique element to the dark personality cluster.

1.6.2 Facets of Subclinical Sadism

The development of questionnaire measures has been an important advancement within subclinical sadism research. In addition to making the study of this construct viable, it has also

broadened the conceptualisation of sadism (Buckels, 2018; Paulhus et al. 2011; Paulhus & Jones, 2015). In 2015, the Varieties of Sadistic Tendencies (VAST; Paulhus & Jones, 2015) measure was developed. Like the SSIS, the VAST was developed to examine a "trait-like proclivity toward sadistic behaviour" but was the first published tool to delineate two sadism subtypes: direct sadism, the "enjoyment of harming others physically or verbally"; and vicarious sadism, the "enjoyment of observing others being harmed" (Paulhus & Jones, 2015, p.584). A later version of the VAST measure was subsequently developed – the Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels 2018). The CAST further delineated the construct of sadism and developed three subscales: physical sadism (physical cruelty); verbal sadism (verbal cruelty); and vicarious sadism (vicarious cruelty). As noted by Buckels (2018), researchers could use the "high-fidelity, narrow facets" of sadism, or total the items in the scale to generate a "broad-bandwidth indicator of sadistic tendencies" (p. 97).

Both questionnaire measures represent an important development within the literature by capturing sadism's multidimensional nature. Over the last decade, research has demonstrated that sadism can be conceptualised as a normal personality variable, where sadistic behaviour ranges from 'everyday' manifestations to cruel and harmful behaviour. As summarised by Paulhus (2016), "contemporary examples of nonsexual sadism are so common that [we] have applied the term *everyday sadism*[23]" (p. 111) and are defined as "largely acceptable forms of subclinical sadism that are prevalent in modern culture" (p. 110). One particular interest to the current research, is this broad continuum of sadistic behaviour, and the potential escalation from vicarious sadism to direct sadism.

[23] The term 'everyday sadism' is used interchangeably throughout the thesis with sadism, subclinical sadism, and trait sadism.

1.6.3 Subclinical Sadism and Sensational Interests

'Sensational Interests' can be defined as involving an inquisitiveness for violence and its expressions, and the macabre, a curiosity around unpleasant concepts often associated with death or violence (Hagger-Johnson & Egan, 2010). In today's society, 'sensational' content is both prevalent and successful in popular entertainment (Egan et al. 2003). It is posited that the enjoyment of sensational interests may also represent 'everyday' manifestations of sadistic behaviour.

Individuals who score higher on Dark Triad traits are more likely to be interested in sensational content (Kavanagh et al., 2014). To the author's knowledge, however, there has been no research which has used recent measures of subclinical sadism to explore the relationship between everyday sadism and sensational interests[24]. Longitudinal research completed by Greitemeyer and Sagioglou (2017) found a bidirectional association between sadism and violent video gameplay, indicating that individuals with increased trait sadism were attracted to violent video gameplay, and that exposure to game play increased sadistic tendencies. These findings emphasise the importance of studying the relationship between sadism and sensational interests, as the everyday sadist may be attracted to sensational content, which in turn, may increase sadistic tendencies.

1.7 The Importance of Researching Subclinical Sadism

Since the development of measures like the SSIS, sadism has attracted significant scholarly attention which has supported its construal as a dimensional personality variable within the general population (Bulut, 2017). Although subclinical expressions of sadism have been

[24] Previous research (Hagger-Johnson & Egan, 2009) has examined this relationship using the 6B Sadistic (Aggressive) scale of the Millon Clinical Multiaxial Inventory-III (Millon et al., 1994).

shown to adapt, flourish, and act within socially acceptable boundaries within society, there is evidence to suggest that individuals with pronounced sadistic traits are more likely to present with antagonistic, harmful, and socially aversive behaviour (Buckels, 2018). As stated by Buckels et al. (2013), sadism's "self-sustaining quality makes [it] more morally disturbing, and perhaps more dangerous, than antisociality tied to extrinsic contingencies" (p. 7). Whilst there has been a significant amount of research on Dark Triad traits (Furnham et al. 2013; Jonason & Dinić, 2021), the newer construct of subclinical sadism is less clearly understood (Bulut, 2017). Due to sadism's intrinsic appetite for cruelty, and comparatively smaller research base, this thesis has focused on this dark trait in particular.

1.7.1 Overall aims of the thesis

This thesis aims to contribute to the research base regarding subclinical sadism. The overall aims of the thesis are to:

1) Explore and summarise existing research on the relationship between increased sadistic traits and aggressive behaviour;
2) Explore if there are temperamental predispositions to developing subclinical sadistic traits;
3) Explore the emotional processing of individuals with increased sadistic traits;
4) Examine the relationship between sadism and sensational interests;
5) Examine what factors could increase sadistic traits.

Chapter Two

Methodology Chapter

A Psychometric Critique of the:

Varieties of Sadistic Tendencies (VAST) Assessment

Abstract

Background: It is important that psychometric tools used within empirical studies are evaluated. If a tool does not adhere to the psychometric characteristics of a robust measure, conclusions from empirical research will be invalid or biased.

Aims: The aim of this chapter was to evaluate the Varieties of Sadistic Tendencies (VAST; Paulhus & Jones, 2015) assessment, a measure used to examine trait-like proclivity towards sadistic behaviour.

Methods: A systematic search was completed to identify empirical research that had used the VAST. Twenty-three studies were included in the final review. The identified literature was examined to evaluate the tool's psychometric properties, by assessing if the instrument validly (accurately) and reliably (consistently) measured the construct of subclinical sadism.

Results: The VAST had been administered to over ten thousand individuals across several different countries, using participants from the general population. Results indicated that the VAST had good construct validity, evidenced by good concurrent and predictive validity. Considering reliability, the VAST demonstrated good internal consistency which remained when translating and/or adapting the measure. Results indicated that the VAST would benefit from further exploration regarding discriminative validity and test-retest reliability.

Conclusion: Overall, the VAST was evaluated as a robust psychometric measure which captured the multidimensional nature of sadism, distinguishing between direct and vicarious sadism. It was concluded that the VAST assessment would be an appropriate tool to undertake the empirical research presented within this thesis.

1. Introduction

1.1 Aims

The aim of this review is to examine the Varieties of Sadistic Tendencies (VAST; Paulhus & Jones, 2015) screening tool, a measure used to assess trait-like proclivity towards sadistic behaviour (Paulhus et al., 2011). This review evaluates the psychometric properties of the VAST, examining if the instrument validly (accurately), and reliably (consistently), measures the construct of subclinical sadism. To do so, this chapter will review the VAST in relation to empirical research, consider the applicability of the tool, its limitations, and discuss future directions regarding the measurement of sadism.

1.2 Defining and Measuring 'Everyday' Sadism

Over the last two decades, it has been recognised that non-sexual sadistic traits exist outside of the forensic and clinical setting – a phenomenon termed 'everyday sadism' [25] (Buckels, 2012; Dinić et al., 2020). Although everyday sadism is positively associated with other dark personality traits, it is conceptually distinct in that it focusses on those who derive enjoyment from another's suffering (Buckels, 2018).

1.2.1 Short Sadistic Impulse Scale (SSIS; O'Meara et al., 2011)

System research on this fourth dark personality trait was not possible until the emergence of questionnaire measures used to operationalise the construct (Paulhus & Dutton, 2016). The earliest measure, the Short Sadistic Impulse Scale (SSIS), was developed by O'Meara et al. (2011; Appendix 1.A). This measured an individual's level of trait sadism by examining a predisposition for sadistic attitudes and behaviours. The SSIS is a 10-item measure with a unidimensional structure. Participants respond to ten statements using a dichotomous scale

[25] The term 'everyday sadism' is used interchangeably throughout the report with sadism, subclinical sadism, and trait sadism.

(0 = unlike me; 1 = like me). The scale was based on a definition of sadism arising from several qualitative studies (Davies & O'Meara, 2007), the initial item pool being developed via consultation with psychologists who worked with sadistic offenders.

O'Meara et al. (2011) reported that the SSIS could be used within forensic mental health settings, or within academic research, stating the tool could be used to identify "various levels of expression of sadistic impulse, whether it is of a benign, consent-based nature or a more clinically relevant, psychopathological orientation" (p.529). The SSIS enables the construal of sadism as another dimensional personality construct (Paulhus & Jones, 2015). O'Meara et al. (2011) reported strong construct and discriminant validity, and research has since supported the scale's convergent and predictive validity (Buckels, 2018).

1.2.2 Addressing the limitations of the SSIS

Buckels (2012) noted that whilst the SSIS was a good starting point for measuring sadism, there were some limitations. Some of the items in the measure encompass anger-motivated aggression and hurting to establish dominance in relationships. Buckels (2012) reported that a more accurate measure of sadism needed to focus on intrinsic enjoyment of distress and exclude instrumental or reactive aggression. Secondly, it was noted that the SSIS only captured situations where suffering was "personally inflicted" on others (Buckels, 2012, p. 12). In sum, the SSIS revealed a "relatively narrow-band measure of reported enjoyment of hurting others" (Buckels, 2018, p. 9). To improve the measurement of sadism, it was therefore important to capture sadism's theoretical and conceptual core - the enjoyment of others suffering, as well as to differentiate facets of sadism within the measure.

In 2012, Buckels reported that Paulhus et al. (in preparation) were developing the Varieties of Sadistic Tendencies inventory (Appendix 1.B), a preliminary measure which identified three forms of sadism. These were: direct perpetration and enjoyment of suffering

(core sadism); indirect enjoyment of suffering (vicarious sadism); and expression of 'harsh' and 'merciless' political attitudes (political sadism). Whilst there was some validity for these subscales, further evidence was required.

1.2.3 Varieties of Sadistic Tendencies (VAST; Paulhus et al., 2011; Pauhus & Jones, 2015)

In 2015, the VAST was published (Paulhus & Jones, 2015). Like the SSIS, it was developed to assess "a trait-like proclivity toward sadistic behaviour" (Paulhus & Jones, 2015, p.584). Addressing the limitations of the SSIS, the VAST was the first published measure to delineate subtypes of sadism. It distinguished between direct sadism, the enjoyment of harming others physically or verbally, and vicarious sadism, the enjoyment of observing others being harmed (Paulhus & Jones, 2015).

1.2.4 Overview of the VAST tool

The VAST is presented in Table 1. It can be self-administered, or, if required, read out to the participant by the researcher. Participants indicate on a 5-point Likert scale how much they disagree or agree with each statement (from 1 'Strongly Disagree', to 5 'Strongly Agree'). The scoring key is provided with the measure and instructs how to score direct and vicarious sadism subscales. In addition to these subscales, total VAST scores (all 16 items) can be calculated and provide a measure of dispositional sadism (Buckels, 2018). Paulhus and Jones (2015) have also advised that filler items can be "intermixed to offset the glut of negativity" (p.1); these items can be viewed in Table 2.

Table 1

The Varieties of Sadistic Tendencies (VAST; Pauhus & Jones, 2015) assessment tool.

Instructions:

Please rate your agreement or disagreement on 5-point scales anchored by (1) strongly disagree and (5) strongly agree.

1. In video games, I like the realistic blood spurts.
2. I sometimes replay my favourite scenes from gory slasher films.
3. I enjoy watching cage fighting (or MMA), where there is no escape.
4. I sometimes look away in horror movies. (R)
5. In car-racing, it's the accidents that I enjoy most.
6. There's way too much violence in sports. (R)
7. I love the YouTube clips of people fighting.
8. I enjoy physically hurting people.
9. I would never purposely humiliate someone. (R)
10. I was purposely cruel to someone in high school.
11. I enjoy hurting my partner during sex (or pretending to).
12. I can dominate others using fear.
13. I enjoy making people suffer.
14. I enjoy mocking losers to their face.
15. I never said mean things to my parents. (R)
16. I enjoy tormenting animals – especially the nasty ones.

Scoring:

Vicarious Sadism = mean of items 1-7

Direct Sadism = mean of items 8-16

(R) = Items are reversed scored.

Table 2

Filler Items that can be intermixed in the VAST tool.

I'm considered to be a kind person.
By staying strong, one can better help others.
I'd do anything – even break the law – for those I love.
I go out of my way to help family members.
I have ambitions to make the world a better place.
My goal is to be a missionary and help others.
I give money to poor people on the street.
I'm worried that we have already seriously damaged the Earth.
I want to spend my life helping sick children.
I have had some really good friends.
I am a religious person.

1.3 Why is this critique required?

It is important that psychometric tools used within empirical studies are evaluated. If a tool does not adhere to the psychometric characteristics of a robust measure, conclusions from empirical research will be invalid or biased (LoBiondo-Wood & Haber, 2022). Within this thesis, three measures of sadism were utilised: the SSIS (O'Meara et al., 2011); the VAST (Paulhus et al., 2015); and the SD4 sadism subscale (Paulhus et al., 2018).

The SSIS has been reported as a reliable and valid tool to measure sadism and has been frequently used within the research area (Buckels, 2018; Dinić et al., 2020). Indeed, it was noted in the systematic review that the SSIS was the most frequently reported summary effect measure. However, as discussed, the SSIS has several limitations.

The VAST was developed to measure everyday sadism and sought to address the limitations of the SSIS. As this tool has been used in both empirical studies within this thesis, it is important to evaluate the tool to assess the reliability and validity of the research conducted. Although the SD4 has also been used, it is not a standalone measure and does not capture the different forms of sadism. It was therefore concluded that the VAST was the most appropriate tool to evaluate.

1.4 Method

A systematic search was completed in May 2022 to identify empirical research that had used the VAST. Studies were identified by searching electronic databases, including Scopus and Web of Science, and by using the platform OVID to conduct searches on PsychInfo (1806 to 2022), Medline (1996 to 2022), and Embase (1980 to 2022). Google Scholar was also used to identify both published and unpublished studies. Studies included were required to use the VAST measure. There were no restrictions on the participants or setting. Exclusion criteria included non-empirical papers, systematic reviews and/meta-analyses, and studies which could not be translated (due to availability of resources). Table 3 shows the syntax terms used in the search; Appendix 1.C shows the search strings used for each database.

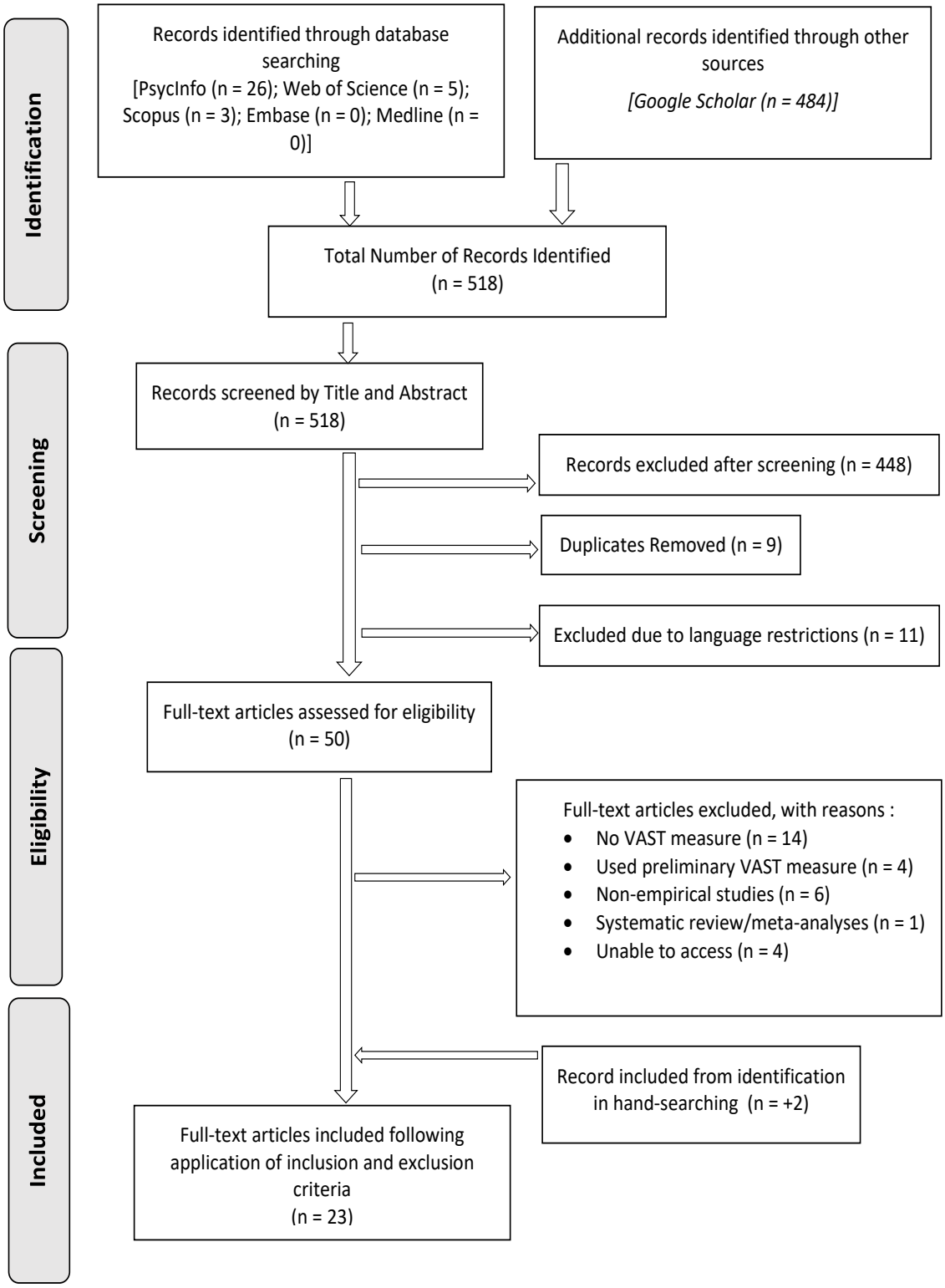
Table 3

Terms derived from concepts used in the final search

Everyday Sadism	VAST
"everyday sadism"	"VAST"
"subclinical sadism"	"Varieties of Sadistic Tendencies"
"soft sadism"	
"dark tetrad"	

The initial search yielded 518 records. Firstly, titles and abstracts of studies were reviewed, and irrelevant studies were removed (n = 448). Following this, duplicates (n = 9) and studies which could not be translated (n = 11) were removed. This left 50 full-text articles that needed to be assessed for eligibility. The following studies were excluded for the following reasons: fourteen studies did not use the VAST; four studies used the preliminary VAST measure; six were non-empirical studies; one a systematic review; and four studies could not be accessed. Two studies were included after hand-searching the references of included studies. There were twenty-three studies included in the final review. Figure 1 presents a diagram of the systematic search process.

Figure 1 *Systematic Search Process used to Identify Empirical Studies that used the VAST*



1.5 Results

1.5.1 Preliminary VAST (Paulhus et al., in preparation[26], as cited in Buckels, 2012)

The search identified several studies that used the preliminary VAST measure (Paulhus et al., in preparation, as cited in Buckels 2012). As this was not the final published VAST measure, information from these studies was not included in the results (Buckels, 2012; Međedović & Damjanović, 2018; Međedović & Petrovic´, 2015; Tetreault et al., 2018). However, additional information on this can be viewed in Appendix 1.D.

1.5.2 Validity

Validity can be defined as "the extent to which an instrument measures the attributes of a concept accurately" (LoBiondo-Wood & Haber, 2022, p.275-292). A valid measure, therefore, measures the concept it intends to. Validity encompasses several factors, which will be evaluated in turn, assessing whether there is sufficient evidence for the VAST's validity.

1.5.3 Construct Validity

Construct validity is the "extent to which a test measures a theoretical construct, attribute, or trait" (Biondo-Wood & Haber, 2022, p.275-292). The establishment of construct validity can be complex (John & Benet-MartÍnez, 2014) so several approaches were implemented to assess this. Table 4 provides a summary of the different expectations that would indicate good construct validity for the VAST. These will be addressed individually throughout the report.

[26] Note to ensure clarity: This was a preliminary VAST measure (in development) which was cited in Buckels (2012). The tool is now published as VAST (Paulhus & Jones, 2015).

Table 4

Summary of approaches used to assess construct validity.

Convergent Validity	• The VAST will be positively correlated with other measures of sadism. • Due to theoretical similarities between Direct Sadism and the SSIS (capturing suffering that is personally/directly inflicted) the VAST Direct Sadism subscale will have stronger correlations with the SSIS than would the Vicarious Sadism subscale.
	Criterion Validity
Concurrent Validity	• It was expected the VAST would be positively correlated with other Dark Traits. • It was expected the VAST would be strongly correlated with psychopathy. • It was expected the VAST would be correlated with personality traits reflecting the 'Dark Core' of dark traits (e.g., low agreeableness, low honesty-humility, low emotionality).
Predictive Validity	• It was expected behavioural validity would be shown through the VAST being positively correlated with antagonistic or harmful behaviour.

1.5.4 Direct Sadism and Vicarious Sadism

The VAST measure was the first to differentiate direct and vicarious sadism. It was therefore expected that whilst these constructs would be positively correlated, they would also reflect unique components. The systematic search identified a study by Dinić et al. (2020) which evaluated the psychometric properties of several sadism scales. With regards to the VAST, results indicated that the two-factor model of sadism was significantly better than the one-factor model ($\Delta\chi2$ (1) = 7.22, $p < .001$) (p. 9). These results suggest that the two aspects of

sadism, direct and vicarious, be separated. Supporting these findings is Thibault's (2016) study, where fit indices from a Confirmatory Factor Analysis for the Dark Triad and VAST scales, suggested a five-factor model (psychopathy, Machiavellianism, narcissism, Direct Sadism, and Vicarious Sadism). These results suggested good construct validity for the VAST's differentiating direct and vicarious sadism.

Additionally, Dinić et al.'s (2020) study found that all sadism scales analysed (SSIS, VAST, Assessment of Sadistic Personality measure, ASP; Plouffe et al., 2017) were highly inter-correlated bar vicarious sadism. Paulhus & Dutton (2016) also report that whilst one would expect these dimensions to be highly correlated, structural analyses have revealed separate factors for direct and vicarious sadism. Direct sadism involves harming others directly and in-person, whilst vicarious sadism refers to fantasised or simulated harm (e.g., playing violent video games). These results indicate that the VAST has good construct validity, as it reflects both the similarities and differences between the two subtypes. Table 5 provides the reported correlations from the systematic search.

Table 5:

Reported correlation coefficients between Direct Sadism and Vicarious Sadism, as measured by the VAST.

Anderson & Marcus (2019)	.45**
Dinić et al. (2020)	.30***
March (2019)	.43***
Thibault (2016)	.61**

1.5.5 Convergent Validity

Convergent validity is "the comparison of different measures for the same definitional concept" (McDonald, 2005, p.945). To assess convergent validity of the VAST, correlations with other measures of sadism were extracted from the studies identified in the systematic search. These correlations are presented in Table 6.

Table 6

Assessment of Convergent Validity: correlations between the VAST and other measures of sadism.

Empirical Study	SSIS	ASP	SD4 Sadism Subscale
Anderson & Marcus (2019)	D.S: .78** V.S: .41**	-	-
Blötner et al. (2021)	-	-	T: .65***
Buckels et al. (2014)	D.S: .73***	-	-
Dinić et al. (2020)	D.S: .51*** V.S: .43***	D.T: .56*** V.S: .55***	-
Dinić et al. (2019)	T: .54*** D.S: .43*** V.S: .48***	-	-

T = Total VAST Scores
D.S = Direct Sadism
V.S = Vicarious Sadism

All studies reported significant positive correlations between the VAST and the SSIS. This provides evidence of good convergent validity as it indicates both instruments are measuring the same construct (i.e., dispositional sadism). It is likely that the strength of the correlation is below moderate on occasions as the VAST includes items that measure vicarious sadism.

All studies, except for Dinić et al. (2019), reported stronger associations between direct sadism and the SSIS (Anderson & Marcus, 2019; Buckels et al., 2014; Dinić et al., 2020). This finding suggests good convergent validity, as direct sadism is conceptually equivalent to the items in the SSIS (i.e., *direct perpetration* and enjoyment of suffering). Interestingly, Chester et al. (2018) combined the SSIS and the VAST Direct Sadism subscale to create the 'Sadism Index'; the reported alpha coefficient was $\alpha = .95$, demonstrating excellent internal consistency. This supports good convergent validity as it indicates that the items across both measures are measuring the same construct, specifically, direct sadism.

The systematic search identified one study (Dinić et al., 2020) which provided correlations between the VAST and the ASP. Results showed moderate significant positive correlations between the VAST and the ASP, which support evidence of convergent validity.

Blötner et al. (2021) reported a moderate correlation between the VAST and SD4 subscale. It is noteworthy that the SD4 is a more recent measure of sadism, which has attempted to improve construct validity by capturing the essence of sadism, whilst avoiding overlap with other dark personality traits (Paulhus et al., 2018). Paulhus et al. (2018), for example, reported that they aimed to "minimize subscale overlap by emphasising the unique components of each construct" (p. 209). The correlation with the SD4 is therefore important in assessing the VAST's construct validity.

5.5.6 Criterion Validity

Criterion validity is the extent to which a measure is associated with, or predictive of, other variables that one would expect the construct to be related to (Chiang et al., 2012). Criterion validity can therefore be distinguished by concurrent validity - “the extent to which the test relates to relevant criteria obtained at the same time”, and predictive validity - “the extent to which the test can predict relevant variables, events, and outcomes in the future” (John & Benet-Martinez, 2014, p. 485).

5.5.6.1 Concurrent Validity

Identified articles which employed established measures of personality were used to assess the concurrent validity of the VAST. There were four studies which reported correlations between the VAST and the HEXACO Personality Inventory (Ashton & Lee, 2009; Lee & Ashton, 2018). Book et al. (2016) found that the VAST was significantly negatively correlated with all HEXACO subscales, but had stronger associations with low honesty-humility, low emotionality, and low agreeableness. Similarly, Chung and Sheridan (2021) found that the VAST was negatively correlated with the following subscales: honestly-humility; emotionality; agreeableness; and conscientiousness.

Dinić et al. (2020) examined the relationship between direct and vicarious sadism, and the HEXACO. Results indicated that both direct and vicarious sadism were negatively correlated with the honesty-humility and conscientiousness subscale, with direct sadism holding a slightly stronger correlation.

Research indicates that dark personality traits, including sadism, can be located on the negative pole of basic personality traits, particularly honesty-humility, agreeableness, conscientiousness, and emotionality dimensions (Međedović & Petrović, 2015). Therefore, these results appear to support concurrent validity of the VAST. Table 7 presents the

correlations between the VAST and HEXACO from the studies identified in the systematic search.

Table 7

Reported correlations between the VAST and HEXACO indicating concurrent validity.

	Honesty-Humility	*Emotionality*	eXtraversion	Agreeableness	Conscientiousness	Openness to Experience
Chung & Sheridan (2021)	T: − .44*	T: -.32*	T: -.11	T: -.17*	T: -.33*	T: .01
Dinić et al. (2020)	D.S: -.28*** V.S: -.22***	D.S: -.06 V.S: -.03	D.S: . 05 V.S: -.07	D.S: -.08 V.S: -.06	D.S: -.18*** V.S: - .15***	D.S: -.10 V.S: -.01
Book et al. (2016)	T: −.53***	T: −.52***	T: −.13**	T: −.32***	T: −.13**	T: -32***

T = Total VAST Scores
D.S = Direct Sadism
V.S = Vicarious Sadism

To explore concurrent validity further, associations between the VAST and Dark Triad of personality were examined. Several studies used the Short Dark Triad (SD3; Jones & Paulhus, 2014) and one study used the Dirty Dozen (DD; Jonason & Webster, 2010) to measure the Dark Triad.

All studies found significant positive correlations between Dark Triad traits and the VAST total. Dinić et al. (2020) examined the relationship between direct and vicarious sadism, finding direct sadism significantly positively correlated with all Dark Triad traits, and holding

the strongest correlation with psychopathy. Vicarious sadism was significantly positively correlated with all dark traits except narcissism. It was noted that Međedović and Kovačević (2020) reported that direct sadism was most strongly correlated with Machiavellianism; this was the only study to use the DD to measure Dark Triad traits.

The systematic search also identified several studies (Anderson & Marcus, 2019; Međedović, 2017; March, 2019) which showed significant positive correlations between the VAST and alternative measures of psychopathy (Appendix 1.E). Overall, it was expected the VAST would be positively correlated with other dark personality traits, and in particular, psychopathy. The strong correlation between the VAST and psychopathy, however, can also be viewed as a limitation with regards to construct validity. Whilst the constructs overlap, it is important measurement tools distinguish between sadism and psychopathy (Paulhus et al., 2018). Correlational results from all identified studies are presented in Table 8.

Table 8

Reported correlations between the VAST and Dark Personality traits indicating concurrent validity.

	Psychopathy	Narcissism	Machiavellianism
Chung & Sheridan (2021)	T: .69*	T: .21*	T: .38*
Book et al. (2016)	T: .69***	T: .24***	T: .56***
Dinić et al. (2020)	D.S: .30*** V.S: .33***	D.S: .16*** V.S: .11	D.S: .15*** V.S: .25***
Nickisch et al. (2020)	T: .57**	T: .32**	T: .40**

Thibault (2016)	D.S: .77*** V.S: .61***	D.S: .29*** V.S: .34***	D.S: .50*** V.S: .42***
Tucaković & Marković, (2021)	D.S: .65**	D.S: .21**	D.S: .43**
Correlations between the VAST and Dark Triad Traits (DD)			
Međedović & Kovačević (2020)	D.S: .33**	D.S: . 23**	D.S: .41**

T = Total VAST Scores
D.S = Direct Sadism
V.S = Vicarious Sadism

5.5.6.2 Predictive Validity

Predictive validity was assessed by examining the associations between the VAST and laboratory (experimental) behaviours. Several studies established behavioural validity by presenting positive correlations between the VAST and the following behaviours: working for the opportunity to administer white-noise blasts to innocent victims (Buckels, 2012); costly punishing cooperative individuals in public goods situations (Pfattheicher & Schindler, 2015; Pfattheicher et al., 2017); and offering less money to save a bug from extermination (Wyngaarden, 2020).

5.5.6.3 Further Evidence of Criterion Validity

During the systematic search, relationships between the VAST and several variables were assessed to examine if there was any further evidence of criterion validity. Overall, there were several significant positive relationships between the VAST and variables that one would

expect the construct of sadism to be correlated with. These variables and associated correlation coefficients are presented in Table 9.

Table 9

Correlational analyses between the VAST and variables that would be expected to be associated with increased sadistic traits.

	Variable	Total Sadism	Direct Sadism	Vicarious Sadism
Anderson & Marcus (2019)	Callousness	-	.61**	.44**
Berndsen et al. (2017)	*Schadenfreude* about disadvantaged people	-	.57***	.51***
Chung & Sheridan (2021)	Perceived victim responsibility (stalking)	.23*	-	-
Dinić et al. (2020)	Anger	-	.18***	.24***
March (2019)	Trolling	-	.50***	.39***
Masui (2019)	Trolling	.39***	-	-
Masui (2019)	Loneliness	.16**	-	-
Međedović & Kovačević (2020)	Violence		46**	-

3.2.4 Discriminant Validity

Discriminant validity examines whether the scores on the measure are correlated with theoretically unrelated constructs (Chiang et al., 2014). A study by Wyngaarden (2020) reported that the VAST was significantly negatively correlated with empathy (p = -.46***). This supports discriminant validity, as like other dark traits, sadism is underpinned by callousness and impaired empathy (Paulhus, 2014)

3.3 Reliability

Reliability is the "ability of an instrument to measure the attributes of a variable or construct consistently" (LoBiondo-Wood & Haber, 2022, p.275-292). It is important to consider three types of consistency: internal consistency (consistency across the items in the measure), test-retest reliability (consistency over time), and inter-rater reliability (consistency across different individuals using the tool) (Chiang et al., 2014).

3.3.1 Internal Consistency

Sadism is not directly observable, so the VAST indirectly measures this behaviour by using a set of items that are proposed to relate to the underlying construct. As such, when indirect measurement tools are used within research, it is important to report a measure of reliability, to show that the items used to construct the measure are reliable. A reliability analysis "provides evidence that the scale is consistently measuring the same thing" (McNeish, 2017, p.2).

Cronbach's Alpha[27] (Cronbach, 1951) is frequently used to measure the reliability of measurement instruments within social and behavioural science research (Hoekstra et al.,

[27] Note: The term 'Cronbach's alpha' is used interchangeably throughout the report with coefficient alpha.

2019), assessing the "internal consistency or reliability between several items, measurements or ratings" (Bujang et al., 2018, p.85). Cronbach (1951) reported that coefficient alpha should not be used in "short tests" and tests that are "divisible into distinct subtests should be so divided before using the formula" (p.297). The VAST adheres to this advice in that it can be used as a 14-item measure of dispositional sadism, or can be divided into two subscales which independently measure direct and vicarious sadism.

When Cronbach's Alpha is calculated, it provides a value between 0 and 1; higher values indicate that the items on the scale are measuring the same dimension, and lower values indicate that all, or some of the items, are not measuring the same dimension (Bujang et al., 2018, p.85). To assess the internal consistency of the VAST, mean reliability scores have been calculated and presented in Table 10. Cronbach's alpha coefficients for each individual study can be found in Appendix 1.E. The statistics presented in Table 10 indicate acceptable internal consistency for both VAST subscales and the VAST total; all individual studies reported coefficient alphas over .60, except for a study by Tucaković and Marković, (2021) who reported α = .55 for the Direct Sadism subscale.

Table 10

Average Cronbach's Alpha calculated for VAST using studies identified from the systematic search.

Number of Studies	VAST Measure	Mean Cronbach's Alpha (α)
9	VAST Total (Sadism)	.80
14	VAST Direct Sadism Subscale	.69
14	VAST Vicarious Sadism Subscale	.76

In addition to the reliability statistics presented in Table 10, the systematic search identified studies which had adapted the measure, either by removing items or combining the VAST subscales with other sadism measures. As mentioned, Chester at al. (2018) combined the VAST Direct Sadism subscale with the SSIS, creating a 'Sadism Index'. The Cronbach's alpha coefficient (α) reported for this measure was .95, indicating 'excellent' internal consistency. This was the highest alpha coefficient reported out of all the empirical papers identified in the systematic search. The internal consistency would have likely been improved by having more items in the scale (SSIS: 10 + VAST Direct: 8 = 18 items), with all measuring the same dimension, i.e., direct sadism. Some identified studies adapted the VAST measure by removing items. Pfattheicher and Schindler (2015; α = .67), and Pfattheicher et al. (2017; α = .75), for example, removed the Item-11[28] due to ethical reasons. For both studies, the internal consistency remained acceptable.

3.3.2 Test-Retest Reliability

Test-retest reliability is an important psychometric property; its main aim is to assess the stability of a measurement tool across repetitions (Palmer et al., 2017). As a personality trait, this indicates sadism is a relatively stable construct likely to yield the same response on two occasions where there is no given intervention (McCrae et al., 2011). Unlike coefficient alpha, differential retest reliability should not be affected by variation across items in the scale.

The systematic search identified one empirical study that examined the test-retest reliability of the VAST. Thibault (2016) examined test-retest reliability by testing the same participants (*n*=212) at two time points. Participants completed the VAST at 'Time 1', and then two months later at 'Time 2'. Results showed that direct sadism possessed a longitudinal

[28] "'I enjoy hurting my partner during sex (or pretending to)"

uncorrected (Pearson's *r*) correlation of .71*** and vicarious sadism possessed a correlation of .80***[29], indicating evidence of good test-retest reliability (Chiang et al., 2014).

3.3.3 Inter-Rater Reliability

There were no identified studies which assessed the inter-rater reliability of the VAST. This was expected as the VAST is a relatively straight forward questionnaire measure.

4. Discussion

4.1 Applicability of the VAST

The VAST tool is freely available online; it can be downloaded in PDF form and provides guidance in administering and scoring the tool. A systematic search identified that the VAST had been administered in several different countries using participants from the general population. It had also been translated into several languages: Romanian; German; Serbian; Chinese; and Japanese; all of which reported acceptable to excellent internal consistency. Participants were mainly adult males and females; there was one study (Nickisch et al., 2020) whose participants ranged from 14 years of age to 63 years. All demographic details can be found in Appendix 1.E.

4.2 Overview of Findings

This review aimed to evaluate the psychometric properties of the VAST by examining if the instrument validly (accurately) and reliably (consistently) measured the construct of everyday sadism. The systematic search found the VAST was a measurement tool used by many researchers within dark personality research. All twenty-three identified studies had used this

[29] Both subscales were reported to possess a longitudinal deattenuated correlation of 1.00.

tool to research sadistic traits within the community, and overall, the VAST had been administered to over ten thousand individuals. This review evaluated both the validity and reliability of the measure; results indicated that the VAST met the majority of criteria that are used to assess the robustness of a psychometric measure (LoBindo-Wood & Haber, 2022). In sum, the VAST has good construct validity, evidenced by good concurrent and predictive validity. To improve its validity, the VAST would benefit from further exploration regarding discriminative validity. In terms of reliability, the VAST frequently presented with acceptable-good internal consistency, which remained when translating and/or adapting the measure. Assessment of the VAST's reliability would benefit from further exploration regarding test-retest reliability.

Overall, the VAST has robust psychometric properties and capture's sadisms core characteristic: experiencing pleasure from another's suffering. Furthermore, the VAST distinguishes and measures both direct and vicarious sadism. It is recommended that future researchers report both direct and vicarious sadism to further assess the dimensionality of these facets of the dark trait.

4.3 Limitations of the VAST and associated recommendations for its use.

The VAST was developed in 2015, and since this time, new sadism measures have emerged to address some of the VAST's limitations. Whilst it is beyond the scope of this review to explore the new measures of subclinical sadism in detail, the points below consider the limitations of the VAST, and provide recommendations for researchers to consider.

- Sadism scores also correlate with, but are distinct from psychopathy, Machiavellianism and narcissism. It is therefore recommended that sadism should be studied and evaluated concurrently with other dark personality traits. In addition to the VAST, future research

could use the four-factor dark personality measure (SD4) which has been developed to capture their distinct theoretical and conceptual origins.

- The VAST captures the multidimensionality of the sadism construct, distinguishing direct and vicarious sadism. A more recent version is the Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels 2018; Appendix 1.F) which has further delineated facets of sadism: physical sadism (physical cruelty); verbal sadism (verbal cruelty); and vicarious sadism (vicarious cruelty). Although the CAST is less established, it may offer a more nuanced view of sadism when assessing traits within the general population.
- In addition to established measures of sadism (SSIS), more recent unidimensional measures of sadism have been developed: the ASP (Plouffe et al., 2017; Appendix 1.G); and more recently, the Revised Assessment of Sadistic Personality (ASP-8; Plouffe et al., 2022). These measures were designed to have broader content coverage of sadism, and prior to the development of the SD4, the ASP was used in conjunction with the SD3 (Plouffe et al., 2017). Despite broader coverage, however, Buckels (2018) reported that the ASP was confounded with other motivations for aggression. It is therefore recommended, that newer measures of sadism be used in conjunction with more established measures.
- To measure associations between sadism and various outcomes, empirical research should consider carefully which sadism measure is most appropriate to the research. For example, if studying violent video games, a vicarious sadism measure would be important when considering outcomes.
- Overall, it is recommended that multidimensional measures of sadism should be used in addition to unidimensional measures.

Chapter Three

Systematic Review

A systematic review and meta-analysis examining the relationship between everyday sadism and aggression: can subclinical sadistic traits predict aggressive behaviour within the general population?

Abstract

Background: Everyday sadism is unique among the dark personality traits that form the Dark Tetrad. Whilst it shares the Dark Core of Personality with psychopathy, narcissism, and Machiavellianism, it is theoretically distinct from the other members in that involves an appetite for cruelty.

Objective: Given mounting evidence of everyday sadism being associated with socially aversive behaviour, and its potential utility in predicting harmful behaviour within the general population; the current review aimed to integrate and synthesise existing research on the relationship between sadism and aggressive behaviour.

Data Sources: Seven well-established electronic bibliographic databases and two other sources were systematically searched. Supplementary searches were employed.

Study Selection: The initial search identified 627 full-text articles. Following application of inclusion and exclusion criteria, 39 full-text articles inclusive of 52 studies were subject to quality assessment. Data was extracted from 52 studies, with 48 studies eligible for quantitative synthesis.

Data Synthesis: Correlational analyses were the most common method of examining sadism and aggression. A multi-method approach was employed to standardize effect sizes into a common metric (correlation coefficient). A meta-analysis was conducted using 57 effect sizes from 48 studies with 22,179 participants, revealing a pooled correlation coefficient of .35, 95% CI [0.29, 0.40]. Significant heterogeneity was observed which warranted sensitivity and subgroup analyses.

Conclusions: Overall, a moderate relationship was found between subclinical sadism and aggressive behaviour, as defined by acts ranging from verbal to physical, and sexual aggression and violence. A stronger, moderate relationship was found between sadism and perpetration of aggressive behaviour online, indicating that anonymity may unleash the darker side of personality within the general population. The implications of this finding are considered.

Key words: everyday sadism; dark tetrad; aggressive behaviour; personality; individual differences; systematic review; meta-analysis.

1. Introduction

Individual differences have been recognized as important predictors of behaviour, attitudes, and outcomes (Skimina et al., 2018). Of late, there has been a surge in the personality literature concerning so-called 'dark personalities' (Paulhus & Williams, 2002). Dark personalities can be considered as socially aversive traits found within subclinical populations; they are not extreme enough to become part of the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 2013) but flourish in the community and may have some adaptive function (Jonason et al., 2008; Paulhus & Jones, 2015).

In 2002, Paulhus and Williams attempted to taxonomize such aversive traits, finding that subclinical psychopathy, narcissism, and Machiavellianism, shared one commonality within the Five-Factor Model of Personality, low agreeableness. Underpinned by a shared callousness and malevolence (the Dark Core; Moshagen et al., 2018), these three personality dimensions were labelled the Dark Triad (Jakobwitz & Egan, 2006; Lee & Ashton, 2005; Paulhus, 2014). In 2009, Chabrol et al. extended the Dark Triad by examining sadistic characteristics in a minority of high school students; they termed subclinical sadistic traits as 'everyday sadism'[30] which was subsequently added to the Dark Triad, forming a Dark Tetrad of dark personalities.

Personality traits represent stable tendencies in feeling, thinking, and behaving (Anglim et al., 2019). Of interest to the current systematic review, is the ability of the dark trait sadism to predict aggressive behaviour.

[30] The term 'everyday sadism' is used interchangeably throughout the report with sadism, subclinical sadism, and trait sadism.

1.1 Aggression

Aggression is a ubiquitous behaviour that contradicts societal norms and rules, often resulting in significant implications, though commonly occurs when there is conflict (Allen & Anderson, 2017). Simply defined, aggression can be described as hostile, injurious, or destructive behaviour used to dominate a situation, that may result in physical or psychological harm to others (Salakhova et al., 2019; Siever, 2008). Violence, a form of aggression, has been defined as "the intentional use of physical force or power, threatened or actual, against oneself, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation" by the World Health Organisation (2014).

Aggression can be expressed in a variety of forms, and there are many types of aggression documented within the literature (Allen & Anderson, 2017). As such, attempts have been made to develop categorisation schemes to organise different types of aggression. Krahé (2013) and Parrott & Giancola (2007) provide two of the most recent taxonomies of aggression. They note, for example, that aggression can present in different response modalities (e.g., verbal, or physical); differ in immediacy (e.g., direct, or indirect); and differ in visibility (e.g., overt or covert), and that aggression has different functions and/or motivations, for example, reactive, proactive, instrumental, or hostile aggression (Krahé, 2013; Kroner et al. 2018). The examples listed here are not exhaustive, and simply highlight the diversity that underpins aggressive behaviour. For the purposes of this review, aggression was defined as 'any behaviour committed with reasonable expectation of physical and/or psychological harm to the victim' to capture the breadth of this complex and subjective concept.

There are numerous definitions of aggression theoretical models which have attempted to understand this phenomenon. Paulhus et al. (2018) recently argued that whilst aggressiveness has often been construed as a unitary trait, this is misleading. They suggest a bottom-up conception based on the Dark Tetrad of personality, highlighting that whilst the dark tetrad shares a common core of callous manipulation, the constituent dimensions are theoretically distinct, and each dark tetrad member shows different patterns of associations with aggression.

1.2 Everyday Sadism

Sadism can be defined as deriving enjoyment from other's suffering (Paulhus & Dutton, 2016). Historically, the term has been associated with criminal behaviour and sadomasochistic sexuality; these associations, however, only capture clinical manifestations of sadistic traits (Buckels, 2012). Research has since demonstrated that pleasure in exercising cruelty occurs in the general population (Chabrol et al., 2009). There are examples within contemporary society that implicate an appetite for cruelty is widespread, for example, the enjoyment of violence in films, sports, and video games; and reports of sadistic behaviour being normative within various institutions (Paulhus & Dutton, 2016). Whilst there many reasons for why people engage in these activities, for some these "common manifestations of cruelty implicate a subclinical form of sadism" (Buckels et al., 2013, p. 2201). This has been labelled 'everyday sadism' and is defined as a "dispositional tendency to take pleasure in others' suffering – as an additional dark personality operating in the subclinical domain" (Buckels, 2012, p. ii).

1.3 Rationale

There are currently no reviews specifically examining the relationship between everyday sadism and aggression. During a scoping search, one systematic review within this field was noted, which examined the relationship between dark personality traits and antisocial online behaviour (Moor & Anderson, 2019). Results indicated that although psychopathy was most strongly associated with antisocial online behaviour, everyday sadism was consistently related. Since its recent addition to the Dark Triad, everyday sadism has received substantial interest; there is mounting evidence of this dark trait being associated with socially aversive behaviour (Bulut, 2017), and given its potential utility in predicting harmful behaviour within the general population, this review is timely and warranted. In addition, extensive research developing reliable measures of trait sadism have now presented a platform for quantitative synthesis (Dinić et al., 2020). This systematic review presents a synthesis of the available evidence regarding the relationship between everyday sadism and aggression, considering the real-life implications and the importance of this subclinical trait.

1.4 Objectives

The aim of this systematic review and meta-analysis was to integrate and synthesise the available literature on the relationship between everyday sadism and aggressive behaviour.

To undertake this research question, the following objectives were addressed:

- To synthesise existing research regarding the relationship between everyday sadism and aggression in the general population.
- To understand further, what types of aggression everyday sadism is positively correlated with.
- To include an overview of the instruments that have been applied in psychological research, to examine the construct of everyday sadism.

2. Methods

2.1 Protocol and Registration

A Systematic Review Protocol was completed and registered on PROSPERO[31] (ID: CRD42020182882). By registering the protocol, it aimed to reduce publication bias and increase transparency if amendments were made.

2.2 Eligibility Criteria

PRISMA guidelines (Liberati et al., 2009) recommend using the PICO model to guide eligibility criteria for included and excluded studies. Due to the use of cross-sectional studies within this research area, the adapted PICo (Population or problem, Interest, Context) model was used. For the current review, studies needed to meet pre-specified study characteristics, which were documented in the protocol. Studies were eligible for inclusion if they satisfied the following criteria: 1) participants were aged 18 years or over; 2) studies included a measure of everyday sadism; 3) studies included a measure of aggression; and 4) studies reported a quantitative relationship between everyday sadism and aggressive behaviour. Carefully defined criteria, as presented in Table 1, were applied to the definition and measure of everyday sadism and aggressive behaviour, to increase the validity, applicability, and comprehensiveness of the review.

Report eligibility criteria were also considered, including the publication language, status, and year of publication. No exclusions were made with regards to publication status or publication date. Unfortunately, there was no available resource to translate studies in a foreign language. As such, exclusion criteria included studies which were not accessible in

[31] An international database of prospectively registered systematic reviews.

English language. Literature reviews, opinion papers, and qualitative studies were excluded as the aim of the current systematic review was to synthesise objective quantitative data.

Table 1

The PICo Model used as a conceptualising tool to inform the research question and search strategy.

	Inclusion	Exclusion
Population or **P**roblem	• Males and/or females aged 18 years or over. • Completion of a validated everyday sadism measure. • Implicit and/or explicit measures of everyday sadism. • Sadism may also be referred to as 'sub-clinical sadism' or 'soft sadism'.	• Males and/or females aged under 18 years. • Measures of 'sexual sadism'.
Interest	• Measure of aggressive behaviour, defined as 'any behaviour committed with reasonable expectation of physical and/or psychological harm to the victim'. • This outcome can be measured by self-report; behaviour measured by paradigm or experimental condition; scores on a validated measure of aggression. • A quantitative relationship between everyday sadism and aggression must be reported. • Where multiple measures of aggression are reported, the	• Measures of potentially non-aggressive behaviour (e.g., non-aggressive risky behaviour).

	preferred measure to extract will be from a validated measure of aggression, followed by behaviour measured within a paradigm, and then self-report data.	
Context	• General Population	• Secure Forensic Settings
Study Designs	• Any study design (observational or experimental).	• Literature reviews • Opinion papers • Qualitative studies • Studies not available in English language.

2.3 Information Sources

Studies were identified by searching well-established electronic bibliographic databases, including PubMed, Scopus, Web of Science, and NCJRS. The platform OVID was used to conduct searches for PsychInfo (1806-Present), Medline (1946–Present), and Embase (1980-Present). Other sources, including Google Scholar and Open Gray, were searched to identify both published and unpublished papers to increase the validity of the review. Initial searches were run in May 2020; one final search was conducted between the 27th and 28th June 2020 to ensure any recent publications were included. Supplementary approaches were used to identify studies. This included hand-searching of key journals and checking of reference lists. All searches were developed and performed by the author of the systematic review. Due to time constraints, potential missing, or unpublished information could not always be retrieved.

2.4 Search

The search strategy was based on the combination of three concepts derived from the PICo. This included everyday sadism, aggressive behaviour, and measurement. Preliminary

searches were conducted to understand the best selection of words for the search string. This included using search tools to find broader, narrower, and related terms, as well as other synonyms and possible historical terms. Table 2 presents the final terms used in the search; each column is populated with words or phrases that describe the relevant concept. Appropriate amendments to the syntax were made in accordance with the database used (Appendix 2.A). One identified limitation is that only English Language search terms were used.

Table 2

Concepts derived from the PICo, and the terms derived from these concepts used in the formal search.

Everyday Sadism	Aggression	Measurement
"everyday sadism"	aggress*	measur*
"subclinical sadism"	violen*	assess*
"soft sadism"	ang*	test*
"dark tetrad"	crim*	psychometric*
	antisocial	implicit
	behav*	explicit
		paradigm

2.5 Study Selection

Initial searches identified 627 results totaled from electronic bibliographic databases and other electronic sources. Of the 627 results, 150 duplicates were removed, leaving 477 records to be screened. Of these results, 43 studies were written in a foreign language. The titles were translated and excluded if clearly irrelevant (n= 41). Records which could not be translated to English were excluded (n = 2).

The remaining 434 records were first screened by title, and clearly irrelevant titles were removed (n = 329). For the remaining 105 records, abstracts were examined, and records excluded if irrelevant (n = 39). This meant that 66 full-text articles were assessed for eligibility.

At this stage, supplementary approaches were employed to identify any additional studies. This included hand searching of journals and reference lists. Following the documented screening approach, the supplementary approach revealed two full-text articles which needed to be assessed eligibility.

The pre-defined inclusion and exclusion criteria (Table 1) were applied to the remaining 68 full-text articles. Following application of the inclusion and exclusion criteria, 28 full-text articles were removed (Appendix 2.B). One full-text article was excluded due to inaccessibility.

Following this process 39 full-text articles were included. Some full-text articles reported more than one study, meaning the final number of eligible studies subject to quality assessment was 52. During data extraction, one duplicate publication was noted. As such, data from 50 studies was eligible for data synthesis; 52 were included in the meta-analysis and 3 were only included in the narrative synthesis. A PRISMA-Flow diagram provides a clear explanation of this process (Figure 1).

2.6 Data Collection Process

A data extraction sheet was developed, pilot-tested and refined accordingly (Appendix 2.C). Additional information which was unavailable in one published article was requested and obtained from the author (Chester et al., 2019). During this process, one duplicate publication was noted; Buckels et al. (2013) was the published version of Buckels (2012). To avoid double

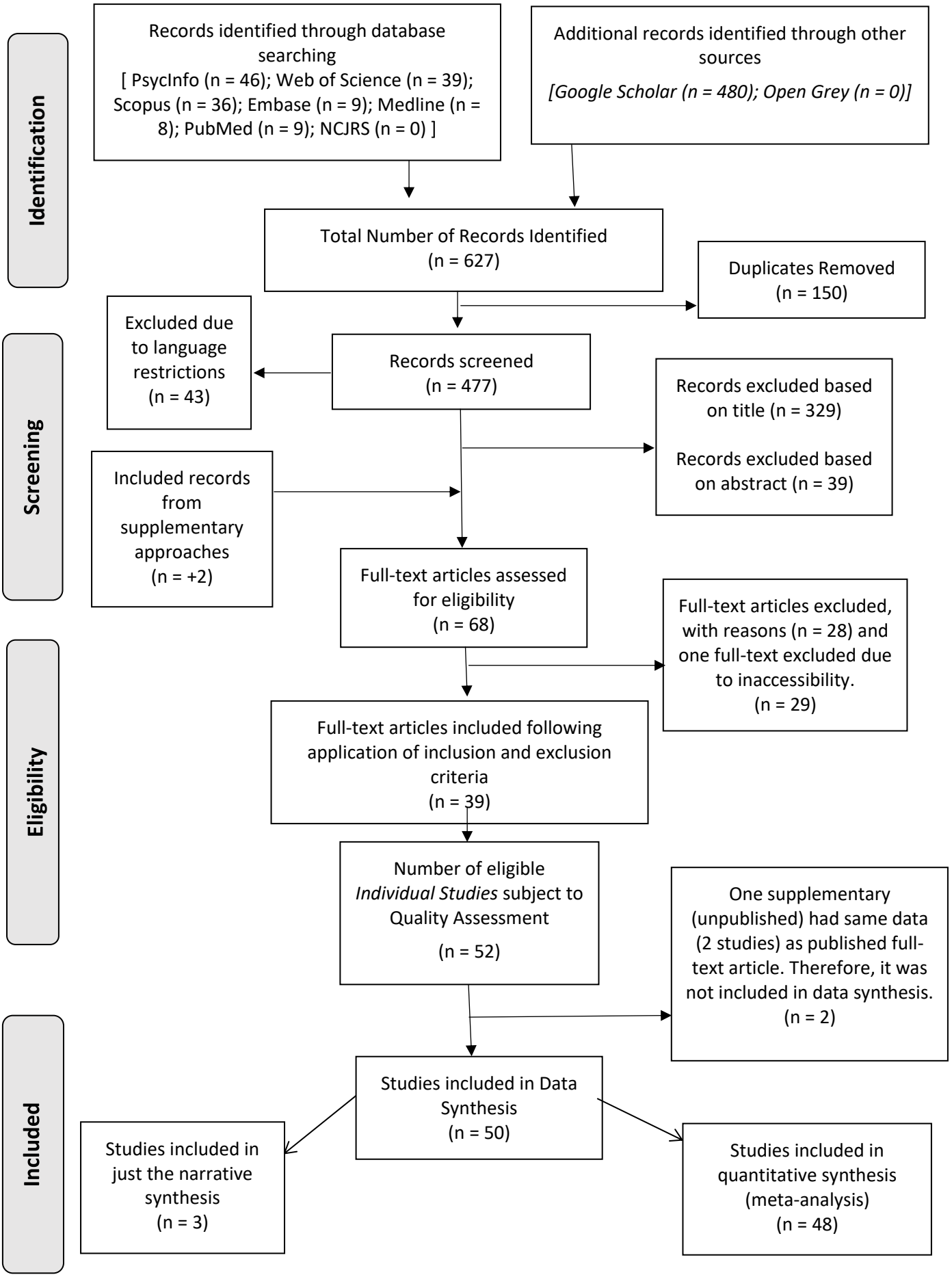
counting and introduction of bias, data was only extracted from the published article, which included two studies. This was chosen as the data included an odds ratio figure which could be transformed for the meta-analysis. As such, 49 studies from 37 full-text articles, were included in the review.

2.7 Data Items

Data items reported on the extraction sheet were informed by the review protocol. The following information was extracted:

- Study characteristics: (1) study design and location of research; (2) aims of the study; (3) participant characteristics; (4) additional dark personality measures; and (5) self-identified limitations.
- Data items: (1) sample size; (2) independent variable (everyday sadism) and measure used; (3) dependent variable (aggression) and measure used; (4) statistical analyses; (5) data values from statistical analyses; and (6) levels of significance.

Figure 1 *PRISMA Flow Diagram of Study Selection Process*



2.8 Risk of Bias in Individual Studies

To assess the validity of the studies, risk of bias was examined using a structured quality assessment form[32]. For this review, a quality assessment form was adapted using the Appraisal Tool for Cross-Sectional Studies (AXIS Tool; Downes et al., 2016) and the National Heart, Lung and Blood Institute Quality Assessment Tool for Controlled Intervention Studies (NIH, 2014). The adapted tool included two parts (Appendix 2.D). The first part comprised of a 20-item checklist, which assessed cross-sectional studies and an additional 10-item checklist to assess controlled intervention studies. For calculation purposes, no/unclear = 0, yes = 1. As some items were non-applicable to some studies, a percentage score was calculated from the total number of applicable checklist items. As the interpretation of the quality scores of the AXIS and NIH tool are subjective, guidelines were developed to categorise studies into low, medium, or high-quality ratings, to inform the sensitivity analysis. These categories are presented in Table 3.

Table 3

Guidelines for the quality ratings of studies based on their quality assessment score.

Percentages of Quality Assessment Score (%)	Quality Rating	Risk of Bias
Between 0%–33%	Low	High
Between 34%-67%	Medium	Medium
Between 68%-100%	High	Low

[32] Also referred to as a risk of bias tool (Higgins et al., 2017)

2.9 Sensitivity Analysis

If substantial heterogeneity is found, it is recommended to either not pool data, or to investigate heterogeneity using subgroup analysis or meta-regression (Ryan, 2016). The utility of investigating potential sources of heterogeneity was recognized, considering the complexity of the current outcomes - particularly aggression and the outcome measures used. Studies at medium to high risk of bias were therefore addressed via a sensitivity analysis and a random-effects model was used for all additional subgroup analyses (Ryan, 2016), informed by heterogeneity statistics (Q-value and I^2).

2.10 Summary Measures

Due to the cross-sectional nature of the included studies, correlational analyses were the most common method of examining the relationship between everyday sadism and aggression. Therefore, the most frequent summary effect measure was a correlation coefficient. The Short Sadistic Impulse Scale (SSIS; O'Meara et al., 2011) was the primary measure used to assess everyday sadism for the meta-analysis. Where multiple measures of sadism were used in a study, the results of the SSIS were recorded. An alternative self-report measure was used when the SSIS was not. In addition to being well-validated as "the first stand-alone measure of sadistic personality in normal samples" (Paulhus & Jones, 2015, p. 584), the SSIS is also a unidimensional measure, which aids quantitative synthesis. Where only subscales were reported, the SSIS can be used in conjunction with Direct Sadism subscales and is included in the Varieties of Sadistic Tendencies (VAST; Paulhus & Jones, 2015) and the Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels & Paulhus, 2014) assessments.

There was no primary measure specified for the outcome of aggression, as it was anticipated that there would be a diverse range of measures used. The outcomes and associated measures used within the review however, would need to meet pre-specified criteria documented in the PICo (Table 1). If multiple outcomes were reported, one *r* coefficient would be included in the meta-analysis to avoid duplication bias.

2.11 Planned Methods of Analysis

A multi-method approach was employed, meaning that if correlation coefficients were not reported in the study, then a partial coefficient transformation was calculated using other reported data values (Lenhard & Lenhard, 2016). As such, where possible, all reported effect sizes were standardised into a common metric. This meant that important statistics and findings would not be lost when performing a meta-analysis. Due to the likely variability of the outcome measure, heterogeneity assessments were pre-specified to advise the appropriate meta-analytic model (fixed- or random-effects; Higgins et al., 2003). The statistical approach used to examine heterogeneity was the I^2 statistic which computes the "amount of variation across studies beyond that expected by chance" (Liberati et al., 2009, p.14; Higgins et al., 2003; Higgins & Thompson, 2002). Pre-specified analyses included sensitivity analysis to assess heterogeneity, a funnel plot to assess publication bias, and, if appropriate, meta-analyses of sub-groups.

2.11.1 Quantitative Synthesis of Results

Meta-analyses have two main model assumptions, the fixed-effects model, and the random-effects model (Borenstein et al., 2009). The random-effects model assumes variation is present across studies and allows for differences between the studies; heterogeneity

assessments confirmed appropriate use of the random-effects model. The studies ineligible for the quantitative synthesis are reported in Tables 4 and 5 as non-applicable (n/a).

The statistical software Comprehensive Meta-Analysis (CMA Software) was used; this program transformed correlation coefficients to Fisher's *Z* Scores using the Hedges and Olkin (1985) method. All data input and transformations from CMA Software are presented in Appendix 2.E. This meta-analysis accepted Cohen's (1988) interpretation of *r* as: small (.1 to .3), medium (.3 to .5) or large (+.5) effect sizes.

3. Results

3.1 Study Characteristics

The 37 full-text articles comprised 50 individual studies from which study-level data was extracted. All studies included in the review were published between 2013 and 2020, demonstrating increased interest in this area. There was a key distinction in the studies retrieved, whereby 20 studies examined everyday sadism and aggression via an online platform. This distinction was taken into consideration when synthesizing data. In Table 5, study characteristics and information relevant to the review question examining everyday sadism and aggression perpetrated online are presented. In Table 4, the study characteristics examining everyday sadism and aggression are presented.

The total number of participants included in the review was 22,179. All participants were adults, the inclusion criteria having specified participants to be aged 18 years or over. Although most studies used a mixed-gender sample (n = 40), there were four studies which used a female-only sample, and five studies used a male-only sample. In Brown and Palasinski's (2019) study their participant sample was divided by gender and ethnicity.

All studies employed a cross-sectional design, including nine controlled studies. Most studies used a community sample (n = 26), recruiting via social media advertising or by using crowdsourcing websites such as Amazon's Mechanical Turk. Student samples were also common, with 20 studies using student-only samples. Four studies stated a mixed sample, comprising of students and the national population.

The geographical location of participants varied across studies. It was noted that 26 studies recruited participants from North America, followed by Europe (n=7), Oceania (n=2), and Asia (n=1). Three studies recruited across different continents. For twelve studies, the region where participants were recruited from was unspecified/unclear.

Four self-report measures were used to measure trait sadism. These were the: SSIS (n = 25); CAST (n = 15); VAST (n = 7); and the ASP (n = 2). Three studies combined items from these measures to create the Sadism Index (Chester et al., 2018) and the Direct Sadism Composite Score (Buckels et al., 2014).

A plethora of measures were used to assess the outcome of aggression, including self-report measures and lab-based aggression paradigms (Table 4 and 5). For aggressive behaviour not perpetrated online, included studies examined: trait aggression; reactive aggression; proactive aggression; anger towards others; aggressive humor; bullying behaviour; hazing behaviour; antisocial behaviour; same-sex aggression; conflict within intimate relationships; radicalised behaviour; and violence and criminal attitudes. Sexual aggression was also examined, including intimate partner violence, sexual coercion and completed rape.

For aggressive behaviour perpetrated online, the included studies examined: online anti-social behaviour; online trolling behaviour; cyberbullying; cyberstalking; intimate partner

cyberstalking; anti-social dating behaviour; and revenge porn proclivity. These behaviours took place across a variety of online platforms, including websites (forums, YouTube, news sites), Social Networking Sites (e.g., Facebook®), and Location-Based Real-Time dating applications, for example Tinder®.

3.2 Risk of Bias within Studies

The quality score of each study can be viewed in Table 4 and Table 5. The methodological features evaluated by the quality assessment tool for each study can be viewed in Appendix 2.F. For high percentages, there is a low risk of bias within the specified methodological area.

3.3 Sensitivity Analysis

A sensitivity analysis was undertaken by removing studies which had a quality score under 68%, indicative of a medium to high risk of bias. Twenty-two studies were removed from all 46 studies in the meta-analysis. High heterogeneity was still observed via the Q and I^2 statistic and sensitivity analysis showed that the overall moderate pooled effect size (.39) remained (Appendix 2.G). It was also noted that some studies (Buckels et al., 2013; Chester et al., 2019) could be viewed as measuring behavioural operationalisations of sadism, rather than aggressive behaviour. A sensitivity analysis showed that the overall moderate pooled effect size (.36) remained when these studies were excluded.

3.4 Results of Individual Studies

A summary of the results of individual studies are presented in Table 4 and Table 5. Both tables provide a synthesis of the information extracted, including the main findings, a summary of reported outcomes, the effect size, and statistical significance.

Table 4

Synthesis of Information extracted from studies included in the review. Everyday Sadism and Aggression.

	Author (Year)	Study/ Sample Number	Quality Score (%)	Sample Characteristics Country (*N*) Age *M* (*SD*) Gender (% male)	Measure of Everyday Sadism	Outcome measure	Main Findings	Standardised Regression Weight (β)	Reported *r* for meta-analysis[33]	Summary of Reported Outcome
1.	Arteta-Garcia (2015)	-	79%	USA 416 19.24 30.3%M	SSIS	PHMQ	Bivariate correlations indicated that of all dark tetrad traits, sadism had the strongest correlation with more severe desired hazing (r= .20, p < .01). When subjected to regression analyses, sadism remained a significant predictor of desired hazing, (β = .178, p < .001).	-	.20**	High sadism/more severe desired hazing**
2.	Buckels (2018)	Study 1	68%	Canada 90	CAST	BPAQ	Bivariate correlations showed that high sadism was highly positively correlated with trait aggression (r = .75, p < .001).	-	.75***	High everyday sadism/increased

[33] Including Partial Coefficient Transformations

										trait aggression***
3.	Buckels et al. (2013)	Study 1	58%	Canada 71 20.37 (2.33) 27.1%M	SSIS	Task Choice	Results indicated that participants who reported high levels of sadism, were associated with greater odds of choosing the sadistic behavioural task of bug killing, odds ratio = 3.41, *SE* = 2.00, *z* = 2.10, *p* = .036, 95% CI [1.09, 10.76]. Overall, results showed that sadists who killed more bugs reported greater pleasure.	-	.32* *(Transformed from Odds Ratio)*	High everyday sadism/more likely to choose sadistic behavioural choice*
	4.1	Study 2	61%	Canada 71 20.52(3.69) 50.7%M	VAST (Direct Sadism Items)	White Noise Paradigm	Correlational results indicated that increased sadism was strongly associated with the strength of non-costly aggression towards an innocent target, (r = .57, p < .001). In the costly condition, correlational results showed that sadism was highly correlated with the number of times a participant	-	.57***	High everyday sadism/increased aggression strength***

							worked to be aggressive against an innocent opponent, (r = .40, p < .05).			
4.	Chabrol et al. (2017)	-	63%	France 511 19.88 (2.01) M 20.09 (2.03) F 17%M	French Version of SSIS	ISRD-2	Multiple regression analysis demonstrated that two dark tetrad traits, sadism (β = .17, p < .001) and psychopathy (β = .28, p < .001), were unique predictors of antisocial behaviour in a community sample of college students.	.17	.22***	High sadistic traits/increased anti-social behaviour***
5.	Chabrol et al. (2019)	-	79%	France 643 20.38 (1.96) 0%M	SSIS	QARRB	Cluster analyses revealed four different groups; no group with solely high levels of trait sadism was formed, therefore making inferences purely between sadism and radicalised behaviours difficult. It was noted that the cluster group with high levels of trait sadism, psychopathy, and Machiavellianism, with moderate levels of narcissistic traits, had the highest level of radicalised cognitions and behaviours.	-	**(*ns*)** **N/A**	*No single sadism cluster in cluster analysis.*

6.	Chester et al. (2019)	Study 1	63%	USA 147 19.08 (1.84) 26%M	SSIS	TAP	Zero-order correlations demonstrated that sadism was positively associated with retaliatory aggressive behaviour (r = .25, p < .01).	-	.25**	High sadism/increased aggressive behaviour**
	7.1	Study 2	66%	USA 149 18.94 (1.19) 28%M	SSIS	HSAT	Zero-order correlations demonstrated that sadism was not associated with greater 'hot sauce allocations' to the opponent (r = .16, p > .05). This effect was not moderated by the type of aggression (proactive or reactive aggression), or whether participants believed they would have to have the same amount of hot sauce administered (experiencing the same suffering of their victim).	-	.16 **(*ns*)**	**High sadism/increased aggressive behaviour**
	7.2	Study 3	63%	USA 125 19.22 (1.19) 50%M	SSIS	IAAM	Zero-order correlations demonstrated that there was a significant association between sadism and greater number of gruesome images given to the opponent (r = .18, p < .05).	-	.18*	High sadism/increased aggressive behaviour*

						This effect was not moderated by the type of aggression (proactive or reactive aggression).			
7.3	Study 4	59%	USA 182 20.02 (4.58) 35%M	SSIS	TAP	Correlational analyses showed that sadism was associated with administering longer and louder noise blasts (r = .19, p < .05). Structural Equation Modelling (SEM) was conducted to examine whether enjoyment during the aggressive act accounted for the sadism-aggression link. Results indicated that sadism was associated with increased aggressive behaviour through greater pleasure whilst engaged in the aggressive act (*B* = .05*, SE* = .03, 95% CI [0.01, 0.14]*, p* = .013*).* [Indirect Effect].	-	.19*	High sadism/increased aggressive behaviour*
7.4	Study 5	64%	USA 152 33.32 (10.25)	SSIS	VDAT	Correlational analyses showed that sadism was associated with increased numbers of pins put in the voodoo doll (r = .46, p < .001),	-	.46***	High sadism/increased

			51%M			and that this effect was attenuated by the provocation condition. Whilst aggression scores could be partially explained by the positive affect experienced during the aggressive behaviour (*B* = 0.04, *SE* = 0.02, 95% CI [0.01, 0.08], sadism was surprisingly associated with greater negative affect following the aggressive behaviour (r=.41, *p* < .001).			aggressive behaviour***
7.5	Study 6	62%	USA 237 19.35 (1.81) 26%M	SSIS	VDAT	Correlation analyses showed that sadism was associated with increased numbers of pins placed in the voodoo doll, imagined to be a person from the participant's life with whom they felt 'a great deal of anger towards' (*r* = .21, *p* < .01). With regards to the experimental manipulation of self-regulatory fatigue, the sadism-aggression link was attenuated.	-	.21**	High sadism/increased aggressive behaviour**

7.6	Study 7	64%	USA 356 19.57 (2.39) 33%M	35-Item Sadism Index	VDAT	Correlational analyses showed that sadism was associated with increased aggressive behaviour (r = .14, p < .01). Findings showed that the link between sadism and aggressive pleasure was strengthened by perceived victim suffering (B = 0.17, t(352) = 2.04, p = .043, 95% CI [0.01, 0.34].	-	.14**	High sadism/increased aggressive behaviour*
7.7	Study 8	66%	USA 204 19.42 (2.76) 20%M	19 Item Sadism Index	TAP	Correlational analyses revealed that there was not a significant association between sadism and aggressive behaviour, as measured by the TAP (r = .04, p>.05). Within the condition where victims were perceived as suffering, sadism was not associated with aggressive pleasure (B=0.37, t (201) = 1.56, p = .121, 95% CI [-0.10, 0.85].	-	.04 (***ns***)	**High sadism/increased aggressive behaviour**

7.	Dinić et al. (2019)	-	65% 624 32.6 (12.8) 48.2%M	Serbia	Serbian Version of SSIS	RPQ	Correlation analyses showed that sadism, measured by the SSIS, and proactive aggression, provided the strongest significant correlation (r = .37, p < .001) compared to other Dark Triad traits. A significant positive correlation was also reported between everyday sadism and reactive aggression (r = .28, p < .001)	-	.37***(proactive)	High sadism/increased reactive aggression*** and proactive aggression***
8.	Fentem (2018)	-	53% 153 32.97 (8.66) 58%M	Unclear	CAST	CTS2	Correlational results revealed a positive association between sadism and conflict within intimate relationships (r = .69, p < 0.01). Multiple regression analyses showed that trait sadism explained a significant amount of variance in conflict within the relationship (β = .69, p < .001).	-	.69**	High everyday sadism/increased conflicts within intimate relationship**

9. Jonason et al. (2017)	-	74%	USA 1236 19.96 (3.04) 24%M	CAST	VAVS (Anger Subscale)	In addition to other Dark Triad traits, results indicated a significant positive correlation between sadism and anger (r = .39, p < 0.01).	-	.39**	High sadism/increased anger towards others**
10. Klann (2017)	-	63%	Unclear 215 33.30 (9.93) 100%M	CAST	TOSS	A multiple regression analysis showed that whilst psychopathy, Machiavellianism, and sadism were all significant predictors of sexual coercion, everyday sadism was noted as the strongest predictor (β = *.51, p < .01)*.	.51**	**N/A** *Unable to transform as .51>.50*	High everyday sadism/significant predictor of sexual coercion**
11. Koscielska et al. (2019)	-	79%	UK and USA 151 31.97 (11.64) 30%M (2%Other)	ASP	TOSS	There was a significant positive correlation between sadism and sexual coercion (r = .37, p < .001). When subjected to hierarchical multiple regression analyses, however, sadism (and Dark Triad traits), did not uniquely predict sexual coercion.	-	.37***	High sadism/increased reporting of sexual coercion***
12. Međedović & Bulut (2017)	-	68%	Unclear 341	SSIS	HSQ (Aggressive Humor Subscale)	Correlational analyses showed a significant positive correlation between sadism and aggressive humor (r = .53, p < .01). Furthermore, when subjected to regression	-	.53**	High subclinical sadism/increased aggressive humor**

							analyses, the association remained statistically significant, with everyday sadism being a significant predictor of aggressive humor (β = *.25, p < .01)*.			
13.	Međedović, J., & Kovacevic, U. (2020)	-	65%	Serbia 128 27 (5) 100%M *Nb. Experimental Group*	VAST (Direct Sadism Items)	MCAA (Inc. Violence Subscale)	Correlational analyses revealed that there was a significant positive association between sadism and violence (r = .43, p < .01). Sadism was found to be the most significant predictor of the dark tetrad traits, with regards to criminal attitudes (β = .26, p < .01) and its subscales of violence (β = .33, p < .01), antisocial intent (β = .19, p < .01), and associates (β = .20, p < .01).	-	.43**	High trait sadism/increased violence**and criminal attitudes**
14.	Međedović & Petrović (2015)	-	68%	Unclear 463 28.3 (6.95) 30%M	VAST	SRP (Anti-social behaviour subscale)	Correlational analyses revealed significant correlations between antisocial behaviour, and both core sadism (r = .22, p < .05) and substitutive sadism (r = .22, p < .05).	-	.22* (CS)	High core sadism/increased anti-social behaviour*

15.	Morgades-Bamba et al. (2018)	-	79%	France 643 20.38 (1.95) 0%M	French Version of SSIS	QARRB	Correlational analyses demonstrated a significant positive association between sadism and radicalised behaviours, (r = .20, p < .001). Whilst sadism was particularly influential in directly predicting radicalised cognitions (β = *.15, p < .001)*, it did not directly predict radicalised behaviour.	-	.20***	High sadism/increased radicalised behaviour***
16.	Plouffe et al. (2020)	Study 2 *(Study 1 excluded)*	79%	USA and Canada 360 34.39 (10.96) 43%M	ASP	IPV Adapted scale	Bivariate correlations revealed that sadism was not positively related to IPV. In regression analyses, sadism was found not to be a significant predictor of IPV perpetration.	-	-.05 (***ns***)	**High sadism/decreased Intimate Partner Violence**
17.	Russell (2016)	-	84%	USA 612 32.88 (11.44) 100%M	CAST	SES	Physical sadism was a unique predictor of sexual aggression (β = .20, p < .01), improving the Confluence Model of Sexual Aggression (Malamuth et al., 1991).	.20	.25**	High physical sadism/Increased likelihood of sexual aggression**

18. Russell et al. (2017)	National Sample 1	84%	USA 592 33.54 (11.08) 0%M	CAST	SES	Significant positive correlations were found between physical sadism and reported 'completed rape' and 'completed coercion' (r = .25, p < .01; r = .24, p < .01).	-	.25**(rape)	High physical sadism/completed rape**
19.1	University Sample 2	84%	USA 439 20.02 (3.17) 0%M	CAST	SES	Significant positive correlations were found between physical sadism and reported 'completed rape' and 'completed coercion' (r = .23, p < .01; r = .18, p < .01).	-	.23**(rape)	High physical sadism/completed rape**
19. Russell & King (2016)	-	79%	USA 489 33.98 (11.07) 100%M	CAST	SES	In a model that predicted 33% of the variance in sexual aggression and 27% of the variance in sexual coercion, physical sadism held a direct path to sexual aggression (β = .31, p < .01) and sexual coercion (β = .29, p < .01).	.31	.36**(aggression)	High physical sadism/significantly predicted sexual aggression and coercion**
20. Tetreault et al. (2018)	-	79%	UK and Sweden 342 26.54 (7.73) 40%M	SSIS	Modified CTS	There was a significant positive correlation with Sadism and IPV and SSA, which was broken down into the following subtypes: verbal (r = .15, p < .05; r = .31, p < .001),	-	.12***(IPV)	High subclinical sadism/increased same-sex physical

							explosive (r = .15, p < .001; r = .18, p < .001), and physical (r = .12, p < .001; r = .16, p < .001).		aggression* and intimate partner violence (physical aggression)***
21. Thibault (2016)	-	74% Unclear 416 42.05 (no *SD*) 28%M	VAST	NAQ-R	Results showed significant positive correlations between both direct and vicarious sadism, and workplace bullying (r = .67, p < 0.001; r = .44, p < 0.001). Hierarchical regressions showed direct sadism to be a unique predictor of workplace bullying (β = *.37, p < .001)*.	-	.67***(DS)	Increased direct sadism/increased bullying behaviour in the workplace***

Note. **SSIS**=Short Sadistic Impulse Scale (O'Meara et al. 2011); **VAST**=Varieties of Sadistic Tendencies (Paulhus & Jones, 2015); **CAST**=Comprehensive Assessment of Sadistic Tendencies (Buckels & Paulhus, 2014); **ASP**=Assessment of Sadistic Personality (Plouffe et al. 2016); Sadism Index (Chester et al. 2018).

BPAQ=Buss-Perry Aggression Questionnaire (Buss & Perry, 1992); **PHMQ**=Predictors of Hazing Motivation Questionnaire (Cimino, 2013); **ISRD-2**= International Self-Reported Delinquency Study 2 Questionnaire (Enzmann et al. 2010); **QARRB**= Questionnaire of Acceptability of Radicalised Religious Behaviours (adapted from Amjad & Wood, 2009); **TAP**=Taylor Aggression Paradigm (Taylor, 1967); **HSAT**=Hot Sauce Aggression Task (Lieberman, Solomon, Greenberg, & McGregor, 1999); **IAAM**=Image-assignment Aggression Measure (Gollwitzer & Bushman, 2012); **VDAT**=Voodoo Doll Aggression Task (DeWall et al. 2013); **RPQ**= Reactive Proactive Questionnaire (Raine et al. 2006; Serbian Adapted Dinić et al. 2019); **CTS2**=Revised Conflict Tactics Scale (Straus et al., 1996); **VAVS**=Vice and Virtues Questionnaire (Veselka et al. 2014); **TOSS**=Tactics to Obtain Sex Scale (Camilleri, 2011); **HSQ**=Humor Styles Questionnaire (Martin et al. 2003); **MCAA**=Measures of Criminal Attitudes and Associates, part B (Mills et al. 2002); **SRP**=Self-Report Psychopathy Scale (Paulhus, Neuman, & Hare, in press); **SES**=Revised Sexual Experiences Survey-Short Form Perpetration (Koss et al. 2006); **NAQ-R**=Negative Acts Questionnaire-Revised (Einarsen et al. 2009); **IPV**= Intimate Partner Violence Adapted scale (Graham et al. 2012)

Where an r correlation coefficient has reported in the study, the standardised regression weight has not been reported in the β column (-)*.*

When multidimensional measures are used (i.e., Subscales of CAST/VAST), direct sadism (DS), physical sadism (PS), core sadism (CS) are used for meta-analysis to correspond with the SSIS.

Where multiple outcomes were reported, one r coefficient which met PICo criteria was included in the meta-analysis to avoid duplication bias.

N/A*= Non-applicable for meta-analysis.* ***ns*** *= Non-significant, n. b. Non-significant results have been highlighted in bold*.

* = $p < .05$, ** = $p < .01$, *** = $p < .001$

n = Number of Participants
M = Mean
SD = Standard Deviation
M = Male
F = Female

Table 5

Synthesis of Information extracted from studies included in the review. Everyday Sadism and Aggression Online.

Author (Year)	Study/ Sample Number	Quality Score (%)	Sample Characteristics Country (*N*) Age *M* (*SD*) Gender (% male)	Measure of Everyday Sadism	Outcome measure	Main Findings	Standardised Regression Weight (β)	Reported *r* for meta-analysis[34]	Summary of Reported Outcome
1. Brown et al., (2019)	Study 1: Sample A	32%	Unclear 294 22.3 (5.95) 100% M	SSIS	CBPS	Correlational analysis revealed no significant relationship between sadism and cyberbullying (r = .11, p > .05)	-	-	High everyday sadism/increased cyberbullying
1.2	Sample B	32%	Unclear 371 22.3 (5.95) 100% Female	SSIS	CBPS	Correlational analyses revealed that sadism was positively associated with cyberbullying (r = .13, p < .05).	-	r = .13*	High everyday sadism/increased cyberbullying*
1.3	Sample C	32%	Unclear 90 22.3 (5.95)	SSIS	CBPS	Correlational analyses revealed that sadism was positively associated with cyberbullying (r = .26, p < .05).	-	r = .26*	High everyday sadism/increased cyberbullying*

[34] Including Partial Coefficient Transformations

			100% M						
1.4	Sample D	32%	Unclear 350 22.3 (5.95) 100% F	SSIS	CBPS	Correlational analyses revealed that sadism was positively associated with cyberbullying (r = .11, p < .05).	-	r = .11*	High everyday sadism/increased cyberbullying*
1.5	Sample E	32%	Unclear 329 22.3 (5.95) 100% M	SSIS	CBPS	Correlational analyses revealed that sadism was positively associated with cyberbullying (r = .24, p < .05).	-	r = .24*	High everyday sadism/increased cyberbullying*
1.6	Sample F	32%	Unclear 448 22.3 (5.95) 100% F	SSIS	CBPS	Correlational analyses revealed that sadism was positively associated with cyberbullying (r = .11, p < .05).	-	r = .11*	High everyday sadism/increased cyberbullying*
2. Buckels et al. (2018)	Study 1	63%	USA 345 34.4 (12.69) 48.2% M	CAST	iTroll	Correlational analyses revealed that sadism was positively associated with online trolling (r = .71, p < .001).	-	r = .71***	High everyday sadism/increased online trolling***
2.2	Study 2: Sample A	59%	Canada 1134 ? (Median = 18)	CAST	iTroll	Correlational analyses revealed that sadism was positively associated with online trolling (r = .46, p < .001).	-	r = .46***	High everyday sadism/increased online trolling***

				29% M						
	2.2.1	Study 2: Sample B	59%	Canada 236 ? (Median = 19) 36% M	SSIS	iTroll	Correlational analyses revealed that sadism was positively associated with online trolling (r = .44, p < .001). This association held when subject to regression analyses whereby results showed sadism as a unique predictor of online trolling (β = 0.24, p < .01)	-	r = .44***	High everyday sadism/increased online trolling***
3.	Buckels et al. (2014)	Study 1	47%	USA 118 29.2 (11.0) 57.6% M	'Direct sadism' composite score	Preferred activity when commenting online	Planned orthogonal contrasts showed that those who selected trolling as their most favourable online activity had increased scores on dark personality measures. This effect was significant for all dark tetrad traits, including sadism, t(500) = 3.03, p < .01, *d=.27*.	-	**N/A** ***Planned Orthological Contrasts not transformed to r***	High everyday sadism/increased online trolling**

	3.1	Study 2	47%	Canada and USA Student: 188 21.15 (3.63) 45% M + MTurk: 609 35.04 (12.98) 57% M	CAST	GAIT	Correlational analyses revealed that sadism was positively correlated with reported enjoyment of trolling behaviour (r = .52, p < .001) and the GAIT measure (r = .68, p < .001). When subject to multiple regression analyses, sadism was a unique predictor trolling enjoyment (β =.53, t(78) = 4,21, p < .002) and stronger GAIT scores (β =.61, t(735) = 15.41, p < .001).	-	r = .68***	High everyday sadism/increased online trolling***
4.	Craker & March (2016)	-	74%	Unclear 396 34.41 (1.70) 24.10% M	SSIS	GAFT	Bivariate correlational analyses revealed a significant positive association between sadism and trolling behaviour on Facebook (r = .35, p < .001). When subject to hierarchical multiple regression analysis, sadism remained a significant predictor of Facebook trolling behaviour (β =.16, p < .001).	-	r = .35***	High trait sadism/increased Facebook® trolling behaviours***

5.	Duncan & March (2019)	-	68%	Unclear 587 23.75 (6.05) 21% M	SSIS	Antisocial Uses of Tinder® Scale	Bivariate correlations indicated a significant positive relationship between sadism and perpetration of general antisocial behaviour (r = .42, p < .001), antisocial-esteem behaviour (r = .12, <.01) and anti-social sexual behaviour (r = .36, p < .001). Further analyses revealed that sadism was a significant predictor of perpetration of general antisocial behaviour (β = 0.26, p < .001) and anti-social sexual behaviour (β = 0.10, p < .05).	-	r = .42*** (general anti-social behaviour)	High trait sadism/increased general antisocial behaviour***antisocial-esteem behaviour** antisocial sexual behaviour*** on Tinder®
6.	Gibb (2016)	-	60%	Western USA 393 21.68 (?) 36.9%M	SSIS	RCBQ	When subject to logistic regression analyses, measures of sadism (χ^2 (2) = 4.19, p = .12) were non-significant and removed from the overall model of	-	r = 0.0845 **(*ns*)** *(Nb. r value from*	**High subclinical sadism/increased likelihood of cyberbullying**

							predicting engagement in cyberbullying behaviour.	*SSIS measure and transforme d from Odds Ratio)*	
7.	Kircaburun et al. (2018)	-	52%	Turkey 761 20.70 (2.28) 36%M	Turkish version of SSIS	Turkish version of CyberBull ying Offending Scale	Correlational analyses revealed that sadism was positively associated with cyberbullying (r = .47, p < .001), cyberstalking (r = .34, p < .001), and cybertrolling (r = .39, p < .001). When subjected to a hierarchical multiple regression analyses, sadism was a significant predictor of cyberbullying (β = 0.23, p < .001), cyberstalking (β = 0.16, p < .001), and cybertrolling (β = 0.15, p < .01).	-	r = .47***	High sadism/increased cyberbullying***cy berstalking***cyber trolling***

8.	March (2019)	-	68%	Global 733 23.53 (7.98) 29.5% M	VAST	GAIT-R	Bivariate correlations indicated significant positive correlations between both direct sadism (r = .50, p < .001) and vicarious sadism (r = .39, p < .001), with internet trolling. Results indicated that both direct (β =.11, p < .01) and vicarious (β =.15, p < .001) sadism were significant positive predictors of trolling behaviour at step one and two of a 2-Step Hierarchical Multiple Regression analysis.	-	r = .50*** (DS)	High trait sadism/increased online trolling***
9.	March et al. (2017)	-	68%	Australia 357 22.50 (6.55) 29% M	SSIS	GAIT modified to reflect LBRTD Apps	Bivariate correlations showed a significant positive association between sadism and trolling behaviour (r = .25, p < .001). This association remained when subject to regression analysis. Within the overall model, sadism (β =.16, p < .05)	-	r = .25***	High trait sadism/increased trolling on LBRTD apps***

						significantly predicted trolling behaviours on LBRTD applications.			
10. March et al. (2020)	-	74%	Unclear 405 24.67 (7.33) 30.4% M	CAST	IPCS-scale	Correlational analyses revealed significant positive correlations between intimate partner cyber stalking and direct physical sadism (r = .34, p < .05) and direct verbal sadism (r = .31, p < .05). Vicarious sadism was non-significant. When subject to regression analyses, physical (β = .17, p < .01) and verbal sadism β = .17, p < .01) were found to be significant predictors of intimate partner cyber stalking.	-	r = .34* (PS)	High physical sadism/increased intimate partner cyberstalking (IPCS)* High verbal sadism/increased IPCS* **High vicarious sadism/increased IPCS**
11. Masui (2019)	-	58%	Japan 513 46.8 (13.4)	Japanese Version of VAST-J	Japanese Version of	Internet trolling was positively associated with sadism (r = .39, p < .001).	-	r = .39***	High everyday sadism/increased online trolling***

			48.9% M		the GAIT-R				
12. Mayshak et al. (2020)	-	68%	Australia 1009 32.30 (13.39) 45.91% M	SSIS	ABS	A binary logistic regression showed that sadism was not significantly associated with the perpetration of anti-social dating behaviour (*b* = 0.66, *p* > .05, *OR* = 1.93, 95% CI [0.88, 4.23]).	-	*r* = 0.1783 **(*ns*)** *(Nb. transformed from Odds Ratio)*	**High sadism/increased antisocial dating behaviour**
13. Nocera (2019)	-	63%	USA 404 25.16 (2.76) 41% M	CAST	CESP	It was reported that bivariate correlations revealed a significant positive association between sadism and all four subscales of the cyber-aggression measure. No p-values were provided. Structural Equation Modelling (SEM) results indicated that sadism (β = .447,	.447	*r* = 0.497**	High sadism/increased likelihood of cyber aggression perpetration**

						p < .01) directly predicted cyber-aggression perpetration.			
14. Paananen & Reichl (2019)	-	95%	USA, Canada, India, and other 347 32.67(?) 100% M	CAST	GAIT and GtM	Bivariate correlational analyses showed significant positive associations between all subscales of the CAST with GenderTrolling (physical sadism, r = .61, p < .001; verbal sadism, r = .47, p < .001; vicarious sadism, r = .41, p < .001) and Trolling Behaviour (physical Sadism, r = .63, p < .001; verbal Sadism, r = .57, p < .001; vicarious sadism, r = .51, p < .001). When subject to regression analyses, physical sadism (β =.26, p < .001) remained a significant predictor of GenderTrolling.	-	r = .63*** (PS)	High sadism/increased online trolling*** and GenderTrolling***
15. Pina et al. (2017)	-	63%	Unclear (87% British) 100	CAST	RPPS	Correlational analysis revealed no significant relationship between sadism and revenge porn proclivity (r = .16, p >	-	r = .16 **(*ns*)**	**High sadism/increased**

				25.81 (7.11) 16% M (2% undisclosed)			.05), revenge porn approval (r = .02, p > .05) or revenge porn enjoyment (r = .06, p > .05).			**revenge porn proclivity**
16.	Sest & March (2017)	-	68%	Australia, USA, and other 415 23.37 (7.19) 36% M 1% Other	SSIS	GAIT-R	Intercorrelations showed a significant positive relationship between sadism and trolling behaviour, (r = .62, p < .001). When subject to regression analysis, sadism proved to be a significant predictor of trolling (β =.27, p < .001).	-	r = .62***	High everyday sadism/increased online trolling***
17.	Smoker & March (2017)	-	63%	Unclear 689 26 (10.21) 30% M	SSIS	IPCS	Bivariate correlations revealed a significant positive relationship between sadism and perpetration of intimate partner cyberstalking (r = .39, p < .001). This relationship remained when subjected to a 2-Step Hierarchical	-	r = .39***	High trait sadism/increased intimate partner cyberstalking***

| | | |

3.6 Meta-Analysis

Overall, effect sizes from 48 studies were computed and quantitatively synthesized. For the 48 studies included in the quantitative synthesis, meta-analysis revealed a statistically significant Q statistic, $Q = 1009.17$, $df = 51$, $p < .001$. Results suggested a moderate summary effect size across all studies (k[35] =52, n[36] = 22, 297, $z = 11.654$, $p < .001$). As presented in Figure 2, the overall indicator of the relationship between everyday sadism and aggression was statistically significant, providing a pooled correlation coefficient of .35, 95% CI [0.29, 0.40].

3.6.1 Publication Bias

Publication bias was assessed by a funnel plot of effect size and standard error (Egger, Smith, Schneider, & Minder, 1997). Relative weights were inspected and were evenly distributed. The funnel plot presented in Figure 3 did not suggest publication bias. This was explored further using the 'Trim and Fill' method (Duval & Tweedie, 2000). As presented in Figure 4, results indicated that seven studies to the right of the funnel plot required trimming.

[35] K = The number of studies
[36] n = The number of participants

Figure 2

Forest plot of all studies included in the quantitative synthesis examining the effect of increased trait sadism on aggressive behaviour using a random effects model.

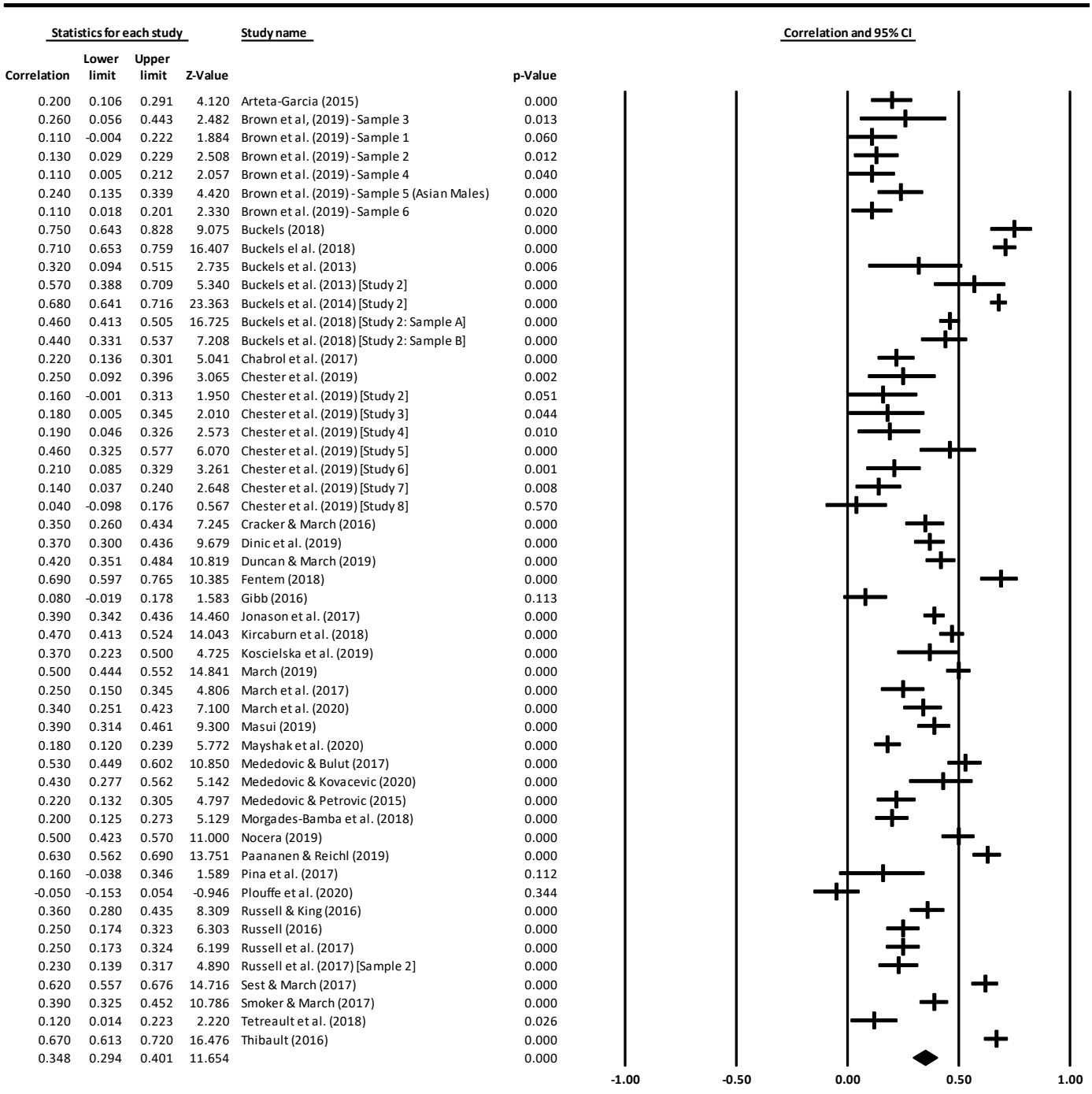


Figure 3

Funnel plot of standard error by Fisher's Z for the 48 studies included in the meta-analysis

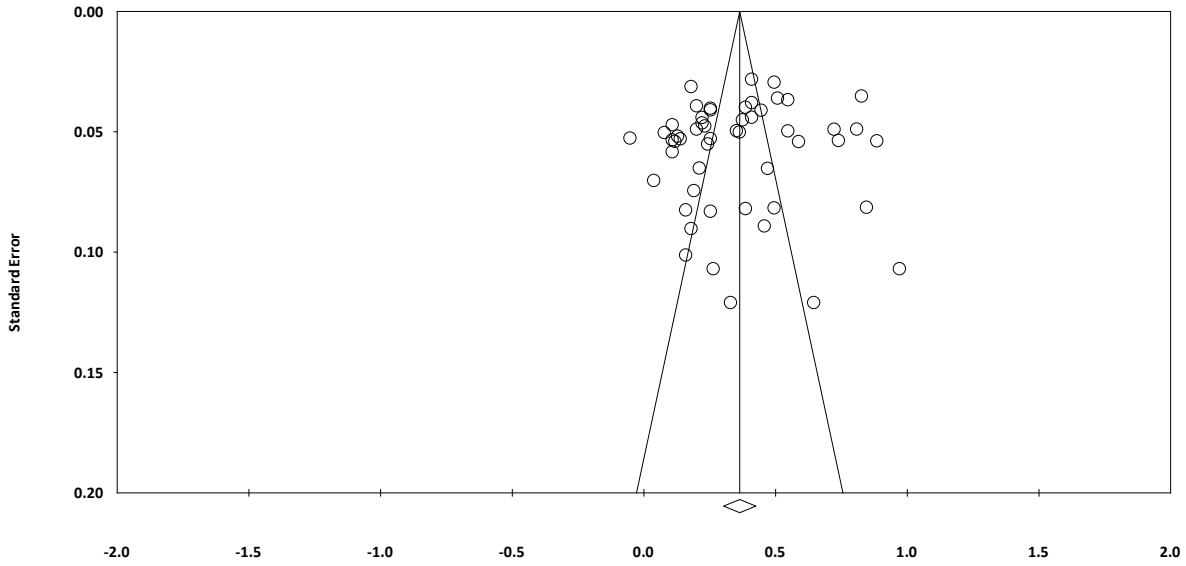
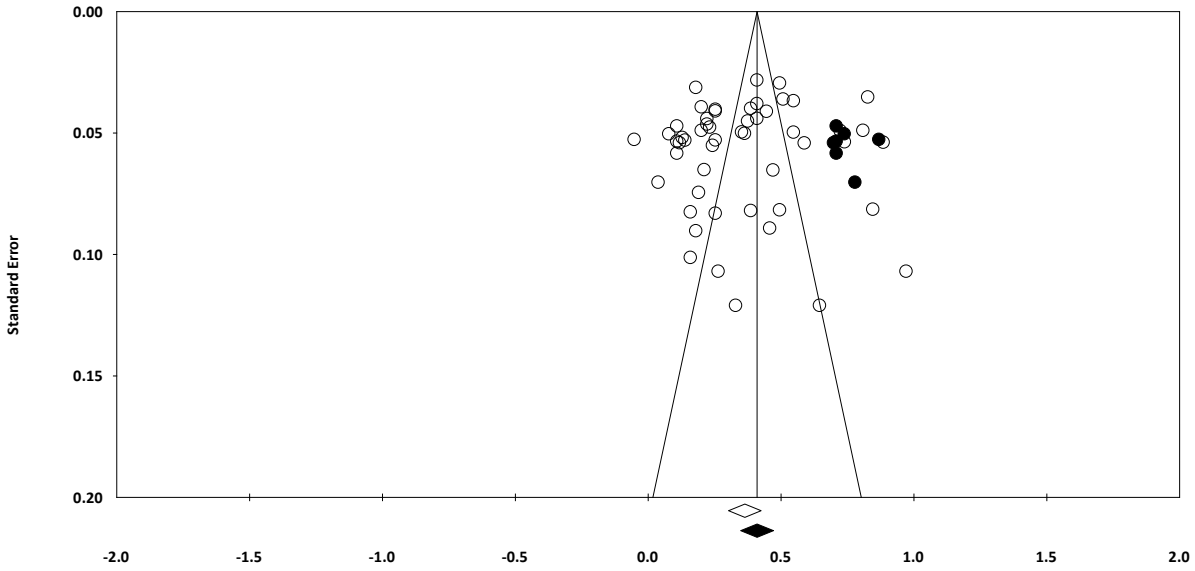


Figure 4

Funnel plot examining publication bias using the 'Trim and Fill' method



3.7 Subgroup Analysis: Online Vs Offline Aggressive Behaviour

Examining sadism and aggressive behaviour not perpetrated online (*n*=28), meta-analysis revealed a statistically significant Q-value, Q =365.99, df = 27, p < .001. Observed total variation was also suggestive of heterogeneity between studies (I^2 = 92.62 %, 95% CI [0.25, 0.39]). The overall indicator of the relationship between everyday sadism and aggressive behaviour not perpetrated online was statistically significant (k = 28, n = 10, 558, z = 8.66, p < .001), providing a pooled moderate correlation coefficient of .32 (Figure 5).

For those examining aggressive behaviour perpetrated online (*n*= 24), meta-analysis revealed a statistically significant Q-value, Q = 581.99, df = 23, p < .001. Observed total variation was also suggestive of heterogeneity between studies (I^2 = 96.05 %, 95% CI [0.29, 0.45]). The overall indicator of the relationship between everyday sadism and aggressive behaviour perpetrated online was statistically significant (k = 24, n = 11,621, z = 8.27, p < .001), providing a pooled moderate correlation coefficient of .38 (Figure 6).

3.8 Subgroup Analysis: Types of Aggression

Within the review key themes were highlighted in terms of the type of aggressive behaviour perpetrated. As such, meta-analyses were run for sexual aggression, intimate partner violence, trolling, bullying, anti-social behaviour, and generalised aggressive behaviour towards others. Pooled correlation coefficients and significance levels are reported in Table 6. It is noteworthy that trolling behaviour pooled the strongest correlation coefficient of .52, 95% CI [0.42-0.60]. A small, pooled effect (r = .26) was found for both bullying and antisocial behaviour. A small, pooled effect (r = .28) was found for sexual aggression, however, there was more homogeneity within the results (I^2=63%, 95% CI [0.20-0.31]).

Figure 5

Forest plot showing the association between sadism on aggressive behaviour not perpetrated online

Statistics for each study				Study name	
Correlation	Lower limit	Upper limit	Z-Value		p-Value
0.200	0.106	0.291	4.120	Arteta-Garcia (2015)	0.000
0.750	0.643	0.828	9.075	Buckels (2018)	0.000
0.320	0.094	0.515	2.735	Buckels et al. (2013)	0.006
0.570	0.388	0.709	5.340	Buckels et al. (2013) [Study 2]	0.000
0.220	0.136	0.301	5.041	Chabrol et al. (2017)	0.000
0.250	0.092	0.396	3.065	Chester et al. (2019)	0.002
0.160	-0.001	0.313	1.950	Chester et al. (2019) [Study 2]	0.051
0.180	0.005	0.345	2.010	Chester et al. (2019) [Study 3]	0.044
0.190	0.046	0.326	2.573	Chester et al. (2019) [Study 4]	0.010
0.460	0.325	0.577	6.070	Chester et al. (2019) [Study 5]	0.000
0.210	0.085	0.329	3.261	Chester et al. (2019) [Study 6]	0.001
0.140	0.037	0.240	2.648	Chester et al. (2019) [Study 7]	0.008
0.040	-0.098	0.176	0.567	Chester et al. (2019) [Study 8]	0.570
0.370	0.300	0.436	9.679	Dinic et al. (2019)	0.000
0.690	0.597	0.765	10.385	Fentem (2018)	0.000
0.390	0.342	0.436	14.460	Jonason et al. (2017)	0.000
0.370	0.223	0.500	4.725	Koscielska et al. (2019)	0.000
0.530	0.449	0.602	10.850	Mededovic & Bulut (2017)	0.000
0.430	0.277	0.562	5.142	Mededovic & Kovacevic (2020)	0.000
0.220	0.132	0.305	4.797	Mededovic & Petrovic (2015)	0.000
0.200	0.125	0.273	5.129	Morgades-Bamba et al. (2018)	0.000
-0.050	-0.153	0.054	-0.946	Plouffe et al. (2020)	0.344
0.250	0.174	0.323	6.303	Russell (2016)	0.000
0.250	0.173	0.324	6.199	Russell et al. (2017)	0.000
0.230	0.139	0.317	4.890	Russell et al. (2017) [Sample 2]	0.000
0.360	0.280	0.435	8.309	Russell & King (2016)	0.000
0.120	0.014	0.223	2.220	Tetreault et al. (2018)	0.026
0.670	0.613	0.720	16.476	Thibault (2016)	0.000
0.323	0.254	0.389	8.659		0.000

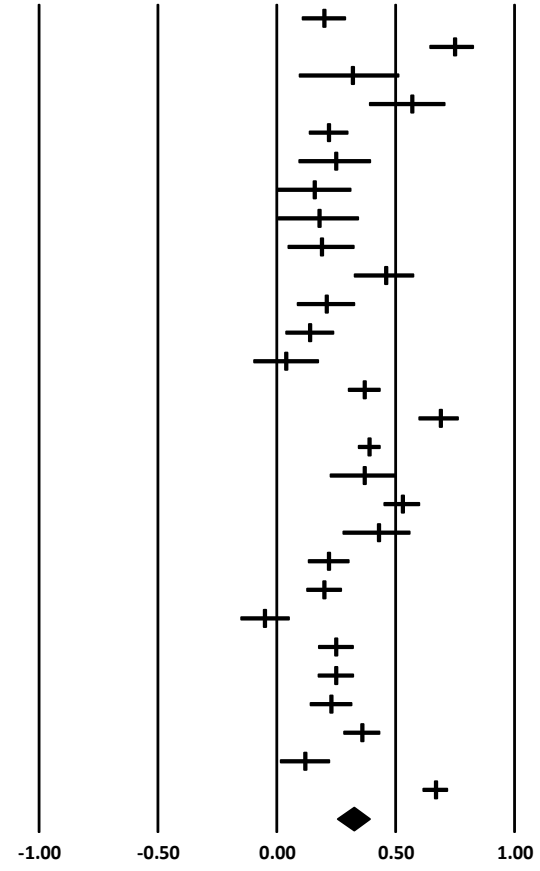


Figure 6

Forest plot showing the effect of everyday sadism on aggressive behaviour perpetrated online.

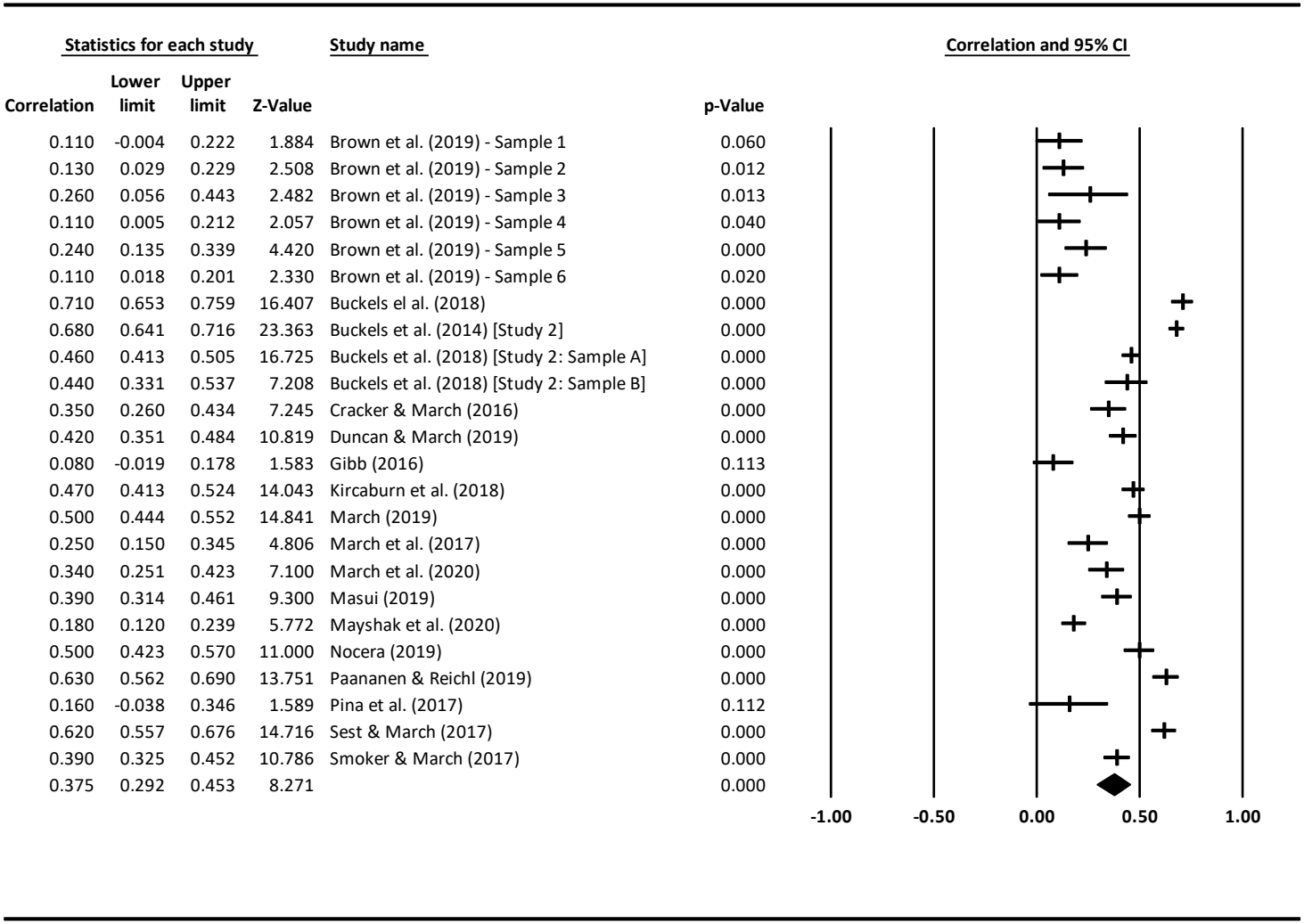


Table 6

Subgroup Analyses: Everyday sadism and its association with different types of aggressive behaviour.

Aggressive Behaviour	Number of Studies (*k*)	Q Statistic	Significance Level	I^2 (inconsistency)	Total Sample Size	Pooled Correlation Coefficient (*r*)	95%CI	*z*	*p*
Generalised Aggressive Behaviour towards others	20	270.80	0.001	92.98	7192	.37	0.29-0.45	8.198	0.001
Sexual Aggression	7	16.21	0.013	62.99	3392	.28	0.20-0.31	8.647	0.001
Trolling Behaviour	10	180.10	0.001	95.00	5273	.52	0.42-0.60	9.117	0.001
Intimate Partner Violence	5	109.43	0.001	96.35	1949	.32	0.09-0.52	2.713	0.007
Bullying Behaviour	9	210.58	0.001	96.20	3452	.26	0.09-0.41	2.966	0.003
Anti-Social Behaviour	4	27.97	0.001	89.27	2570	.26	0.15-0.37	4.355	0.001

ES=Everyday Sadism; Significance level for Q statistic; Pooled correlation coefficient (r)=pooled studies included in each meta-analysis; CI = Confidence intervals; z = Fishers Z transformation; p = significance value of z; significant results considered as p < .001.

Nb. Generalised Aggressive Behaviour towards others=excludes sexual aggression, intimate partner violence, extremist behaviour, anti-social behaviour, online trolling, problematic social media use.

3.9 Meta-Regression Analysis

3.9.1 Meta-Regression: Aggressive Behaviour Vs Online Aggressive Behaviour

To examine potential moderator variables between increased sadism and aggression, meta-regression analyses were performed. Results indicated that the manner in which aggressive behaviour was perpetrated (online or offline) was not a moderator of increased sadistic traits and aggressive behaviour (β = -0.06, 95% CI [-0.18, 0.06], z = -0.96, p = .34). Whilst not significant, it is important to note the direction of the results which indicated that the mean effect size for studies which examined online aggression were higher than the mean for studies that examined aggression not perpetrated online.

3.9.2 Meta-Regression: Gender

A meta-regression was also conducted to examine whether gender was a moderator of increased sadistic traits and aggressive behaviour. A negative coefficient of indicated that studies which included female participants had a significantly lower effect size than the reference group, male participants (β = -0.18, 95% CI [-0.34, -0.01], z = -2.13, p = .03). It was therefore concluded that the effect size between increased sadistic traits and aggressive behaviour was lower in studies with female participants as compared with studies that included male participants. The R^2 analogue was 0.21, which indicated that some 21% of the variance in true effects could be explained by the difference between gender subgroups.

4. Discussion

The aim of this systematic review and meta-analysis was to investigate the relationship between everyday sadism and aggressive behaviour. Forty-four studies (out of 52) showed a significant positive relationship between these constructs. Only one study showed a negative relationship (Plouffe et al., 2020). A meta-analysis, comprised of data from 48 studies, provided statistical evidence of this relationship. A moderate effect size was found for the

relationship between sadism and aggressive behaviour (pooled correlation coefficient, *r* = .30, 95% CI [0.29, 0.32] and between sadism and aggressive behaviour perpetrated online (pooled correlation coefficient, *r* = .40, 95% CI [0.38, 0.41].

4.1 Synthesis of Major Findings

The synthesised evidence suggests that everyday sadism was consistently correlated with dispositional aggression and a range of aggressive behaviour. Subgroup meta-analysis found a moderate correlation between sadism and generalised aggressive behaviour towards others. Considering the nature of this aggression, a strong effect size was found between sadism and trait aggression (Buckels, 2018; Gibb, 2016), with intermediate effects for anger (Jonason et al., 2017) and proactive aggression (Dinić et al., 2019). This suggests that whilst individuals with increased sadistic traits are predisposed to act aggressively in a conflict situation, they may also aggress against innocent others without warning.

Subgroup meta-analysis found a small correlation between sadism and anti-social behaviour. Considering anti-social behaviour more generally, Chabrol et al.'s (2017) research highlighted that sadism differentially contributed to anti-social behaviour whereby "pleasure in dominating and making others suffer" (p. 300) appeared to be one of the main determinants. In line with the notion of direct and vicarious enjoyment of cruelty, is the literature regarding bullying.

Subgroup meta-analysis found a small correlation between sadism and bullying behaviour. Thibault (2016) showed that direct and vicarious sadism was associated with workplace bullying, and that sadism moderated the effects of other Dark Triad traits regarding workplace deviance and conflict behaviour. Considering perpetration of online bullying, Kircaburun et al. (2018) and Brown and Palasinski (2019) reported a positive association

between sadism and cyberbullying. It was noted however, that Gibb's (2016) results indicated that sadism was not predictive of cyberbullying.

Increased trait sadism and subsequent propensity to act aggressively could result in serious harm. Arteta-Garcia's (2015) study, for example, found that individuals with high trait sadism desired the 'level of hazing' to be more severe. Hazing behaviour, defined as ritual humiliation used as a symbolic initiation into a social group, has been reported to produce mental and/or physical discomfort, embarrassment, or ridicule (Allen & Madden, 2012; Arteta-Garcia, 2015) and in some instances, has resulted in serious harm and/or death (Hollmann, 2002; Srabstein, 2008). The severity of hazing behaviour is likely to be influenced by elevated sadistic traits due to the associated enjoyment of directly engaging in the act or vicariously watching it.

Overall, the potential motivating factor (sadistic enjoyment) behind anti-social and aggressive behaviour is supported by the trolling literature, whereby the enjoyment of disrupting, distressing, or harassing others, appears to motivate the online troll who can anonymously engage in troublesome behaviour. Subgroup meta-analyses found a strong correlation between sadism and trolling behaviour; all eleven studies examining sadism and trolling within this review found significant associations across a variety of online platforms.

In addition to research examining aggressive behaviour perpetrated towards unknown targets, subgroup meta-analyses found a moderate correlation between sadism and intimate partner violence (IPV). The review identified three studies which examined sadism and levels of conflict within intimate relationships, assessing both physical and sexual violence. In 2018, Tetreault et al. found a small but significant correlation between sadism and IPV, examining verbal, explosive and physical aggression. Supporting this association,

Fentem (2018) found a strong correlation between sadism and aggressive behaviour within intimate relationships. Two studies found that sadism was a unique predictor of technology-facilitated intimate partner cyberstalking (IPCS; Smoker & March 2017; March et al., 2020). Overall, results imply that individuals with high trait sadism may be at risk of committing aggressive behaviour within an intimate relationship.

This review identified eight studies which examined the relationship between sadism and sexual aggression. Subgroup meta-analyses revealed a small correlation between sadism and sexual aggression. Three studies (Klann, 2017; Russell, 2016; Russell & King, 2016) using male-only samples found that sadism was a significant predictor of sexual violence. Both Russell (2016) and Russell and King (2016) found that physical sadism was predictive of sexual aggression. In comparison with other dark personality traits, Klann (2017) reported that sadism was the strongest significant predictor of sexual coercion. This positive association between sadism and sexual aggression remained when using a female-only sample (Russell et al., 2017) and mixed-gender sample (Koscielska et al., 2019). Considering female sexual violence against men, Russell et al. (2017) found a significant correlation between physical sadism and completed rape across a national and university sample.

Three studies examined sadism and the perpetration of technology facilitated sexual violence. Duncan and March (2019), and Mayshak et al. (2020), both examined sadism's association with anti-social dating behaviour. Results were conflicting; Duncan and March (2019) showed an intermediate significant association between these variables, whilst Mayshak et al.'s (2020) results did not. In 2017, Pina et al. found that individuals with increased sadistic traits were not significantly more likely to perpetrate revenge porn, but that most endorsed revenge porn enjoyment and approval.

Finally, this systematic review identified two studies which examined sadisms association with radicalised behaviour, defined as aggression towards individuals of other religions. Morgades-Bamba et al. (2018) found a significant, but small association between everyday sadism and radicalised behaviour, reporting that sadism was predictive of radicalised thoughts. Chabrol et al. (2019) supported this research indicating that women with the coexistent presence of dark personality traits could be vulnerable to radicalisation and associated aggressive behaviour; this indicates that trait sadism can facilitate violent thoughts towards collective groups, and not just individuals.

4.2 Study-level limitations and the complexity of measuring everyday sadism

These results are predominantly representative of populations in North America and Europe, therefore must be interpreted with caution. Disappointingly, many studies did not provide sufficient demographic information, with the location of twelve studies' participants being unclear. Future studies should aim to capture and understand the groups/subpopulations where these traits may be more prevalent within the community or between cultures. Međedović and Kovačević (2020), for example, published a study which examined sadistic traits in football fans, finding that this population had significantly higher scores compared to the general population. Most studies within the review, however, did not use a sampling frame, consider subgroups, and were at risk of selection bias.

Most studies did not provide information on participants with missing data, or those who dropped out of the research, raising concerns about response bias. If information was provided on non-responders, this could be compared to responders and highlight any potential group differences with regards to levels of sadism. A study by Paananen and Reichl (2019) noted that when recruiting from the online platform Reddit®, the researchers received

aggressive responses/behaviour from some participants who ‘doxed’ one of the researchers (p. 155); a potentially valuable sample, but also participants who did not complete the research. This highlights the importance of identifying characteristics of those who drop out of research, as well as using well-thought recruitment/sampling strategies in sourcing criterion populations; it also shows the complexity of dark personality research.

In addition to non-response bias, is the potential limitation of social desirability bias. For those residing in the community, respondents may be less likely to disclose socially undesirable aspects of their personality and associated aggressive behaviour. Whilst anonymity can protect against this limitation, a blunted effect size could be consequential. Another perspective, highlighted by Cracker and March (2016), who considered trolling behaviour, is that participants high in dark personality traits might purposely report false and misleading questions - i.e., troll the questionnaire. Additional data integrity methods, however, can be used to overcome some of these limitations. In the VAST, for example, filler items can be intermixed to offset the ‘glut of negativity’ (Paulhus & Jones, 2015).

This review collated information regarding tools used to measure sadism. The SSIS was most frequently used and consistently showed good internal reliability; as well as discriminant (Dinić et al., 2019) and predictive validity (Buckels et al., 2014). In 2011, O’Meara et al. confirmed the dimensionality of the SSIS using a principal component analysis. This could be considered a limitation, as other multidimensional measures, such as the CAST and VAST (Buckels, 2018; Paulhus et al., 2011) can provide intricate detail regarding sadisms varied content. For the purposes of this review however, the primary use of the SSIS was appropriate as “despite varied content spanning different domains, sadism emerges as a unitary construct

with a consistent pattern of associations" regardless of particular subscales examined (Buckels, 2018, p. 98).

It is acknowledged that some of the experimental studies included in the review (Buckels et al., 2013) could be considered as behavioural operationalisations of sadism, rather than aggressive behaviour. To defend their inclusion in the review, these studies can help understand the underlying motivation of aggressive behaviour; for example, understanding the desire to kill through the behaviour of bug-killing, and the pleasure-driven motivation of causing distress to innocent others through experimental paradigms (Chester et al., 2018). A sensitivity analysis indicated that when these studies were excluded from the analysis, it did not affect the overall results of the meta-analysis.

4.3 Limitations of the review process

Although this review followed rigorous standards outlined by PRISMA guidelines, its limitations are acknowledged. Firstly, it is highlighted that study selection, data extraction, and assessment of risk of bias, were not completed wholly in duplo (i.e., by two authors independent from each other). Considering the quality assessment stage (where 10% of studies were assessed in duplo), whilst the intra-rater reliability was acceptable according to Landis and Kock (1977), rating in duplo would have been beneficial.

With regards to the study selection process, it was not possible to access one full-text article due to accessibility, and two further articles as they could not be accessed in English, excluding valuable research. Another limitation to acknowledge is that the studies included were primarily cross-sectional, making it difficult to infer causality.

A limitation of the review concerns aspects of the meta-analysis, including potential unreliability of partial transformations; three studies being excluded from the meta-analysis

due to the values reported; and the considerable heterogeneity of studies presented. Unfortunately, high heterogeneity has been a noted inevitability within behavioural sciences due to the complexity of concepts examined (Higgins et al., 2003). This review was no exception, and was subject to varied measures of outcomes, broad outcome definitions, and differences in sample characteristics, size, and study design. Whilst broad inclusion criteria has its disadvantages, however, a comprehensive meta-analysis is likely more valuable than a meta-analysis with too strict inclusion. It is also highlighted that meta-analysis methods are designed to analyse heterogeneous studies. It is recommended that authors of future original studies should consider what sadism measures are most beneficial to use so future meta-analyses find less heterogeneity. With regards to converted effect sizes, future systematic reviews could limit inclusion criteria to papers that report a correlation coefficient to avoid estimated effect sizes. This could, however, limit the scope of the results. Due to limitations of the meta-analysis, it is emphasised that results should be interpreted with caution.

4.4 Implications: sadism residing within the general population

To the author's knowledge, this was the first systematic review to examine everyday sadism and aggression. Adding additional methodological rigour, with extensive database searching and quantitative methods, this review adds evidence to the findings of Moor and Anderson's (2019) review. It reinforces sadism's individual contribution to anti-social behaviour online and highlights a particularly strong quantitative relationship between sadism and trolling behaviour.

Overall, this review evidences the multifaceted relationship between everyday sadism and aggression. The meta-regression completed within this review indicates that the relationship between increased sadistic traits and aggressive behaviour may be partially

moderated by gender, indicating that males with sadistic traits are more likely to act aggressively. This finding indicates further, a need to analyse sadism within certain subgroups including gender.

A key development in research, and pertinent to the implications of this review, is the appearance of reliable measures. This review indicates that valuable interventions could be developed within the general population to reduce distress, aggression, and potentially serious harm.

Regarding the evolving online world, policy makers and moderators of social networking sites/online applications could be informed by this research. Screening processes, for example, could identify individuals more likely to engage in socially aversive behaviour. These strategies could be used to reduce interpersonally harmful behaviour and to mitigate online risks.

These screening processes could also be employed in institutions, such as universities or work organisations, developing methods to identify and prevent potential perpetrators of harmful behaviour, such as bullying or hazing, or to highlight individuals vulnerable to radicalisation. For aggressive behaviours such as IPV or sexual aggression, this information could be used to inform factors which contribute to perpetration/recidivism, as well as inform interventions aimed at reducing re-offending. This review emphasises the importance of dark personality research, and the risks associated with subclinical sadism residing in the general population.

Chapter Four

Empirical Study One

Subclinical Sadism: Examining temperamental predispositions and emotional processing

Abstract

Background: Considering sadism's intrinsic appetite for cruelty, it is important to increase understanding of the factors that may result in experiencing another person's suffering as enjoyable.

Aims: The aim of this research was to examine factors (temperamental traits) that might predispose an individual to developing sadistic traits and to examine potential underlying mechanisms (emotional processing) of sadism. Reinforcement Sensitivity Theory (RST; Gray 1972) underpinned this research, as it generated the hypothesis that sadistic tendencies may result from a dysfunction in the Behavioural Inhibition System (BIS) and Behavioural Activation System (BAS).

Methods: A cross-sectional design was employed to explore the relationship between sadism, the BIS and BAS, and emotional responses to audio-visual stimuli. The final sample comprised of 232 adults (37.5% male, 60.7% female, 1.7% other) recruited from the general population, aged between 18 and 70 years of age (M = 27.97, SD = 9.28). Participants completed self-report measures which assessed dark personality traits, and dispositional BIS and BAS sensitivities. Participants then rated emotional responses to 'violent' and 'positive' audio-visual stimuli.

Results: Bootstrapped correlational analyses found that all dark personality traits were correlated with positive emotional responses to violent stimuli. Sadism was negatively correlated with the BIS-Anxiety and Flight-Fight-Freeze System, and positively correlated with the BAS-Drive subsystem. A Structural Equation Model showed a direct path between a deficit in the BIS-Anxiety and the Dark Tetrad. A direct pathway was found between sadism and positive emotional responding to violent stimuli, over and above latent Dark Tetrad antagonism.

Conclusion: Findings suggest that there may be temperamental predispositions to developing sadistic traits; according to RST, sadism could be understood as a high-approach low-avoidance temperamental trait. Findings also support preliminary evidence of aberrations in the emotional processing of individuals with increased sadistic traits. These findings could help explain sadism's propensity towards interpersonal aggression and cruelty.

1. Introduction

Research indicates some individuals in the general population have elevated levels of sadistic traits and may seek out opportunities to exercise cruelty towards others (Chabrol et al., 2009). Given the harm associated with an appetite for cruelty, it is important to understand the underlying mechanisms of subclinical sadism.

1.1 Reinforcement Sensitivity Theory

Reinforcement Sensitivity Theory (RST; Gray, 1972) proposes that two biological systems drive the neurobiology of emotion, motivation, and learning. The Behavioural Inhibition System (BIS) facilitates avoidant or inhibitory responses to environmental cues associated with punishment and non-reward (Gray, 1990). Due to its association with punishment and non-reward, the BIS has been strongly associated with emotions like anxiety, fear, and frustration (Corr & McNaughton, 2008). These somatic marking emotions inhibit behaviour that may lead to perceived negative consequences. The other component is the Behavioural Activation System (BAS), which facilitates approach-related responses to environmental cues associated with reward, escape from punishment, and non-punishment (Gray, 1990) and is associated with positive emotions (Corr, 2008). These emotions facilitate behaviour that may lead to perceived positive consequences.

1.2 Subsystems of the BAS

Carver and White (1994) propose three differentiating factors and subsequent systems in the BAS. These comprise the BAS-Fun-seeking subsystem (BAS-FS), associated with impulsivity motivated by the desire for novel and immediate rewards; the BAS-Reward-Responsiveness subsystem (BAS-RR), associated with behaviour motivated by the anticipation of future reward; and the BAS-Drive subsystem (BAS-DR), associated with propensity for persistent

pursuit of desired goals (Carver & White, 1994). Whilst not acknowledged in Gray's (1987a) and Gray's (1987b) theoretical assumptions, these sub-systems are important to consider within the current research, as they consider specific cues of reward/incentive sensitivity.

1.3 The BIS: Anxiety and Fear

Gray and McNaughton (2000) revised RST theory to highlight the role of the Flight-Fight-Freeze System (FFFS), a punishment-sensitive system where behaviour is facilitated in response to fear. The FFFS was recognised as having a distinct role from the BIS which related to anxiety (BIS-Anxiety). The FFFS is an emotional system which reacts to innately unpleasant or painful stimuli, and generates evolutionary survival behaviours (Corr & McNaughton, 2008).

1.4 Reinforcement Sensitivity Theory and Individual Differences

Gray (1972, 1981) related these neurophysiological principles to personality, explaining that individual differences could be linked to variations in the sensitivity of these systems triggered by environmental cues. Since Gray's proposal, RST-based research has since revealed further personality-psychopathology associations (Bijttebier et al., 2009). Within a given population there are varying levels of high and low BIS and BAS sensitivity, leading to varying emotional and behavioural responses, which are associated with individual differences.

1.5 The Dark Triad of Personality

The Dark Triad refers to a "constellation of three socially offensive personality variables: narcissism, Machiavellianism, and psychopathy" (Paulhus et al. 2021, p.209) which predispose an individual towards antisocial, criminal, and immoral behaviour (Međedović, 2016). Unlike their clinical/forensic counterparts, these subclinical traits are also observed within non-clinical, non-forensic samples. Although Dark Triad traits have different

conceptual origins, they are underpinned by a shared callousness and malevolence that encourages interpersonal manipulation (the Dark Core; Moshagen et al., 2018). For this reason, it is advised that these traits are examined jointly, to ensure reliable empirical associations (Paulhus & Williams, 2002).

Machiavellianism involves the manipulation of social situations; to achieve this, those with increased Machiavellianism traits will build alliances, plan ahead, and maintain a positive reputation, which can be exploited for personal benefit (Jones & Paulhus, 2014). Machiavellianism is associated with strategic planning and is not impulsive, which distinguishes this trait from psychopathy. Jones and Paulhus (2014) summarise Machiavellianism's key elements as "manipulativeness, callous affect, and strategic-calculating orientation" (p. 29).

Subclinical psychopathy is characterised by lack of self-control, thrill-seeking, and impulsivity, with little concern for personal reputation (Jones & Paulhus, 2014). The second key element of psychopathy is a deficit in affect (i.e., callousness) characterised by low empathy and reduced anxiety (Paulhus & Williams, 2002). These traits can result in reckless, antisocial, and dangerous behaviour to achieve immediate rewards, with no inhibiting somatic marker (Jones & Paulhus, 2014). Impulsivity is key in distinguishing subclinical psychopathy.

Like the other dark traits, narcissistic behaviour is callous and manipulative, however, it is differentiated by a grandiose sense of self (Meere & Egan, 2017). Grandiosity enables a sense of entitlement, and threatened, narcissists can become aggressive (Paulhus & Jones, 2014). Hence, narcissism is distinguished from Machiavellianism and psychopathy due to the ego-reinforcement that motivates narcissistic behaviour.

1.6 Reinforcement Sensitivity Theory and the Dark Triad

A meta-analysis examining the relationship between the Dark Triad and the BIS/BAS found that narcissism held the strongest relationship with BIS and BAS scales of all the Dark Triad traits, indicating this trait is strongly motivated by reward, and weakly motivated by punishment (Foster & Trimm, 2008; Włodarska et al., 2019). Psychopathy is characterised by a deficit in BIS sensitivity, potentially resulting from a lack of fear, anxiety, and punishment insensitivity (Heym & Lawrence, 2010). Of all dark traits, psychopathy is most strongly associated with the BAS-Fun-Seeking subscale, a reflection of its impulsive elements. Machiavellianism, a trait associated with strategic planning and reduced impulsivity, held the weakest association with the BIS and BAS systems. Overall, results suggest that narcissism and psychopathy can be explained in terms of low BIS and high BIS sensitivity, presenting as a high-approach low-avoidance temperament.

1.7 The Dark Tetrad of Personality: the addition of subclinical sadism

The Dark Triad has been extended by including subclinical sadism in the dark personality constellation, forming the Dark Tetrad (Chabrol et al., 2009). Paulhus and Jones (2014) argue its inclusion was theoretically justified due to the following reasons: first, it shares the common core of callousness and impaired empathy with other dark personality traits; secondly, it adds a unique component – the intrinsic pleasure of hurting others.

1.8 Subclinical Sadism and Emotional Processing

Whilst all dark traits are underpinned by a callous lack of regard for others, they are theoretically distinct, and demonstrate different patterns of associations with aggression. Those high in psychopathy and Machiavellianism, for example, appear to aggress for instrumental gain, whereas those high in narcissism are likely to aggress when their grandiose

sense of self is threatened. Sadism's core characteristic is the enjoyment of other's suffering, and this trait could be more predictive of malign behaviour (Muris et al 2017).

In 2016, Međedović offered new insights into the emotional processing in sadism. They found that individuals in the general population with heightened sadistic traits experienced positive emotions when exposed to violent visual stimuli,[37] and decreased positive emotions when observing peaceful interactions.[38] These results indicated a series of emotional reactions which opposed normal emotional reactivity, suggesting comprehensive affective disturbances may be present. It was hypothesised that sadism could be understood in relation to RST, proposing that individuals with sadistic traits generate positive emotions in response to violent stimuli due to the activation of the BAS. With no obvious benefits to direct aggression, it is possible that individuals with higher sadistic traits may be augmenting emotion regulation or affective states (Meere & Egan, 2017). As such, further research regarding sadism and emotional processing is warranted.

1.7 Goals of the present research

This research explores emotional processing of violent stimuli in individuals with elevated levels of subclinical sadistic traits. It builds on the empirical work of Međedović (2016), improving methodology by using audio-visual stimuli and validated measures of the BIS/BAS systems. Gray's (1987a; 1987b) RST is central to the current research, as it generates the hypothesis that sadistic tendencies result from a dysfunction in the BAS/BIS systems. It is hypothesised that there will be a positive association between positive emotion in response to violent stimuli, increased trait sadism, high BAS, and low BIS sensitivity. This research will

[37] Images that represented "scenes of physical abuse, fighting or imagery" (p.275).

[38] Images that "represented people in interactions that are characterised by pleasantness and satisfaction such as handling, hugging, dancing" (p.275).

help understand the dark side of human personality, by considering its links with the BAS and BIS, and potential motivations for violence.

2. Method

2.1 Design

The current study used a cross-sectional, within-subjects design using online questionnaires and Internet-streamed audio-visual stimuli. Ethical approval was granted by the University of Nottingham's Research Ethics Committee.

2.2 Participants and Sampling Procedure

All participants were recruited online and voluntarily from the general population. To advertise the study and recruit participants, a URL link directing potential participants to the online study was posted on social networking sites and online communities. A Participant Recruitment Poster (Appendix 3.A) was uploaded alongside the URL link, as the poster included the title of the study ("One man's pain is another man 's pleasure") and a short description of the study ("This study looks at why some people enjoy another person's discomfort, and others do not").

The study was advertised on Facebook®, Instagram®, Twitter® (Social Networking Sites) and Reddit® (Online Communities). The study was intentionally advertised on specific social network groups and online communities which were related to direct and/or vicarious sadism. For example, groups created for pranking or trolling behaviour, or groups created for interests in horror and violent media (movies, games, sports). The aim was to recruit a participant population who were more likely to present with sadistic traits; that is, either direct sadism (a tendency to enjoy harming others directly and in-person, physically or verbally), or vicarious sadism (a tendency to enjoy simulated and/or fantasised harm).

Participants were also recruited from online research communities (SurveyCircle) and crowdsourcing sites (Prolific).

If the participant chose to click on the URL link, they were redirected to the online study which was powered by JISC Online Surveys. Participants were then presented with the participant information sheet (Appendix 3.B), which informed them about the study's general intention, phrased as understanding why some people enjoy another person's discomfort and others do not, and the tasks involved, including completing questionnaires about personality, and watching some video clips. Participants were informed that the videos used within the study may be distressing to some individuals, and so to keep this in mind prior to giving consent to take part in the study. Participants were informed that it was entirely their decision if they wanted to take part in the study. Participants were informed that their responses would be anonymous, of their right to withdraw, and were asked for informed consent (Appendix 3.B). Only those who provided consent by ticking each box on the consent form (Appendix 3.C) completed the study.

The final sample comprised of 232 participants (Male, 87; Female, 141; Other, 4). A 50 + 8k calculation (Green, 1991) indicated that the final sample size was sufficient. Age of participants ranged from 18 to 70 years (M = 27.97, SD = 9.28). Out of all participants, 54% were employed, 1% were unemployed, and 45 % were students. Additional information on participant characteristics is presented in Table 1.

Table 1

Additional Information on Participant Characteristics

Variable	Frequency *(n)*	Percentage (%)
Level of Education		
Basic Education	28	12.1
A-Level Qualifications	27	11.6
Bachelor's Degree	92	39.7
Master's Degree	54	23.3
Doctorate Degree	18	7.8
Trade/Technical/Vocational Training	4	1.7
Professional Degree	7	3.0
Unknown/Missing Data	2	0.9
Area of Occupation		
Transport, Retail or Wholesale	11	4.7
Business and other services, Finance, or Insurance	18	7.8
Manufacturing, Constructing or Agriculture	7	3
Engineering	14	6
Hospitality, Catering or Leisure Services	6	2.6
Health or Social Care	39	16.8
Public Sector or Education	22	9.5
Student	104	44.8
Unemployed	3	1.3
Participants who identified other occupation areas		
Science and Technology	2	0.9
Media and Entertainment	3	1.3
Military	2	0.9

Translation	1	0.4

2.3 Measures

All means, SDs, and reliabilities for the measures below are in Table 2 (section 3.1).

2.3.1 Varieties of Sadistic Tendencies Scale (VAST; Paulhus & Jones, 2015)

The VAST distinguishes direct sadism (a tendency to enjoy harming others directly and in-person (physically or verbally)), and vicarious sadism (a tendency to enjoy simulated and/or fantasised harm). It uses a seven-point Likert scale which ranges from 1 (not at all) to 7 (very much).

2.3.2 Four Identities Questionnaire (SD4; Paulhus et al., 2018)

The SD4 is an extension of the Short Dark Triad (SD3). The SD3 captures Dark Triad traits: psychopathy ("impulsive thrill-seekers"), narcissism ("attention-seeking self-promoters"), and Machiavellianism ("strategic manipulators") (brief descriptions by Paulhus & Jones, 2015, p. 568). The SD4 was extended to include a measure of sadism. The scale contains four self-report 7-item subscales for each dark personality rated using a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree'. When developing this scale, Paulhus et al. (2018) aimed to "to minimize subscale overlap by emphasising the unique components of each construct" (p. 209).

2.3.3 BIS/BAS Scales (Carver & White, 1994)

The BIS/BAS measures individual differences in the sensitivity of the two proposed physiological self-regulatory systems. In total there are 24 items which can be divided into

five subscales. It uses a four-point scale response which ranges from 'very true for me' to 'very false for me'.

2.3.4 International positive and negative affect schedule short-form (I-PANAS-SF; Thompson, 2007)

The I-PANAS-SF consists of two ten-item mood scales; one measures positive affectivity and the other measures negative affectivity. Considering 'sadistic' responses, the emotions of 'entertained' and 'amused' were added to the I-PANAS-SF list of emotions.[39]

2.4 Procedure

Once participants were enrolled in the study, they first provided demographic information which included their age, gender, level of education, and area of occupation (Table 1). Following this, participants were asked to complete the self-report measures. Following completion of all self-report measures, participants were presented with a series of video-clips. Fourteen video-clips were presented in total; all video clips were publicly available and sourced from the website YouTube®. Participants were asked to watch the video-clip once. Seven video-clips consisted of scenes which depicted aggression, violence, cruelty or distressing interpersonal interactions (termed 'violent stimuli'), and seven video clips were characterised by positive scenes[40] (termed 'positive stimuli'). All video-clips were in colour and provided sound. Descriptions of each audio-visual stimuli can be found in Appendix 3.D.

The task of the participants was to indicate what emotion they experienced for each video clip, and the intensity of this emotion. Participants were presented with a list of emotions taken from the I-PANAS-SF (Thompson, 2007). Emotions included negative affect

[39] Please note: Further measures were administered at this stage for Empirical Study Two.
[40] Stimuli that depicted positive scenes – images that represented people in interactions that are characterised by pleasantness and satisfaction such as hugging or dancing or engaging in prosocial behaviours.

(afraid, nervous, upset, hostile, ashamed) and positive affect (active, determined, attentive, inspired, alert). Considering 'sadistic' responses, the emotions of 'entertained' and 'amused' were included. For each of the 12 emotions presented, participants were asked to rate the intensity of the emotions experienced on a scale from 1 (very slightly or not at all) to 5 (extremely). Video-clips were presented in a pseudorandom order and the time for the emotional evaluation of each stimulus was not time limited.[41] At the end of the study, participants were presented with a Debriefing Statement (Appendix 3.E).

2.5 Data analysis

Due to the nature of the research and the population of interest, outliers were not removed. To test the assumption of normality, Skewness and Kurtosis values were calculated and interpreted for each variable (Bulmer, 1979). As some of the scales violated the normality assumption, bootstrapping was performed.

3. Results

3.1 Descriptive Statistics

Mean (*M*), Standard Deviations (*SD*), reliability statistics, and correlations for all measures are presented in Table 2. Most measures showed good internal consistency, as determined by Cronbach's alpha. The internal consistency of the BIS-Anxiety and BAS Fun-seeking scale was considered acceptable (George & Mallery, 2003).

[41] Please note: Following this testing, participants were asked to watch further audio-visual stimuli and self-report measures for Empirical Study Two.

Table 2

Means, standard deviations, Cronbach alpha coefficients, and bivariate correlations

Scale	*M*	*SD*	α	1	2	3	4	5	6	7	8	9	10
1. Direct Sadism	16.75	5.73	.77										
2. Vicarious Sadism	14.67	5.18	.77	.48***									
3. Sadism	15.62	6.26	.83	.63***	.68***								
4. Psychopathy	14.11	4.99	.79	.61***	.38***	.59***							
5. Machiavellianism	22.66	4.54	.72	.34***	.34***	.48***	.30***						
6. Narcissism	18.58	5.32	.80	.32***	.16*	.27***	.45***	.28***					
7. BIS-Anxiety	8.53	1.96	.60	-.27***	-.29***	-.24***	-.26***	-.07	-.24***				
8. FFFS-Fear	10.07	2.56	.77	-.21**	-.31***	-.25***	-.27***	-.21**	-.26***	.55***			
9. BAS-Drive	10.07	2.56	.77	.30***	.21***	.29***	.34***	.38***	.32***	.04	-.26***		
10. BAS-Fun Seeking	9.07	2.19	.63	.17**	.10	.13	.25***	.14	.21***	.20**	-.12	.42***	
11. BAS-Reward Responsiveness	8.92	2.48	.71	-.10	-.06	.02	-.11	.18**	.10	.43***	.11	.35***	.43***

α = Cronbach's Alpha

Bootstrap results are based on 2000 bootstrap samples. *p < .05, **p < .01, ***p < .001 (two tailed).

3.2 Correlations between Dark Personality traits and the BIS/BAS systems

Bootstrapped Pearson's correlations in Table 2 show the relationship between all dark personality traits and the BIS/BAS systems. With regards to sadism, there was a significant negative correlation with the BIS-Anxiety and FFFS-Fear. There was also a small, but significant correlation between sadism and BAS-Drive. Only direct sadism held a significant correlation with BAS-Fun-Seeking. Bootstrapped Pearson's partial correlations were completed to assess the relationship between sadism and BIS/BAS after adjusting for Dark Triad traits. Results

showed that the relationship between BIS-Anxiety and sadism remained statistically significant (r = -.13, p < .05).

3.3 Principal Axis Factoring Emotional responses to audio-visual stimuli

Factor analysis was used to assess the latent structure of the 12-item questionnaire that measured emotional responses to 14 video clips (Appendix 3.F). A two-way repeated measures ANOVA found a statistically significant two-way interaction between type of audio-visual stimuli viewed and type of emotional response produced, $F(1, 231) = 229.694$, $p < .001$, meaning that significantly different emotional responses ('positive' and 'negative') were produced for the different types of audio-visual stimuli ('violent' and 'positive').

3.4 Relationships between Sadism, the Dark Triad, and Emotional Responses

Whilst the main aim was to assess the emotional processing of sadism, to extend findings in the area, measures of the Dark Triad were included in the analyses to compare dark traits. Correlational analyses explored the associations between measures of sadism, the Dark Triad, and emotional responding to audio-visual stimuli (Table 3).

Results showed that all dark personality traits held significant positive correlations with positive emotional responding to violent stimuli. Only psychopathy and narcissism were significantly correlated with negative emotion to violent stimuli and positive emotion to positive stimuli. Considering sadism's core characteristic, further analyses were completed to assess responses of enjoyment and amusement related to violent stimuli. Results showed that sadism held the strongest correlation between reported enjoyment and amusement, in response to watching violent stimuli.

Table 3

Correlations between dark personality traits and emotional responding to stimuli

	Positive emotion to violent stimuli	Negative emotion to violent stimuli	Positive emotion to positive stimuli	Negative emotion to positive stimuli	Reported 'enjoyment' or 'amusement' to violent stimuli
Direct Sadism	.36***	.11	.01	.24***	.40***
Vicarious Sadism	.32***	-.15*	-.05	.13*	.42***
Sadism	.40***	-.07	.01	.17**	.49***
Psychopathy	.44***	.19**	.15*	.39***	.47***
Machiavellianism	.22***	-.09	.03	.03	.27***
Narcissism	.41***	.16**	.23***	.30***	.39***

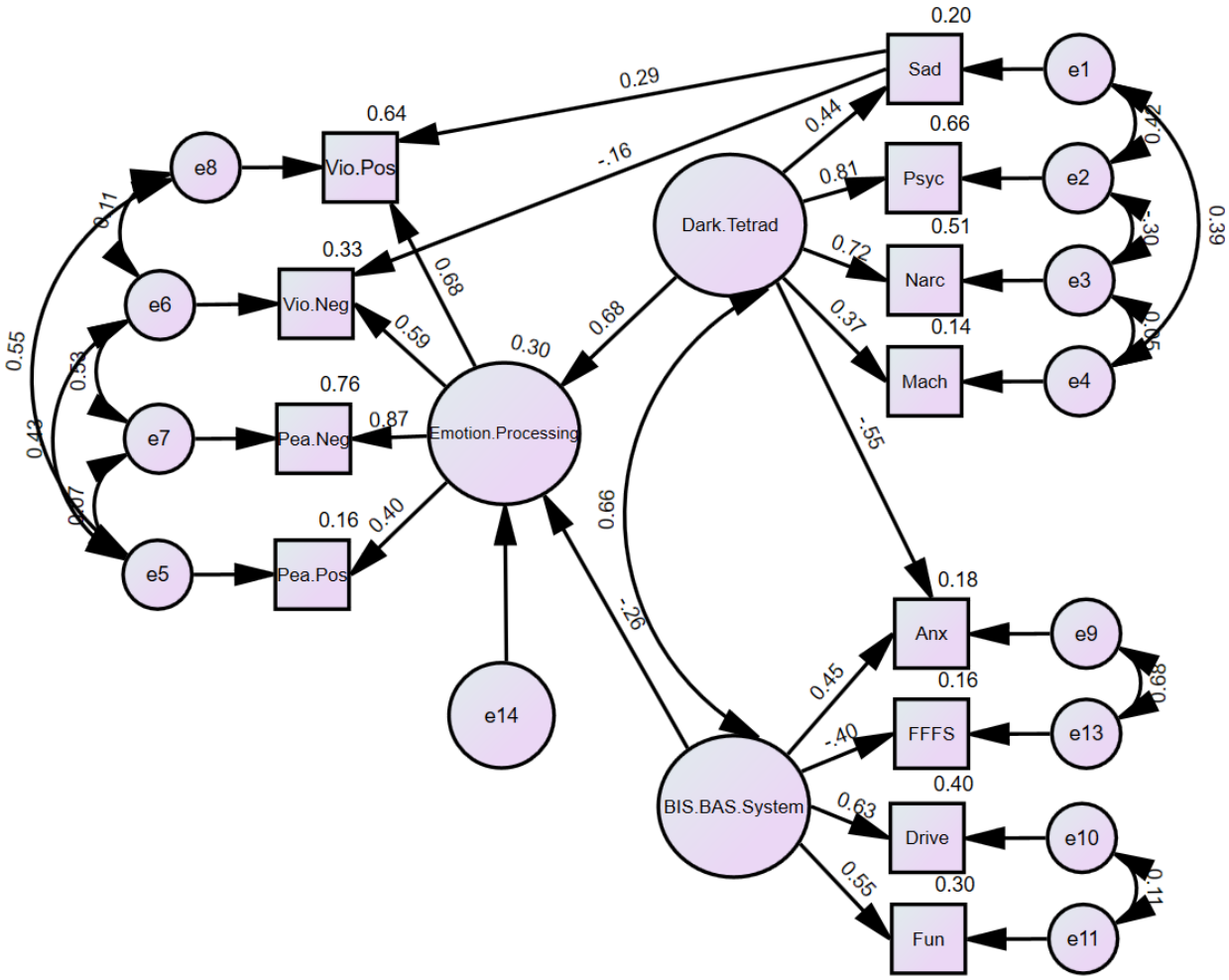
Bootstrap results are based on 2000 bootstrap samples. *$p < .05$, **$p < .01$, ***$p < .001$ (two tailed).

3.5 Structural Equation Modelling (SEM)

SEM combines factor analysis and multiple regression to describe the structural relations between measured and latent variables (Byrne, 2016). Using AMOS 28 (Arbuckle, 2014), a SEM was constructed by integrating measures of the Dark Tetrad and BIS/BAS, to predict the latent 'emotional processing' variable, created from emotional responses to stimuli. Modification indices were used to improve the model fit. Figure 1 presents the final model, which was a good fit to the data (CMIN(38) = 2.69, CFI = 0.94, RMSEA = 0.09). Whilst the RMSEA was marginal (Fabrigar et al. 1999), this could be due to smaller sample size and degrees of freedom (Kenny et al. 2015).

All pathways were significant ($p < .01$) except for the direct path from the BIS/BAS to emotion processing (Appendix 3.G). The model demonstrated a direct path, however, between a deficit in the BIS-Anxiety and dark tetrad ($p < .001$), and between the dark tetrad and emotional processing ($p < .01$). A direct pathway was found between sadism and positive emotional responding to violent stimuli ($p < .001$) and lack of negative emotion to violent stimuli ($p < .001$), over and above latent dark tetrad antagonism.

Figure 1 *SEM fitting dark personality and BIS/BAS data to emotional processing*



Measured variables are shown in rectangles, latent variables in circles, circled arrows are error variances, arrowed lines are standardised regression pathways, double-headed arrows are covariances between subscale measures.

4. Discussion

The aim of this research was to explore the underlying mechanisms of subclinical sadism, considering emotional processing in relation to sadism's core characteristic – the enjoyment of another's suffering (Buckels et al., 2013). Correlational analyses supported the first hypothesis, that there would be a positive association between positive emotional responding to violent stimuli and increased trait sadism. Results also indicated a small, but significant negative correlation between positive emotional responses and stimuli depicting positive scenes.

Whilst not the focal point of the current paper, the SD4 was included to assess whether aberrations in emotional processing were solely related to sadism. Results showed that all dark traits were significantly correlated with experiencing positive emotion in response to violent stimuli. Similarly, all dark traits apart from Machiavellianism responded negatively to positive stimuli. Whilst it is beyond the scope of this paper to explore this in depth, it is posited that this shared response amongst the dark traits is due to their common core of callousness and impaired empathy for others (Paulhus, 2014).

By considering the profile of each dark trait, possibly the experience of positive emotion to violent or distressing stimuli arises from different functions. For example, for narcissism, watching others fail or get harmed may provide ego-reinforcement, whilst for sadism, it is enjoyment from watching others get harmed that elicits positive emotion. To explore sadism's emotional responding further, additional analyses were completed; when only the responses of 'enjoyed' and 'amused' were analysed in response to violent stimuli, sadism held the strongest (moderate) correlation out of all dark traits. The current study highlights that the emotional processing of each dark trait requires further exploration.

The second hypothesis, that incongruent emotional responding may occur due to a dysfunction in the BIS/BAS system was partially supported. Correlational analyses revealed a moderate negative correlation between trait sadism and the BIS-anxiety and FFFS system, and a small but significant positive correlation between sadism and the BAS-Drive and BAS-Fun-seeking system. Trait sadism was not associated with the BAS-Reward-Responsiveness system. Overall, results indicated that in addition to psychopathy and narcissism, sadism could be explained in terms of low BIS and high BIS sensitivity.

The results of this study replicate Međedović's (Study 1, 2016) research, revealing the same pattern of emotional responding in those with pronounced sadistic traits in the general population. Addressing the self-identified limitations of Međedović's (2016) research, this study used unidimensional and multidimensional measures of sadism, exploring differences between the emotional processing of direct and vicarious sadism. Both types of sadism were associated with positive emotional responding to violent stimuli and negative emotional responding to positive stimuli. For individuals with higher vicarious sadistic traits, analyses suggested an absence of negative affect when viewing violent stimuli.

This study supports preliminary evidence that aberrations in sadism's emotional processing could account for its deficit in empathy and propensity towards interpersonal aggression. Our findings support and extend O'Meara et al.'s (2011) explanation that those with increased sadistic traits may "have a cognitive empathic understanding of their victim's suffering while potentially lacking appropriate emotional responses to this suffering" (p. 524). O'Meara et al. (2011) note the common assumption within the literature that individuals with increased sadistic traits lack all empathy, but as mentioned by Baumeister (1997), to be truly sadistic one would target an individual's specific weaknesses to cause increased suffering,

demonstrating a degree of cognitive empathy to understand the person's vulnerabilities. Heym et al. (2019) highlighted the importance of assessing empathy as a multidimensional construct in relation to dark personality, indicating that such traits were best conceptualised "as distinct monads with unique pathways in terms of affective and cognitive empathy deficits and capacities" (p. 8). The current research suggests that lack of empathy in those with increased sadistic traits could result from the experience of positive emotional affectivity to violent stimuli and negative emotional affectivity to positive stimuli.

Examining the mechanisms potentially underlying this phenomenon of emotional responding, the current study considered RST as an explanation. Results showed deficits in the BIS-Anxiety and FFFS-Fear system were associated with pronounced sadistic traits. Results therefore suggest those with increased sadistic traits may have negative emotional responding inhibited (because of low BIS sensitivity) to cues of punishment, presenting as low anxiety and behaviour undeterred by consequences.

Overall, the RST model of subclinical sadism suggests that: (a) sadism is associated with a dysfunctional BIS-system; (b) that both direct and vicarious sadism is associated with a deficit in BIS-anxiety and FFFS-fear; (c) direct sadism is associated with an overactive BAS-Drive and BAS-Fun-seeking; and (d) vicarious sadism is associated with an overactive BAS-Drive. It appears that direct sadism is concerned with impulsive goal-driven behaviour motivated by immediate rather than future reward, whilst vicarious sadism is concerned with goal-directed behaviour without a predisposition to impulsivity. Only direct sadism was associated with the BAS-Fun Seeking facet; as this has previously been most associated with psychopathy, this may reflect the overlap between the construct of direct sadism and psychopathy. This could indicate that individuals with increased direct sadism may be more

willing to approach immediate rewards. In the case of sadism, this could mean being more willing to satisfy the intrinsic need to harm others if the opportunity becomes available.

Much like the other dark traits (Włodarska et al. 2019), both constructs of sadism have a deficit in BIS-anxiety, meaning an insensitivity to goal conflict and reduced anxiety, rumination, and worry (Gray & McNaughton, 2003). The current study highlights that all types of increased sadism are associated with deficits in the FFFS-system (i.e., fear responses). This indicates individuals with higher sadistic traits lack a fear response to inherently unpleasant or painful stimuli. To the author's knowledge, this study is the first to examine sadism within this context, suggesting that sadism could be added to the high-approach low-avoidance temperament (Włodarska et al., 2021).

Drawing findings together, the incongruent emotional processing presented within this study suggests the presence of violent stimuli could lead to the over-activation of the BAS system and the inhibition of the BIS system for those with greater sadistic traits. This means that for some, environmental cues of aggression, encompassing the suffering of others, could activate positive emotions associated with the BAS, and inhibit negative emotions associated with the BIS. Considering the approach and avoidant functions of the BIS and BAS systems, this suggests that individuals with pronounced sadistic traits may be more inclined to seek out violent situations and avoid more positive scenes.

4.1 Limitations

Data within this study was collected online via self-report explicit measures; data could be threatened by social desirability bias. The study was conducted online, resulting in a lack of experimenter oversight; it is not possible to know whether participants strictly adhered to the instructions provided or whether other environmental factors impacted engagement. It is

recognised that the study would have benefited from including reading comprehension checks. This study would have benefitted from gathering additional participant characteristics, including ethnicity and geographical location, to draw further conclusions from the sample taken and to enable cultural comparisons.

It is important to acknowledge the use of bootstrapping within the analyses of this study, considering both its strengths and limitations. Bootstrapping is a computationally intensive statistical procedure, that creates simulated datasets by resampling the original dataset (Efron & Tibshirani, 1993; Haukoos & Lewis, 2005). To create the simulated datasets, the bootstrap method "creates an environment where a person from the original sample, could be drawn more than once in a given resample or not at all", where "all resamples . . . have the same number as the original sample" (Guthrie, 2001, p. 9). The process ends by having many simulated datasets, which are created using different combinations of the values in the original dataset.

Each simulated dataset has a set of sample statistics; the bootstrap procedure forms a distribution of simulated sample statistics, which are used as the sampling distribution (Frost, 2023). As indicated by Central Limit Theorem, a "sufficiently large sample size means that the sampling distribution of the mean for a variable, will approximate a normal distribution" (Frost, 2023, p.1). This means that the nonnormal distribution of the original population "does not affect the distribution of the sample means as the sample size increases" (Kwak & Kim, 2017, p. 145).

The bootstrapped sampling distribution can then be applied to statistical analyses, estimating standard errors and 95% confidence intervals (Guthrie, 2001). The bootstrap procedure, therefore, can be used as a nonparametric analytical tool for situations where

distribution assumptions in the original sample are not satisfied (Goldstein, 2010; LaFlair et al., 2015).

Whilst bootstrapping can be a powerful tool to address the issue of nonnormal distributions, it has its limitations. One of the main limitations of the bootstrap procedure, is that it assumes that the original sample is representative of the target population (LaFlair et al., 2015). If the sample is not representative of the population, then the bootstrap procedure may further increase sampling error and produce invalid statistical estimations, including confidence intervals (Haukoos & Lewis, 2015). A limitation of the current study, therefore, is that if the original dataset did not accurately reflect the characteristics of the population, invalid statistical estimates of 95% confidence intervals may have been produced.

In addition to addressing the issues of nonnormal distributions, bootstrapping has been reported as a powerful non-parametric tool to address the limitations of small sample size (LaFlair et al., 2015). However, the smaller the original sample, the less likely it will be representative of the population. This means that confidence intervals are more likely to be invalid (Haukoos & Lewis, 2015). Whilst the current study used a 50 + 8k calculation (Green, 1991) which indicated that the final sample size was sufficient, it is still highlighted that bootstrapping should only be used for large samples (Guthrie, 2001).

In sum, whilst the bootstrap statistical procedure addressed the nonnormal distribution within the current study, the simulated sampling distribution may have led to the appearance of greater precision in 95% confidence intervals, than is merited for the size of the sample. Both the advantages and disadvantages of the use of bootstrapping should be considered within the current study and future studies.

Finally, it is highlighted that due to the correlational design of the study, exact causal relationships cannot be determined, and therefore it is recommended that future research employs a design to examine the causal direction of the relationship being studied.

Chapter Five

Empirical Study Two

What factors could increase sadistic traits? Dark Personality, Sensational Interests, and Excitation Transfer Theory

Abstract

Background: Sensational interests involve an inquisitiveness for violence and the macabre. There appears to be no research that has used validated measures of subclinical sadism to explore its relationship with sensational interests. The effects of Excitation Transfer (Zillman, 1971) have been shown to increase aggressive responses; there appears to be no research which has examined its effects on sadistic traits.

Aims: This research aimed to explore lifestyle mechanisms (sensational interests) that might contribute to everyday sadism and examine what factors (excitation transfer) might increase sadistic traits and make antisocial cognitions more consciously available.

Methods: A cross-sectional design was used to explore the relationship between sadism and sensational interests. The final sample comprised of 240 adults (37% male, 61% female, 1% other, 1% missing) recruited from the general population, aged between 18 and 70 years (M = 26.41, SD = 7.96). Participants completed self-report measures which assessed sensational interests, personality traits, and general antagonism. An experimental design was employed to examine the effects of excitation transfer. The final sample comprised of 205 adults (38% male, 61% female, 2% other) aged between 18 and 70 years (M = 27.82, SD = 9.15), who were randomly allocated to one of three experimental conditions, which aimed to manipulate physiological arousal (increased arousal, n = 86; decreased arousal, n = 70; control, n = 67). Participants then completed post self-report measures of sadism and sensational interests.

Results: Bootstrapped correlational analyses found that Militarism was positively correlated with all dark personality traits. Violent Occultism was positively correlated with sadism and psychopathy. A bootstrapped hierarchical multiple regression found that up to 26% of the variance in sadism could be predicted from sensational interests. Bootstrapped paired-samples t-tests found no significant increases in sadism or sensational interest scores, following the experimental condition which aimed to increase physiological arousal.

Conclusion: Overall, findings indicate that sensational interests contribute to the profile of individuals with increased sadistic traits. Sadism's core characteristic – the enjoyment of another's suffering – may provide a conceptual explanation of this relationship. Further research is warranted to assess whether a bidirectional relationship exists. With regards to the effect of excitation transfer on sadistic traits, future research addressing the self-identified methodological limitations of this study is required.

1. Introduction

1.1 Part 1: Sensational Interests

In 1970, a Forensic Psychiatrist working at the State Hospital, Carstairs, provided an initial understanding of 'sadists' by anecdotally describing 'sadistic murderers', suggesting that they were more likely to be interested in the following: sadomasochism and pornography; weaponry; torture and atrocities; true-life crimes; Nazism; horror films; black magic and the occult. Brittain's (1970) description, however, lacked any serious empirical measures or clinical description. Later research operationalised this description and produced the Sensational Interests Questionnaire (Egan et al., 1999). This aimed to measure "interests of a potentially pathological and lurid, morbid, or violent kind" (Hagger-Johnson & Egan, 2010, p. 114). Essentially, sensational interests involve an inquisitiveness for violence and its expressions, and for the macabre (curiosity around unpleasant concepts often associated with death or violence).

1.1.1 Sensational Interests and the Forensic Population

Initial research examined sensational interests by comparing forensic and non-forensic populations. Egan et al. (1999) found that forensic patients were more likely to have interests in militarism and violent occultism than members of the community. Subsequent research found that sensational interests were associated with criminal offending (Egan et al., 2003; Egan et al., 2001), extremes of personality and personality disorder (Egan et al., 2001;2003). However, as this research was undertaken within the forensic population, it impacted the generalisability of the results, and a causal relationship could not be inferred. As summarised by Egan (2013), "sensational interests are underpinned by evolutionary processes, and that

like personality and values generally, these are not inherently criminal or psychopathological" (p.135).

1.1.2 Sensational Interests within Contemporary Society

'Sensational' content is both prevalent and successful in popular entertainment (Egan et al., 2003). Within film and television, media that denotes violence generates global interest and is a growing lucrative industry (Bushman et al., 2013). There is a perennial interest in horror films, which aim to shock or horrify the viewer by making references to "the supernatural, the abnormal, mutilation, blood, gore, the infliction of pain, death, deformity, putrefaction, darkness, invasion, mutation, extreme instability, and the unknown" (Martin, 2019, p.2).

Over the last few decades, the video game industry has continued to experience rapid growth; statistics indicate that in the United Kingdom alone, there were more than 44 million video gamers in 2021 (Clement, 2021). With regards to sensational content, research indicates that over 85 percent of all video games contain some level of violence and/or horror (American Psychological Association, 2015), and advancement in technology means that users are engaging in a more realistic and immersive[42] experience of perpetrating violence (Ivory & Kalyanarman, 2007; McGloin et al., 2013; Witmer & Singer, 1998).

Considering the sporting world, mixed martial arts (MMA) could be considered a sensational interest; though regarded as a sport by some, it is a "no-holds-barred form of . . . fighting" (Andreasson & Johansson, 2018, p.1183), where two opponents enter a cage[43] and use physical violence[44] to defeat the opponent. In the 1990s, legislators attempted to ban MMA, as it was deemed barbaric and inhumane (Doeg, 2013). Now, the sport attracts crowds

[42] Immersive defined as "a psychological state characterized by perceiving oneself to be enveloped by, included in, and interacting with an environment" (Witmer & Singer, 1998, p. 227)
[43] Referred to as the Octagon in MMA
[44] Violence includes punches, kicks, and grappling techniques.

of over 20,000 people; it has been reported that MMA has moved from “being perceived as a subcultural and violent . . . phenomenon”, to being a popular sport which attracts attention for its “sheer violence” (Andreasson & Johansson, 2018, p. 1183–1184).

Technological advancements and increased accessibility of the internet endlessly increases the ability to access and engage with sensational content. The emergence of social media has also increased both access and exposure to violent and macabre content. Duncombe (2020), notes that “billions of images are shared across different social media platforms every day” and “many of these images depict events of extreme violence, which circulate uninhibited by the conventional constraints, associated with traditional news media censorship” (p. 609).

The popularity and accessibility of sensational content within society is increasing, and whilst the viewing of sensational content may not cause all individuals to engage in antagonistic, harmful, or offending behaviour, it is important to explore this further and understand what factors could increase this risk. Whilst there has been significant research regarding the impact of violent media on individuals (Bender et al., 2018; Bushman & Huesmann, 2012), the effects of newer forms of media are less well understood and therefore research is warranted.

1.1.3 Sensational Interests, Dark Personality, and Subclinical Sadism

Few studies have examined the relationship between sensational interests and dark personality traits. Yet, since the emergence of dark personality measures, research has indicated that individuals who score higher on Dark Triad traits are more likely to be interested in sensational content (James et al., 2014).

In 2010, Hagger-Johnson and Egan examined the relationship between personality, sadism, and sensational interests within the general population. Findings indicated that whilst

sensational interests were not a significant indicator of sadism, increased sadistic tendencies were associated with sensational interests. It was noted, however, that Hagger-Johnson and Egan (2010) measured sadism using a measure for Sadistic Personality Disorder[45]. To the author's knowledge, there has been no research which has examined the relationship between everyday sadism and sensational interests since validated measures of subclinical ('everyday') sadism have become available.

Some research has examined subclinical sadism and violent video gameplay, which as discussed, could be construed as a sensational interest (Gonzalez & Greitemeyer, 2018; Greitemeyer, 2015; Greitemeyer & Sagioglou, 2017). In fact, Gonzalez and Greitemeyer (2018) adapted the Sensational Interests Questionnaire (Egan et al., 1999) to examine the relationship between sadism and a fascination with weapons. A fascination with weapons moderated the association between sadism and violent video gameplay, indicating that individuals with increased sadistic traits may play violent video games to satisfy their interest in weaponry.

Of particular interest to the current study, is the longitudinal research completed by Greitemeyer and Sagioglou (2017). Results suggested a bidirectional association between sadism and violent video gameplay, indicating that individuals with increased trait sadism were attracted to violent video gameplay, and that exposure to gameplay increased sadistic tendencies. These findings emphasise the importance of studying the relationship between sadism and sensational interests - individuals with pronounced sadistic traits may be attracted to sensational content, which in turn, may increase sadistic tendencies. Based on results presented in Chapter Four, it is hypothesised individuals with increased sadistic traits will be

[45] 6B Sadistic [Aggressive] scale of the Millon Clinical Multiaxial Inventory-III 3 (Millon et al., 1994)

attracted to sensational content, due to possible aberrations in emotional processing and dysfunction in the BIS and BAS .

1.2 Part 2: Excitation Transfer Theory

Excitation Transfer Theory (EET; Zillmann, 1971) proposes that when an individual experiences a state of physiological arousal, the effects of arousal can remain for a period of time and be misattributed to a subsequent situation or stimulus. This effect occurs because whilst an individual subjectively feels that they have returned to a normal level of arousal, the autonomic nervous system needs more time to adapt. This results in a period whereby the individual feels 'normal' but remains at a heightened state of autonomic arousal. This time lag in excitory adjustment, termed residual excitation, results in excitation transfer, where residual arousal can intensify an individual's emotional experience of an unrelated stimulus. Empirical studies have found that residual physiological arousal from physical exercise intensified aggressive behaviour (Zillman & Bryant, 1974; Zillman et al., 1972) and arousal from sexual excitation intensified aggression (Donnerstein & Hallam, 1978).

1.2.1 Excitation Transfer Theory and Emotion

EET has been informed by the three-factor theory of emotion, which explains that emotional experience and behaviour are caused by the interaction of three components of emotional state: the dispositional, the excitory, and the experiential (Zillmann, 1996). Dispositional responses are innate valanced responses that an individual has towards a stimulus. The excitory component is the physiological reaction (arousal) in response to the stimulus, which activates the autonomic nervous system. The experiential component refers to the individual's conscious experience and cognitive appraisal of the excitory state. In this final stage, the individual is aware of and experiences the emotion.

Within this three-factor model of emotion, it is the excitory component of the emotional response that can increase the objective arousal response to a subsequent stimulus, as well enhance subjective evaluations or judgements. These enhanced evaluations of stimuli have been explained by the misattribution paradigm (Zillmann, 1996), where the individual "incorrectly attributes his or her emotional state to an obvious, temporally proximate cause" (Cummins, 2017, p. 2). In accordance with excitation transfer, this misattribution is caused by "differential rates of decay associated with the excitatory versus experiential components of emotional response" (Cummins, 2017, p.2).

This means that when an individual experiences a positive or negative emotion, although the emotional valance towards subsequent stimuli does not change, attitudes towards subsequent stimuli are experienced more intensely. Advertisement research has demonstrated this effect well; for example, empirical studies have shown that intensified attitudes towards advertisements were found following watching 'high-suspense' programs (Bee & Madrigal, 2012); arousing films (Mattes & Cantor, 1982); arousing magazines (Moorman et al., 2002); and arousing music (Gorn et al., 2001).

1.3 Goals of Present Research

The aim of this research is to explore what factors could increase sadistic traits and make antisocial cognitions more consciously available in persons who are temperamentally inclined to this disposition. To examine this, the current research aims to explore underlying processes (excitation transfer) which could intensify sadistic cognitions, as well as considering the role of sensational content. It is hypothesised that, out of all dark personality traits, sadism will hold the strongest positive relationship with sensational interests. Considering EET, it is hypothesised that physiological and/or emotional arousal will increase sadistic traits and

enhance subjective evaluations of sensational interests. To the author's knowledge, no previous research has explored the effects of excitation transfer on sadistic traits or, has examined the relationship between sadism and sensational interests using validated measures of subclinical sadism.

2 Method

2.1 Design

Part 1 of the study used a cross-sectional design and online questionnaires to explore the relationship between sensational interests and personality traits. Part 2 of the study used an experimental, within-subjects design, to assess the effects of excitation transfer on sadistic traits and sensational interests. Ethical approval was granted by the University of Nottingham's Research Ethics Committee.

2.2 Participants

The participants used within this study were those who were recruited and enrolled for empirical study one. As such, the sampling process is that which is documented in Chapter Four (see '2.2 Participants and Sampling Procedure', p. 122).

2.2.1 Part 1 Participant Information: Sensational Interests and Personality Traits

The final sample used to explore the relationship between sensational interests and personality traits included 240 participants (37% male, 61% female, 1% other, 1% missing) aged between 18 and 70 years (M = 26.41, SD = 7.96) following data cleansing. Demographic and socioeconomic information is presented in Table 1.

Table 1

Demographic and socioeconomic information for the sample (n=240) used to explore sensational interests and personality traits.

Variable	*M*	*SD*
Age	26.41	7.96
	Frequency *(n)*	Percentage (%)
Gender		
Male	89	37
Female	147	61
Other: Non-binary	3	1
Other: Missing	1	1
Level of Education		
Basic Education	29	12.1
A-Level Qualifications	28	11.7
Bachelor's Degree	96	40
Master's Degree	57	23.8
Doctorate Degree	17	7.1
Trade/Technical/Vocational Training	4	1.7
Professional Degree	7	2.9
Unknown/Missing Data	2	0.8
Area of Occupation		
Transport, Retail or Wholesale	11	4.6
Business and other services, Finance, or Insurance	18	7.5
Manufacturing, Constructing or Agriculture	6	2.5
Engineering	14	5.8
Hospitality, Catering or Leisure Services	6	2.5
Health or Social Care	39	16.3
Public Sector or Education	22	9.2
Student	112	46.7

Unemployed	3	1.3
Participants who identified other occupation areas		
Science and Technology	2	0.8
Media and Entertainment	3	1.3
Military	2	0.8
Translation	1	0.4
Sport	1	0.4

Note. M = Mean, *SD* = Standard Deviation

2.2.2 Part 2 Participant Information: Excitation Transfer Theory (ETT)

The sample used to explore the effects of excitation transfer on sadistic traits and sensational interests included 205 participants (38% male, 61% female, 2% other) aged between 18 and 70 years (*M* = 27.82, *SD* = 9.15), following data cleansing. Table 2 presents the demographic and socioeconomic information of participants following allocation to each experimental group.

Table 2

Demographic and socioeconomic information for the sample used within each experimental condition.

Variable	Experimental Condition 1: Increased Emotional Arousal [*n* = 68]		Experimental Condition 2: Decreased Emotional Arousal [*n* = 70]		Control Condition: No Emotional Arousal [*n*=67]	
	M	*SD*	*M*	*SD*	*M*	*SD*
Age	27.61	8.92	26.87	8.21	29	10.23
	Frequency (*n*)	Percentage (%)	Frequency (*n*)	Percentage (%)	Frequency (*n*)	Percentage (%)

Gender						
Male	21	31	17	24	39	58
Female	45	66	52	74	27	40
Other: Non-binary	2	3	1	1	1	2
Other: Missing	0	0	0	0	0	0
Level of Education						
Basic Education	10	14.7	6	8.6	11	16.4
A-Level Qualifications	11	16.2	11	15.7	3	4.5
Bachelor's Degree	25	36.8	29	41.4	27	40.3
Master's Degree	15	22.1	18	25.7	14	20.9
Doctorate Degree	4	5.9	4	5.7	7	10.4
Trade/Technical/Vocational Training	1	1.5	1	1.4	1	1.5
Professional Degree	2	2.9	1	1.4	2	3
Unknown/Missing Data	0	0	0	0	2	3
Area of Occupation						
Transport, Retail, or Wholesale	5	7.4	4	5.7	2	3.0
Business and other services, Finance, or Insurance	7	10.3	2	2.9	7	10.4
Manufacturing, Constructing or Agriculture	1	1.5	1	1.4	5	7.5
Engineering	2	2.9	1	1.4	5	7.5
Hospitality, Catering or Leisure Services	2	2.9	3	4.3	1	1.5
Health or Social Care	12	17.6	11	15.7	11	16.4
Public Sector or Education	4	5.9	5	7.1	10	14.9
Student	34	50	36	51.4	23	34.3
Unemployed	0	0	3	4.3	0	0
Participants who identified other occupation areas						
Science and Technology	1	1.5	1	1.4	0	0
Media and Entertainment	0	0	2	2.9	1	1.5

Military	0	0	0	0	2	3
Translation	0	0	0	0	0	0
Sport	0	0	1	1.4	0	0

Note. M = Mean, *SD* = Standard Deviation

2.3 Measures

Mean, Standard Deviation, and reliability statistics for all measures used are presented in Table 4.

2.3.1 Sensational Interests Questionnaire (SIQ; Egan et al., 1999)

The SIQ was developed to measure violent and unusual interests. Participants rate their interest level in 28 topics (19 of which are 'sensational' items) using a 5-point Likert Scale (1 = great dislike, 5 = great interest). The measure produces the following five subscales: Militarism, Violent Occultism, Intellectual Recreation, Occult Credulousness, and Wholesome Activities. The Militarism and Violent Occultism subscales are used to measure sensational interests. Egan et al. (1999) and others have reported good internal reliability for this measure.

2.3.2 Buss Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992)

The BPAQ was developed to measure an individual's propensity to act aggressively. It contains 29 items and consists of four subscales which measure physical aggression, verbal aggression, anger, and hostility. All items include a five-point scale response which ranges from 'hardly ever or never' to 'very often applies to me'. Buss and Perry (1992) reported good test-retest reliability for all four subscales.

2.3.3 60-Item HEXACO Personality Inventory (HEXACO-60; Ashton & Lee, 2009)

The HEXACO-60 is a short measure of the major dimensions of personality. It contains 60 items and measures six domains of personality, including: emotionality, extraversion,

agreeableness, honesty-humility, conscientiousness, and openness to experience. Participants respond on a 5-point Likert-scale to indicate their level of agreeability with each statement, from strongly disagree (1) to strongly agree (5). This measure has shown good levels of internal consistent reliability and has demonstrated high convergent correlations between self-reports and observer reports on the HEXACO-60 (Aston & Lee, 2009).

2.3.4 Varieties of Sadistic Tendencies (VAST; Paulhus & Jones, 2015)

The VAST is a measure used to examine trait-like proclivity towards sadistic behaviour. It contains 16 items which can be subdivided into a Direct Sadism (a tendency to enjoy harming others directly and in-person [physically or verbally]) subscale and a Vicarious Sadism (a tendency to enjoy simulated and/or fantasised harm) subscale. It uses a seven-point Likert scale which ranges from 1 (not at all) to 7 (very much). Research has demonstrated good reliability and validity for this measure (Paulhus & Jones, 2015).

2.3.5 Four identities Questionnaire (SD4; Paulhus et al., 2018)

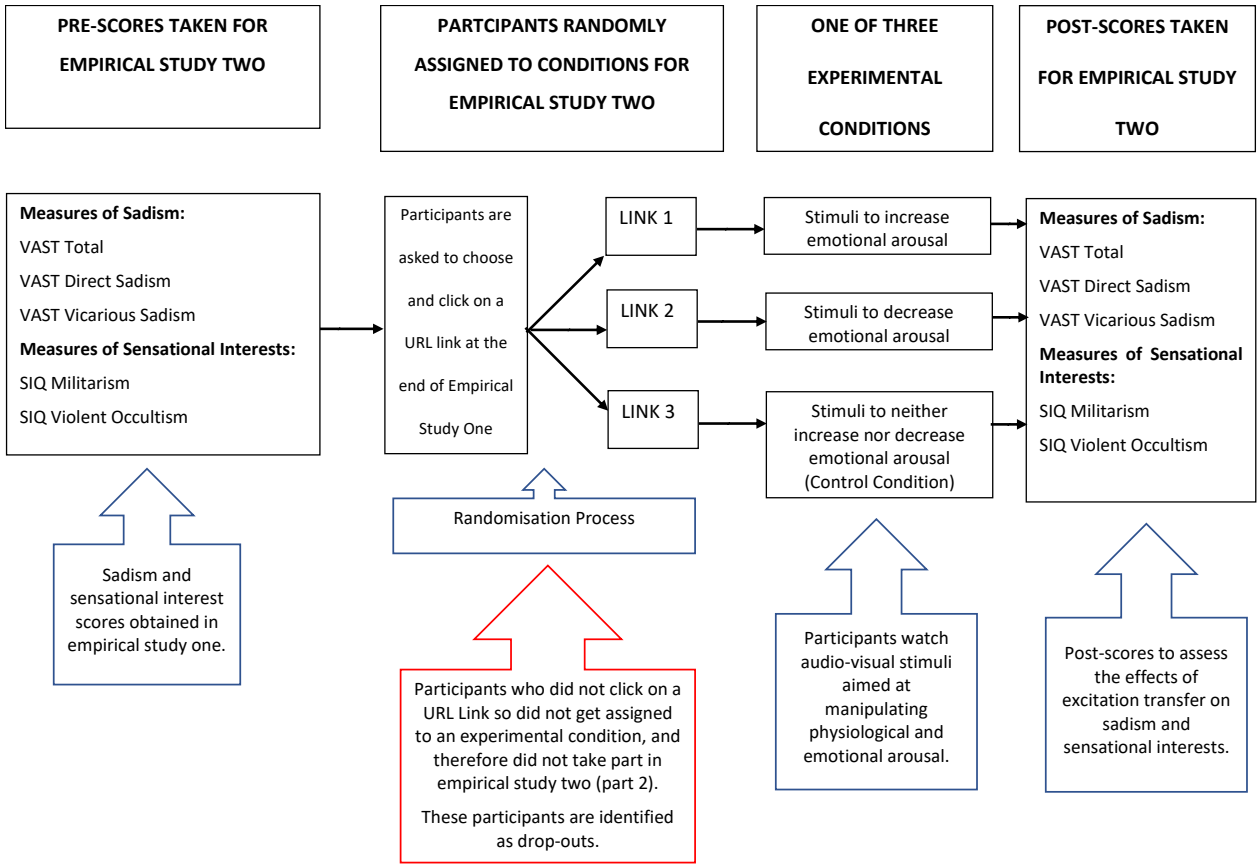
The SD4 is an extension of the Short Dark Triad (SD3). The SD3 captures Dark Triad traits: psychopathy (“impulsive thrill-seekers”), narcissism (“attention-seeking self-promoters”), and Machiavellianism (“strategic manipulators”) (brief descriptions by Paulhus & Jones, 2015, p. 568). The SD4 was extended to include a measure of sadism. The scale contains four self-report 7-item subscales for each dark personality, rated using a 5-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. When developing this scale, Paulhus et al. (2018) aimed to “to minimize subscale overlap by emphasising the unique components of each construct” (p. 209).

2.4 Procedure

Following testing for empirical study one, participants needed to be randomly assigned to one of three experimental conditions for the current study. JISC Online Surveys does not have an in-built function to randomly allocate participants to experimental conditions. To overcome this limitation of the software, three URL links were added at the end of empirical study one data collection. The links were anonymised ("Link 1", "Link 2", "Link 3") and the participant was instructed to click on one of the links. By doing so, the URL link sent the participant to one of three experimental conditions.

In all three conditions, participants were instructed to watch a two-minute video clip, aimed at manipulating physiological and emotional arousal (Appendix 4.A). Within each condition, participants either watched a video clip aimed at increasing arousal, decreasing arousal, or neither increasing nor decreasing arousal (control condition). Following this, participants were asked to complete the VAST and SIQ self-report measure for a second time (having already completed the measures during empirical study one data collection). This procedure is presented diagrammatically in Figure 1 below.

Figure 1 *A diagram showing the procedure used for Empirical Study Two*



2.5 Data analysis

2.5.1 Part 1: Sensational Interests and Personality Traits

Test data from 255 participants was downloaded from JISC Online Surveys. Missing and/or inaccurate data was explored. Initial screening indicated the following: there were four participants who did not provide any data; there were three participants who did not indicate their agreement to all terms stated in the information sheet; and two participants who were under 18 years old. All nine participants were removed, leaving 246 participants in the study.

Variables were computed for each condition by reverse scoring the appropriate items and using the mean to calculate the facets of each measure. Participants who missed more than one item on individual scales were removed from the study (n = 6). Following data

cleansing, 240 participants were included in the data analysis. Some outliers were identified but due to the nature of the research and the population of interest, outliers were not removed. As skewness and kurtosis values indicated that several scales violated the normality assumption, bootstrapping was performed to check the outliers did not produce artefactual results.

2.5.2 Part 2: Excitation Transfer Theory

Test data from 255 participants was downloaded from JISC Online Surveys. This included downloading the data set from all 255 participants who completed part one[46] of the study, as well as the data sets from part two[47] of the study, where participants were randomly assigned to one of three experimental conditions. Initial screening meant that nine participants were removed and there were 246 participants left in the study.

As described, participants were randomly allocated to an experimental condition by choosing one of three URL links. During data analysis, the date and time that the participant completed the study was used to identify which condition they had been allocated too. This enabled a comparison of pre-scores (before being randomly allocated to a condition) and post-scores (after watching the experimental stimuli) to assess the impact of the intervention and the effects of excitation transfer (as presented in Figure 1).

There were some participants who did not click on the URL link and as such, were not allocated to an experimental condition. This indicated that there were 28 participants who dropped out of the study. The participant characteristics of those who dropped out are presented in Table 3.

[46] Part 1: Completion of self-report measures prior to being assigned to one of three experimental conditions.
[47] Part 2: Completion of self-report measures following experimental condition.

Table 3

Demographic and socioeconomic information for the participants (n = 28) that dropped out of the study before being assigned to an experimental condition.

Variable	*M*	*SD*
Age	27.56	10.60
	Frequency (*n*)	Percentage (%)
Gender		
Male	9	32.1
Female	19	67.9
Other: Non-binary	0	0
Other: Missing	0	0
Level of Education		
Basic Education	1	3.6
A-Level Qualifications	3	10.7
Bachelor's Degree	12	42.9
Master's Degree	6	21.4
Doctorate Degree	3	10.7
Trade/Technical/Vocational Training	1	3.6
Professional Degree	2	7.1
Unknown/Missing Data	0	0
Area of Occupation		
Transport, Retail, or Wholesale	0	0
Business and other services, Finance, or Insurance	2	7.1
Manufacturing, Constructing or Agriculture	0	0
Engineering	4	14.3

Hospitality, Catering or Leisure Services	1	3.6
Health or Social Care	4	14.3
Public Sector or Education	4	14.3
Student	13	46.4
Unemployed	0	0
Participants who identified other occupation areas	0	0

Note. M = Mean, *SD* = Standard Deviation

There were 218 participants who completed all aspects of the study. Variables were computed for each condition by reverse scoring the appropriate items and using the mean to calculate the facets of each measure. Participants who missed more than one item on individual scales were removed from the study (*n* = 13). Following data cleansing, 205 participants were included in the data analysis; there were 68 participants in the 'arousing' experimental condition; 70 participants in the 'de-arousing' condition; and 67 participants in the 'neutral'/control condition. Due to the nature of the research and the population of interest, outliers were not removed. Bootstrapping was performed to check the outliers did not produce artefactual results.

2.5.2.1 Non-parametric analyses to determine differences in baseline sadism and sensational interest scores between groups of participants.

The participants (*n* = 28) who dropped out the study were not randomly allocated to an experimental condition (as they dropped out before being allocated). As such, no data on outcomes (sadism and sensational interest scores) post the experimental manipulation were available. This may be indicative of attrition bias, where the characteristics of those who dropped out of the study may differ systematically from those who remain in the study

(Nunan et al., 2018). To explore the characteristics of those who dropped out the study, further non-parametric analyses were completed to determine if there were any statistically significant differences between the groups of participants.

A Kruskal-Wallis H test was run to determine if there were differences in baseline sadism and sensational interest scores between the four groups of participants - those allocated to an experimental condition (the experimental condition which aimed to increase arousal [*n* = 68]; the experimental condition which aimed to decrease arousal [*n* = 70]; the control condition which aimed to neither increase nor decrease arousal [*n* = 67]) and those who dropped out the study and therefore not allocated to an experimental condition [*n* = 28].

Distributions of all scores (VAST total, VAST direct, VAST vicarious, militarism, violent occultism) were similar for all groups, as assessed by visual inspection of a boxplot. Sadism scores, as measured by the VAST total, were not statistically significantly different between groups, $\chi2(3) = 7.805$, $p = .050$. Direct sadism scores, as measured by the VAST direct sadism subscale, were not statistically significantly different between groups, $\chi2(3) = 6.807$, $p = .078$. Vicarious sadism scores, as measured by the VAST vicarious sadism subscale, were not statistically significantly different between groups, $\chi2(3) = 7.638$, $p = .054$. For sensational interest scores, there were no statistically significant differences between the groups on the militarism subscale, $\chi2(3) = 2.574$, $p = .462$, or the violent occultism subscale, $\chi2(3) = 3.844$, $p = .279$. Overall, the analyses indicated that those who dropped out the study were not significantly different to those who remained in the study, in terms of sadistic traits and interest in sensational content.

3. Results

3.1. Descriptive Statistics

Descriptive statistics and bivariate correlations for all measures are reported in Table 4. Most measures showed good internal consistency, as determined by Cronbach's alpha. The internal consistency of the Violent Occultism (SIQ) subscale was considered acceptable (George & Mallery, 2003).

Table 4

Means, standard deviations, Cronbach alpha coefficients, and bivariate correlations.[48]

Scale	*M*	*SD*	α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1.Sadism [VAST]	32.42	9.47	.84	-																		
2.Direct Sadism	17.14	5.69	.78	.88***																		
3.Vicarious Sadism	15.28	5.18	.78	.85***	.50***																	
4.Sadism [SD4]	15.52	6.30	.84	.75***	.62***	.69***																
5.Psychopathy	14.16	5.01	.78	.59***	.62***	.40***	.59***															
6.Narcissism	18.57	5.33	.81	.33***	.35***	.21***	.30***	.47***														
7.Machiavellianism	22.57	4.50	.71	.38***	.32***	.33***	.47***	.29***	.27***													
8.Militarism	23.74	7.14	.81	.49***	.37***	.48***	.49***	.30***	.27***	.23***												
9.Violent Occultism	14.94	4.72	.66	.39***	.34***	.34***	.34***	.26***	.05	.06	.45***											
10.Honesty-Humility	34.87	6.64	.75	-.52***	-.53***	-.37***	-.44***	-.43***	-.37***	-.50***	-.20***	-.10										
11.Emotionality	32.62	7.00	.80	-.36***	-.23***	-.40***	-.36***	-.26***	-.26***	-.23***	-.19***	.00	.14*									
12. Extraversion	30.92	6.87	.80	-.10	-.12	-.05	-.13*	-.01	.45***	-.05	.08	-.10	.12	-.22***								
13.Agreeableness	32.20	6.23	.77	-.27***	-.34***	-.13*	-.32***	-.34***	-.17**	-.18**	-.05	-.07	.34***	-.05	.25***							
14.Conscientiousness	36.47	6.51	.82	-.32***	-.30***	-.26***	-.19***	-.38***	-.04	-.06	-.20***	-.15*	.28***	.06	.02	.13						
15.Openness	36.01	6.97	.81	-.17**	-.08	-.23***	-.11	-.01	.15*	-.11	-.08	.06	.18**	.01	.13*	.09	.15*					
16.Physical Aggression	19.39	7.72	.86	.71***	.67***	.56***	.70***	.67***	.31***	.42***	.38***	.20***	-.48***	-.22***	-.12	-.44***	-.28***	-.16*				
17.Anger	16.26	5.96	.83	.48***	.52***	.30***	.47***	.56***	.23***	.23***	.28***	.25***	-.37***	.11	-.17**	-.58***	-.31***	-.15*	.71***			
18.Hostility	21.98	6.68	.82	.37***	.44***	.20****	.41***	.40***	-.03	.35***	.22***	.25***	-.31***	.14*	-.43***	-.39***	-.18***	-.13	.51***	.62***		
19.Verbal Aggression	14.37	4.09	.73	.42***	.43***	.29***	.47***	.43***	.17**	.18**	.30***	.21***	-.20***	-.08	-.14	-.51***	-.18***	.02	.55***	.58***	.51***	
20. Total Aggression	72.26	20.28	.93	.61***	.63***	.42***	.63***	.64***	.21***	.38***	.36***	.28***	-.44***	-.02	-.27***	-.57***	-.29***	-.15	.86***	.88***	.81***	.74***

M = Mean; *SD* = Standard Deviation; α = Cronbach's alpha. Bootstrap results are based on 2000 bootstrap samples. *p < .05, **p < .01, ***p < .001

3.2 Part 1: Sensational Interests and Personality Traits

3.2.1 Relationships between sensational interests, dark personality, and general personality traits.

As presented in Table 4, correlational analyses were conducted to explore the association between sensational interests and personality traits. Results indicated that militarism was significantly positively correlated with all dark personality traits and significantly negatively correlated with the following dimensions of personality: honesty-humility, emotionality, and conscientiousness. Violent Occultism was significantly positively correlated with sadism and psychopathy, and negatively correlated with conscientiousness. With regards to VAST subscales, a statistically significant moderate relationship was found between both sensational interest subscales and direct and vicarious sadism. It was noted that vicarious sadism held a stronger relationship (than direct sadism) with militarism.

3.2.2 Dark personality as a predictor of sensational interests

A bootstrap-corrected multiple regression was run to assess the variance of sensational interests with dark personality traits as predictors. The overall model for militarism was .26, with an adjusted R^2 of .24, indicating up to 26% of sensational interest variance could be predicted from dark personality traits. For violent occultism, up to 14% could be predicted. Increased trait sadism was the only dark trait that added statistically significantly to the prediction of both militarism and violent occultism. Table 5 demonstrates which variables statistically significantly added to the prediction; regression coefficients and standard errors are presented.

Table 5

Bootstrap-corrected multiple linear regression model for the prediction of sensational interests (SIQ) by the Dark Tetrad (SD4).

SIQ Measure	*B*	95% CI for *B*		*SE B*	β	R^2	$\triangle R^2$
		LL	*UL*				
Militarism							
Model						.26	.24
Sadism	.42	.27	.55	.07	.47***		
Psychopathy	-.05	-.23	.14	.09	-.05		
Narcissism	.16	.04	.29	.07	.16*		
Machiavellianism	-.02	-.17	.15	.08	-.02		
Violent Occultism							
Model						.14	.13
Sadism	.30	.16	.42	.07	.34***		
Psychopathy	.15	-.02	.33	.09	.14		
Narcissism	-.10	-.23	.03	.07	-.09		
Machiavellianism	-.14	-.32	.06	.09	-.11		

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardised regression coefficient; CI = confidence intervals; *LL* = lower limit; *UL* = upper limit; *SE B* = standard error of the coefficient; β = standardised coefficient; R^2 = coefficient of determination; $\triangle R^2$ = adjusted R^2. Bootstrap results are based on 2000 bootstrap samples.

*$p < .05$. **$p < .01$. ***$p < .001$.

3.2.3 Are sensational interests an indicator of sadism, or general antagonism?

As presented in Table 4, correlational analyses were completed to explore the association between sensational interests and aggression. Results indicated that both Militarism and Violent Occultism, were significantly positively correlated with physical aggression, verbal aggression, hostility, and anger. Considering an overall measure of aggression, results showed

a statistically significant, moderate positive correlation between aggression and militarism, $r(238) = .36$, $p < .001$, and a statistically significant, but small positive correlation between aggression and violent occultism, $r(238) = .28$, $p < .001$.

3.2.4 Aggression as a predictor of Sensational Interests

A bootstrap-corrected multiple regression was run to assess the variance of sensational interests with aggression types as predictors. The overall model for militarism was .16, with an adjusted R^2 of .14, indicating up to 16% could be predicted from aggression. Physical aggression was the only predictor which held a statistically significant contribution to the prediction of militarism. As demonstrated in Table 6, none of the aggression subscales added statistically significantly to the prediction of violent occultism.

Table 6

Bootstrap-corrected multiple linear regression model for the prediction of sensational interests (SIQ) by Aggression (BPAQ).

SIQ Measure	*B*	95% CI for *B*		*SE B*	β	R^2	$\triangle R^2$
		LL	*UL*				
Militarism							
Model						.16	.14
Anger	-.03	-.22	.15	.09	-.04		
Physical	.30	.15	.44	.08	.33***		
Hostility	.01	-.13	.15	.07	.01		
Verbal Aggression	.13	-.02	.28	.08	.14		
Violent Occultism							
Model						.08	.07
Anger	.12	-.09	.30	.09	.13		
Physical	.01	-.15	.17	.08	.01		

Hostility	.13	-.03	.28	.08	.14
Verbal Aggression	.06	-.10	.21	.08	.07

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardised regression coefficient; CI = confidence intervals; *LL* = lower limit; *UL* = upper limit; *SE B* = standard error of the coefficient; β = standardised coefficient; R^2 = coefficient of determination; $\triangle R^2$ = adjusted R^2. Bootstrap results are based on 2000 bootstrap samples.

*$p < .05$. **$p < .01$. ***$p < .001$.

3.2.5 Sensational Interests as a predictor of Subclinical Sadism

A hierarchical multiple regression was run to determine how sensational interests improved the prediction of subclinical sadism, as well as controlling for the effects of the Dark Triad, general personality traits, and aggression.

Considering the prediction of sadism, Model 1 was .26, with an adjusted R^2 of .25, indicating up to 26% could be predicted from sensational interests. The addition of general personality traits to the prediction of sadism (Model 2) led to a statistically significant increase in R^2 of .24, $F(6, 231) = 18.55$, $p < .001$. The addition of aggression to the prediction of sadism (Model 3) led to a statistically significant increase in R^2 of .14, $F(4, 227) = 21.26$, $p < .001$. The addition of the Dark Triad (Model 4) led to a statistically significant increase in R^2 of .02, $F(3, 224) = 4.90$, $p < .01$.

The overall model was .66, with an adjusted R^2 of .63, indicating up to 66% could be predicted from the variables reported in Model 4. Table 7 demonstrates that both militarism and violent occultism significantly contributed to the prediction of sadism. In the final model, increased physical aggression, lack of emotionality, militarism, Machiavellianism, violent occultism, psychopathy, and lack of extraversion.

Table 7

Hierarchical Multiple Regression Predicting Subclinical Sadism (SD4) from sensational interests, personality variables, and aggression.

Predictor Variables	*B*	β	*t*
Model 4: Sensational Interests, General Personality traits, Aggression, and Dark Triad.			
Militarism	.20	.17	3.44***
Violent Occultism	.15	.13	2.85**
Honesty Humility	-.06	-.04	-.81
Emotionality	-.24	-.18	-3.86***
Extraversion	-.14	-.11	-2.00*
Agreeableness	-.04	-.03	-.54
Conscientiousness	.10	.07	1.58
Openness	-.03	-.02	-.48
Anger	-.04	-.04	-.54
Physical Aggression	.39	.37	5.10***
Hostility	-.02	-.02	-.28
Verbal Aggression	.09	.08	1.52
Psychopathy	.19	.15	2.39*
Narcissism	-.00	-.00	-.04
Machiavellianism	.21	.15	2.94**

Note. R^2 = .26 for Model 1, $p < .001$; $R^2\Delta$ = .24 for Model 2, $p < .001$; $R^2\Delta$ = .14 for Model 3, $p < .001$; $R^2\Delta$ = .02 for Model 4, $p < .001$; Total R^2 = .66, $p < .01$.

3.3 Part 2: Excitation Transfer Theory

3.3.1 Experimental Condition 1: Increased Emotional Arousal

A bootstrapped paired-samples t-test was used to examine whether there was a statistically significant increase in mean scores of sensational interests and subclinical sadistic traits, following increased emotional arousal. As presented in Table 8, participants scored lower on sensational interest subscales after watching a video clip aimed to increase emotional arousal,

with a significant decrease of 0.14, 95% CI [0.07, 0.19], $t(67) = 4.00$, $p < .001$, $d = 0.48$ for Militarism, and a significant decrease of 0.06, 95% CI [0.02, 0.11], $t(67) = 2.45$, $p < .019$, $d = 0.30$ for Violent Occultism.

In relation to sadism, participants scored lower on the VAST measure following watching a video clip aimed to increase emotional arousal, with a mean decrease of 0.06, 95% CI [0.01, 0.12], $t(67) = 2.34$, $p < .024$, $d = 0.28$. Participants also scored lower on the VAST's direct sadism subscale, with a decrease of 0.07, 95% CI [0.01, 0.14], $t(67) = 2.43$, $p < .023$, $d = 0.30$. Table 8 presents the results of sadistic traits, direct sadism, and vicarious sadism, pre and post the experimental condition.

Table 8

Bootstrapped paired-samples t-test examining sensational interest scores (as measured following increased emotional arousal.

	Pre-Video		Post-Video		*t*(67)	95% CI for *t*		Cohen's *d*
Sensational Interests	*M*	*SD*	*M*	*SD*		*LL*	*UL*	
Militarism (SIQ-R)	2.52	0.84	2.38	0.89	4.00***	.07	.19	0.48
Violent Occultism (SIQ-R)	2.40	0.79	2.34	0.82	2.45**	.02	.11	0.30
Sadism	*M*	*SD*	*M*	*SD*		*LL*	*UL*	
VAST	1.92	0.60	1.86	0.68	2.34*	.01	.12	0.28
Direct Sadism (VAST)	1.87	0.73	1.80	0.78	2.42*	.01	.14	0.29
Vicarious Sadism (VAST)	1.98	0.70	1.93	0.76	1.33	-.02	.12	0.16

M = Mean, *SD* = Standard Deviation, *t* = Quasi bootstrapped t-value (t-test), CI = Confidence Intervals, *LL* = Lower Limit, *UL* = Upper Limit, Cohen's *d* = Effect Size

Bootstrap results are based on 2000 bootstrap samples.

*$p < .05$. **$p < .01$. ***$p < .001$.

3.3.2 Experimental Condition 2: Decreased Emotional Arousal

A bootstrapped paired-samples t-test was used to examine whether there was a statistically significant decrease in mean scores of sensational interests and measures of sadism, following stimuli aimed at reducing emotional arousal. Results indicated that there was a reduction in the mean of sensational interests scores, as measured by the Militarism and Violent Occultism subscales, however, this was not a significant reduction. In relation to sadism, results indicated that there was a reduction in trait sadism and direct sadism scores, however, this was not a significant reduction (Appendix 4.B).

3.3.3 Experimental Condition 3: Neutral Arousal/Control Condition

A bootstrapped paired-samples t-test was used to examine whether there were any statistically significant changes to measures of sensational interests and measures of sadism in the control condition, where participants were asked to view stimuli which was neither aimed to increase or decrease emotional arousal. As presented in Table 9, results indicated a statistically significant mean decrease of 0.08, 95% CI [0.01, 0.16], $t(66) = 2.36$, $p < .020$, $d = 0.29$ for Militarism, and a statistically significant mean decrease of 0.09, 95% CI [0.01, 0.18], $t(66) = 2.38$, $p < .023$, $d = 0.28$ for Violent Occultism. In relation to sadism, there were no statistically significant changes to mean scores pre and post the control condition.

Table 9

Bootstrapped paired-samples t-test examining sensational interest scores within the experimental control condition.

Measure	Pre-Video		Post-Video		*t*(66)	95% CI for *t*		Cohen's *d*
Sensational Interest	*M*	*SD*	*M*	*SD*		*LL*	*UL*	
Militarism (SIQ-R)	2.65	.73	2.57	.74	2.36*	.01	.16	0.29
Violent Occultism (SIQ-R)	2.40	.90	2.31	.88	2.38*	.01	.18	0.28
Sadism	*M*	*SD*	*M*	*SD*		*LL*	*UL*	
VAST	1.95	.53	1.88	.54	1.76	-.02	.16	0.22
Direct Sadism (VAST)	1.80	.53	1.72	.55	1.68	-.02	.17	0.20
Vicarious Sadism (VAST)	2.14	.69	2.08	.69	1.15	-.05	.16	0.14

Bootstrap results are based on 2000 bootstrap samples.

*$p < .05$. **$p < .01$. ***$p < .001$.

4. Discussion

The aim of this research was to explore what factors may increase sadistic traits in persons who are temperamentally inclined to this disposition. To explore this, the current study used Excitation Transfer Theory (ETT) as a theoretical framework. Another aim of the study was to consider what factors may reinforce and increase sadistic tendencies. Therefore, this study examined the relationship between everyday sadism and sensational interests. To explore this further, additional analyses were completed to assess whether sensational interests were an indicator of sadism, or general antagonism.

In relation to ETT, it was hypothesised that emotional arousal would increase sadistic traits through making antisocial cognitions more consciously available. Similarly, it was hypothesised that emotional arousal would enhance subjective evaluations or judgements of sensational interests. Finally, it was hypothesised that there would be a positive relationship between sadism and sensational interests.

The first hypothesis, that increased emotional arousal would increase sadistic traits, was not supported. As measured by the VAST, results indicated that there was a significant decrease in trait sadism and direct sadism scores, following watching stimuli that aimed to increase emotional arousal. There was no significant change in vicarious sadism scores. In the second experimental condition, which aimed to reduce emotional arousal, there were no significant effects. Similarly, in the control condition, where participants were asked to view stimuli which were neither aimed to increase or decrease emotional arousal, there were no significant changes to sadism scores.

The second hypothesis, that increased emotional arousal would enhance subjective evaluations of sensational interests was not supported. As with sadistic traits, there was a significant decrease in ratings of sensational interests following watching stimuli that aimed to increase emotional arousal. There were no significant effects in the second experimental condition, which aimed to reduce emotional arousal. Within the control condition, there was a significant decrease in sensational interest scores.

The third hypothesis, that there would be a positive relationship between increased sadistic traits and sensational interests was supported. Correlational analyses revealed that sadism (SD4) held the strongest correlation with sensational interests, over and above other dark personality and general personality traits. Using the VAST, results found that both direct

and vicarious sadism held stronger correlations with sensational interests, than did Dark Triad traits. It was also noted that whilst all dark personality traits were positively associated with the militarism subscale, only sadism and psychopathy were associated with violent occultism.

To assess whether sensational interests were an indicator of sadism, or general antagonism, a measure of aggression was included in the analysis. Whilst results showed that all aggression subscales were positively correlated with sensational interests, when subject to regression analyses, only physical aggression was predictive of militarism, and no aggression subscale was predictive of violent occultism. Taking results together, a hierarchical multiple regression showed that militarism, violent occultism, and physical aggression, significantly contributed to the prediction of sadism.

4.1 Excitation Transfer Theory

Upon initial examination of the results, it appears that the effect of excitation transfer did not result in increased sadistic traits. However, there can be several interpretations of these results by considering each of the following: the methodological rigour of the study; findings within Chapter Four; and specific research on excitation transfer and aggression.

In terms of the methodology, it is possible that the audio-visual stimuli used were not strong enough to produce a heightened state of physiological and/or emotional arousal, meaning that there was no residual excitation to result in excitation transfer. A limitation of the study, therefore, is that no measures were used to assess the impact of each experimental condition. For example, in Cantor et al.'s (1978) study, by using physiological measures, they were able to note that an erotic film was significantly more arousing than an aggressive film; it is clear that this measure was important in interpretating the results of the study.

Additionally, the excitation transfer effect may not have been elicited because the use of provocation was not included in the experimental design. Previous research on excitation transfer and aggression, indicates that when an individual experiences high levels of excitation (arousal) caused from a previous incident, this arousal may be added and misattributed to a subsequent source of provocation. In 1972, for example, Zillman et al. found that participants who experienced physiological arousal from physical exercise and were provoked within the experimental condition, administered more intense electric shocks to the instigator, than those in conditions of low physiological arousal and without provocation. It was noted that the transfer effect was only significant when the participant was provoked; without provocation, the transfer effect was negligible.

In 1978, Cantor et al. assigned female participants to one of three groups, where they either watched a 'neutral', 'aggressive', or 'erotic' film. Following watching the film, participants were either provoked or not provoked, in a game which allowed an opportunity for retaliation by administering noxious noise. Similar to Zillman et al.'s (1972) findings, results indicated that females who viewed the 'erotic' film and were provoked, were significantly more likely to retaliate. For participants who were not provoked, the prior viewing of films did not significantly affect retaliation. Overall, this research suggests that aggressive behaviour occurs following arousal *and* provocation. Therefore, reflecting on the current study, excitation transfer and subsequent increased sadistic tendencies, may not have been elicited because there was no form of provocation within the experimental design.

Since the proposal of the current study, further research regarding excitation transfer and dark personality has been published. Tetreault and Hoff's (2019) study aimed to examine if individuals with Dark Triad traits and sensitivity to arousal, would be more willing to aggress

and/or retaliate following provocation. Tetreault and Hoff (2019) concluded that the "arousal and/or provocation levels did not provide a strong enough situational force, to elicit dark behaviour from those who were not high on subclinical psychopathy" (p.176). They proposed that that those with increased psychopathy scores would be willing to aggress regardless of experimental manipulation, and that overall, negative emotion did not increase willingness to aggress for individuals with increased dark traits. Results did find however, that those within the high provocation condition retaliated the most, implying general excitation transfer effects. As this study focused on the Dark Triad, a measure of sadism was not included, and therefore further research is warranted.

The results of this study can also be interpreted in relation to the findings in Chapter Four. It is possible, that the audio-visual stimuli used within the current study did not elicit the desired physiological and/or emotional response from individuals with increased trait sadism. The stimuli used within the first experimental condition, for example, used a video which would typically induce anxiety. However, findings in empirical study one indicated that increased sadistic traits were associated with a deficit in the FFFS, meaning less sensitivity to the experience of fear and anxiety in response to threatening stimuli. As such, it is plausible that the stimuli used did not evoke the desired response. This may be reflected in the results, whereby the condition which aimed to increase emotional arousal, resulted in significantly reduced scores of trait sadism.

4.2 Sensational Interests

To the author's knowledge, there has been no research which has used validated measures of subclinical sadism, to explore its relationship with sensational interests. The current study found a robust relationship between sadism and sensational interests, over and above other

dark personality or general personality traits. This relationship was hypothesised following results from empirical study one, which showed a positive relationship between increased trait sadism and the enjoyment of audio-visual stimuli, which could be construed as sensational in nature. Drawing findings together, it is possible that aberrations in the emotional processing of individuals with pronounced sadistic traits, may attract them to more violent and/or distressing situations, as well as sensational content. Overall, findings indicate that sensational interests contribute to the profile of individuals with increased sadistic traits.

The current study also assessed whether sensational interests were an indicator of sadism, or general antagonism. Results indicated that sensational interests were associated with both sadism and aggression, and that sensational interests and physical aggression were predictive of subclinical sadism. This is an interesting finding, as it could reflect the continuum (low to high levels) of this dark personality trait. Whilst the systematic review evidenced links between sadism and a range of aggressive and violent behaviour, the current study shows how milder levels of sadism exist vicariously.

The distinction of vicarious and direct sadism has been highlighted in the literature; direct sadism is defined as the "enjoyment of harming others physically or verbally", and vicarious sadism, as the "enjoyment of observing others being harmed" (Paulhus et al., 2011, as cited in Paulhus & Jones, 2015, p. 584). By examining sadism and sensational interests, this study adds further insight into the different facets of sadism. Sensational interests, or engagement with sensational content, could be understood as a form of vicarious sadism, where individuals may enjoy observing harm to others, or engage in activities that enable the individual to simulate harming others. In this way, individuals may satisfy sadistic tendencies through 'acceptable' activity within contemporary society, such as playing violent video

games, or watching videos where others are distressed. Interestingly, vicarious held a stronger relationship with militarism than direct sadism and held an equally strong relationship with violent occultism within the current study.

This study also assessed whether excitation transfer would enhance subjective evaluations or judgements of sensational interests. Results showed that in the first experimental condition, which aimed to increase emotional arousal, and the control condition, sensational interest scores significantly decreased. Due to the positive association between sadism and sensational interests, one might expect the excitation transfer effect to apply in a similar manner. That is, for those who have an interest sensational content, they might not have been emotionally and/or physiologically aroused in relation to the stimuli used. As noted by Bunce et al. (1993), it is likely that there are individual differences in the excitation transfer effect, and it is therefore recommended, that future research explores these differences in relation to dark personality traits, to ascertain what situations might elicit dark behaviour. Future research could also examine if individuals with elevated sadistic traits experience increased arousal from engaging with sensational content, and whether residual excitation could increase sadistic traits and the risk of sadistic behaviour.

4.3 Limitations

As discussed, there were some limitations in relation to the methodology used within the study, which limited interpretation of the results in relation to ETT. In addition to a manipulation check and a provocation condition, it is recommended that future research employs measures of behavioural operationalisations of sadism[49], in addition to self-report measures.

[49] N. b. Of course, following Ethical Guidelines when studying behavioural operationalisations of sadism.

A limitation of this study is the software that was used to conduct it. JISC Online Surveys (formerly known as Bristol Online Survey) does not have an option to randomly allocate participants to experimental conditions. To overcome this limitation of the software, three URL links were added at the end of empirical study one data collection. The links were anonymised ("Link 1", "Link 2", "Link 3") and the participant was instructed to click on one of the links. By doing so, the URL link sent the participant to one of three conditions. During data analysis, however, it was noted that 28 participants did not click on the URL link and therefore did not complete empirical study two.

This indicates issues of attrition bias within the study - where the characteristics of those who dropped out the study may differ systematically from those who remained in the study (Nunan et al., 2018). Additional analyses showed that there were no statistically significant differences in sadism or sensational interest scores between the four groups of participants. Participants may have dropped out of the study for one of many reasons. For example, it may be due to the content of the study, the length of the study (e.g., participant fatigue), their motivation to complete the study, whether they had time to complete the study, whether there were technical difficulties, or desirability bias. These reasons are speculative, however, and it remains unclear why these participants dropped out the study. It is recommended that future research uses software which has an in-built function to complete random allocation (e.g., Qualtrics) and includes a question to ask participants why they decided to leave the study.

Unfortunately, as the 28 participants dropped out of the study before they were randomly allocated to an experimental condition, this meant that no data on outcomes (sadism and sensational interest scores) post the experimental manipulation were available.

If they had been randomly allocated, their baseline scores of sadism and sensational interests could have been included in the analysis. This issue could be attributed to both issues in the software used (JISC Online Surveys) and attrition bias.

Due to this study being completed online there was also no experimenter oversight, meaning that participants may not have adhered to the instructions in relation to viewing the audio-visual stimuli. In addition to this, there were also limitations with regards to how the audio-visual stimuli was chosen. The stimuli for each experimental condition were chosen by the researcher. There are limitations to this process because it was the researcher's subjective opinion, as to what audio-visual stimuli would increase or decrease, participants' physiological and emotional arousal.

It is recommended that future studies address this limitation by using focus groups to derive the material and descriptive terms. Focus groups are a research method used to gather qualitative data via group discussion (Morgan, 2019). The aim is to collect qualitative data which is integral to the research study. To achieve this the researcher guides the discussion and the group members generate the data required. With regards to using a focus group for the current research, group members (who would be recruited only for deriving material for the study and not be a participant in the study) could be asked to discuss between them, what type of video clip would increase, decrease, and neither increase nor decrease, their emotional and physiological arousal. The discussion between the group members would generate information on their individual experiences, their viewpoints, attitudes, beliefs, similarities, and differences. The researcher would observe the discussion to identify a pattern of similarities and differences in opinion, as well as the extent of consensus and diversity amongst the group (Morgan, 2019). These observations would be used to inform

what audio-visual stimuli would be required to meet the aims of the study. Given that individuals may experience stimuli differently, several focus groups based on demographic variables (e.g., gender, age, nationality, culture) could be facilitated, to further inform what material should be used in the study.

In addition to the use of focus groups, the study would have benefitted from additional self-report measures, to control for factors that may have affected the participants experiencing of audio-visual stimuli. For example, given that a participant's mood and anxiety are likely to affect their perception of stimuli (Fisher et al., 2010; Gray et al., 2021), self-report measures could have been included to control for these variables within the analysis.

To improve the current study, additional demographic information should have been gathered, for example, on nationality, geographical location, and culture. This information could have been used to explore the results in each experimental group, by controlling for these variables when analysing pre and post scores of sadism and sensational interests. These analyses may have highlighted differences in the effects of excitation transfer for different populations, in either enhancing subjective evaluations of sensational interests or increasing sadistic cognitions.

As noted by Niles and Donovan (2018), selecting stimuli to elicit emotional responses in participants can be challenging, explaining that "selecting one set of stimuli that will be relevant for all subjects can be challenging because not every person responds the same way to a given stimulus" (p. 1). To address this difficulty, databases of stimuli (most commonly picture databases) have been developed and standardised, to allow researchers to choose specific stimuli that meet the needs of their research (Fernandes et al., 2019). Whilst there are some databases which contain standardised audio-visual stimuli, many have been

criticised for their low ecological validity, as stimuli have been created in laboratory or controlled conditions (Kossaifi et al., 2021). Although the current study attempted to overcome these difficulties by selecting its own audio-visual stimuli, as discussed, there were several limitations with the method employed.

Finally, whilst this study has provided insight on the relationship between sadism and sensational interests, due to the study's correlational design, the exact causal relationship cannot be inferred. Future longitudinal research is recommended to address this limitation.

4.4 Final Conclusions

The systematic review within this thesis highlighted that individuals with increased trait sadism are at risk of perpetrating a range of harmful and aggressive behaviour. The current study demonstrated the robust relationship between sadism and sensational interests, likely reflecting the vicarious facet of sadism. Overall, this highlights the continuum of the dark personality trait sadism; whilst some individuals may enjoy watching sensational content and not be at risk of harming others, other individuals may inflict a broad range of harm to satisfy their need for cruelty. It is therefore important to understand whether there are factors that increase sadistic traits or enable a shift from vicarious sadism to direct sadism.

A growing body of research has examined the relationship between sadism and violent video game play. Whilst most of this research has been correlational in its design (Greitemeyer, 2015; Gonzalez & Greitemeyer, 2018), a longitudinal study by Greitmeyer and Sagioglou (2017) reported a potential bidirectional relationship between sadism and violent video game play, where results supported a downward spiral model (Slater et al., 2003). This indicated that individuals with increased sadistic traits are more likely to prefer violent video games, and that their desire for cruelty is strengthened by more game play. The current study

highlights that future research should examine the bidirectional relationship between sadism and sensational interests. With technological advancements, increased accessibility of the internet, and social media, the ability to access material with sensational content has significantly increased, and therefore further research is warranted - particularly in individuals with elevated sadistic traits.

Using excitation transfer as a theoretical framework, this study examined factors that may increase sadistic traits and make antisocial cognitions more consciously available; as discussed, this requires further exploration using the proposed changes to the experimental design. Overall, this study highlights that further research is warranted regarding sadism and sensational interests; do sensational interests allow individuals with increased sadistic traits to satisfy their need for cruelty, or could exposure to such content could increase sadistic traits in those who are temperamentally inclined to this disposition?

Chapter Six

Discussion

1. Discussion

1.1 Thesis Aims and Chapter Overview

The aim of this thesis was to increase understanding of subclinical sadism. It evaluated the relationship between increased sadistic traits and aggression; studied factors (temperamental traits) that predispose an individual to developing sadistic traits; examined potential underlying mechanisms of sadism (emotional processing); considered what factors (excitation transfer) could increase sadistic traits; and explored lifestyle mechanisms that may contribute to everyday sadism (sensational interests).

Within this chapter, the key findings of the thesis will be integrated and discussed further, along with consideration of wider theoretical implications within dark personality research. The applicability of sadism research within the field of forensic psychology will also be discussed. Finally, the chapter will conclude by discussing study limitations and ethical considerations.

1.2 Theoretical Contributions: Integration and Discussion of Key Findings

The first aim of this thesis was to evaluate the links between subclinical sadism and aggression. To assess this, empirical studies examining this relationship were systematically reviewed. Synthesised evidence suggested sadism was consistently correlated with aggression (trait aggression; anger towards others; proactive aggression; reactive aggression) and a range of aggressive behaviours (aggressive humour; sadistic behavioural choice; desires for more severe hazing; criminal attitudes; violence; anti-social behaviour; radicalised behaviour; conflicts within intimate relationships; same sex aggression; intimate partner violence; sexual coercion; sexual aggression; completed rape). Increased sadistic traits were also associated with aggressive behaviour perpetrated online (cyberbullying; online trolling;

social media trolling; trolling and anti-social behaviour on dating applications; gender trolling; cyberstalking; intimate partner cyber-stalking; revenge porn proclivity).

Meta-analytic techniques quantitively synthesised the data and examined the association between sadism and aggression. A meta-analysis was conducted using 57 effect sizes from 48 studies with 22,179 participants, revealing a pooled correlation coefficient of .35, 95% CI [0.29, 0.40]. Meta-regression analyses were completed to examine potential moderator variables between sadism and aggressive behaviour. Results suggested that this relationship may be partially moderated by gender, indicating that males with increased sadistic traits are more likely to act aggressively.

The systematic review and meta-analysis within Chapter Three highlighted potential risks associated with increased sadistic traits. Results demonstrated that subclinical sadism may be important in understanding a range of aggressive, socially aversive, and antagonistic behaviours that occur in the general population. As stated by Lyons (2019) "most minor criminal acts are likely to go undetected and/or punished . . . understanding the personality correlates of criminal tendencies is important and can be useful in tackling the problem of hidden crime" (p. 73). In relation to more severe forms of aggression, results highlighted that trait sadism could be an important variable, in understanding the role of personality within a forensic context.

Following on from these findings, the aim of Chapter Four was to explore emotional processing of violent stimuli in individuals with pronounced sadistic traits. Reinforcement Sensitivity Theory (RST) underpinned this research as it generated the hypothesis that sadistic tendencies result from a dysfunction in the Behavioural Inhibition System (BIS) and Behavioural Activation System (BAS). Overall, results indicated individuals with increased

sadistic traits had higher levels of enjoyment and amusement when watching videos that depicted aggression, cruelty, and/or distressing interpersonal interactions. These findings supported preliminary evidence of an aberration in the emotional processing of individuals with pronounced sadistic traits.

To develop an understanding of this emotional responding, RST was used as a theoretical framework. Sadism, direct sadism, and vicarious sadism were significantly negatively correlated with the Behavioural Inhibition System (BIS). Using Gray's RST (1970; 1982; 1987), these results indicate individuals with increased sadistic traits, have reduced sensitivity to cues of punishment, and therefore present with low anxiety in response to aversive stimuli.

More recent versions of RST (Gray & McNaughton, 2000; McNaughton & Corr, 2004; McNaughton & Corr 2008; Corr & McNaughton, 2012) propose the BIS is activated when there is a conflict between competing goals (i.e., when there are environmental cues that signal both reward and threat). In these instances, the BIS must decide whether to engage in approach or avoidance behaviour. This conflict and associated process can result in increased arousal; increased attention and gathering of information (to inform decisions); anxiety and rumination (in deciding how to respond to possible a threat); and/or behavioural disengagement, which stops current behaviour (Corr, 2008; Cooper, 2021).

As noted, increased sadistic traits were significantly negatively correlated with the BIS. This indicates that due to an under-aroused BIS, the individual is more likely to approach threatening stimuli, the BIS not effectively risk assessing and inhibiting approach behaviour (Corr, 2008). This provides a consistent explanation with regards to trait sadism. Individuals with increased sadistic traits may not identify some threats in the environment – so tend to

approach stimuli that suggests risk rather than avoid it (e.g., approach stimuli indicative of suffering).

Results of the primary study also found increased sadistic traits negatively correlated with the Flight-Fight-Freeze System (FFFS). According to Gray and McNaughton's (2000) revised RST theory, this indicates that individuals with increased sadistic traits are less sensitive to experiencing fear and anxiety, in response to aversive and/or threatening stimuli. FFFS insensitivity means anxiety (an emotion) may not be activated when cautiously approaching a possible threat, and fear (an emotion) may not be activated when a severe threat is in close proximity. If these emotions are not triggered, then behavioural responses aimed at keeping the individual (or organism) safe, will not occur (i.e., fight, flight, freeze responses). This seems consistent with the characteristics of sadism, where environmental cues of aggression, violence, cruelty, or distressing interpersonal interactions, do not seem to trigger warning signs of threat or danger, risky situations being risky for all persons involved.

In line with the RST model of personality, it seems plausible differences in the BIS and FFFS motivation systems provoke different responses for individuals with increased sadistic traits. For example, in response to threatening environmental stimuli, the nervous system produces different levels of arousal (less arousal for individuals with increased sadistic traits); different emotions (reduced anxiety and fear for individuals with increased sadistic traits); and different behavioural approaches (reduced avoidance of threat).

Gray's original RST proposes that individuals with a hyperactive BAS will present with high levels of impulsivity, due to increased sensitivity to environmental cues of reward. Later revisions of Gray's RST, however, recognised that whilst the primary function of the BAS was to move individuals towards a reward (approach behaviour towards a reinforcer), there were

several subprocesses that needed to occur. Corr and Cooper (2016) suggest the BAS requires the following subprocesses: identification of the reinforcer, planning to get to the reinforcer, and actioning of the plan. In sum, BAS behaviour and emotion is multidimensional (Corr, 2008).

In the primary research study, Carver and White's (1994) BAS scales were used to measure the following sub-processes: BAS-Reward Responsiveness, BAS-Drive, and BAS-Fun-Seeking. Corr (2008) observed that high BAS sensitivity "should cause people to seek out new initiatives (reward responsiveness), to be persistent in pursuing incentives (drive), and to respond with positive feelings when incentives are attained (fun seeking)" (p. 20).

Results in the primary study found all measures of sadism significantly and positively correlated with BAS-Drive, indicating increased sadistic traits are associated with persistence in pursuing incentives and goal directed behaviour. Combined with a deficit in the BIS and FFFS, however, this means that such individuals may not alter their behaviour when environmental cues suggest the current behaviour is no longer adaptive (BIS is not activated to resolve conflict when environment cues are suggestive of both reward and threat) or appropriate (BIS not activated in response to cues of punishment; FFFS does not activate experience of negative emotions).

Considering the different facets of sadism, results found direct sadism significantly correlated with BAS-Fun-Seeking. According to Corr (2008), BAS-Fun-Seeking has similarities to impulsivity, as it is motivated by immediate reward, and does not involve planning or control of behaviour. Considering the triarchic model of psychopathy (Patrick et al., 2009), it is posited that direct sadism partially shares the construct of disinhibition with psychopathy, namely, an insistence on immediate gratification and propensity towards impulsivity (Sica et

al., 2021). Supporting this, direct sadism was correlated with BAS-Fun-Seeking, and also held the strongest correlation with psychopathy. In contrast, vicarious sadism was not significantly correlated with the BAS-Fun-Seeking. This suggests individuals with vicarious sadistic traits may present with goal-directed behaviour, but not act impulsively.

Overall, the findings presented in Chapter Four suggested increased sadistic traits are associated with a hypoactive BIS and a hyperactive BAS. Similar to how RST conceptualises antagonistic behaviour, increased sadistic traits appear to be associated with persistent goal-driven behaviour, impulsivity, reduced self-control, and an unawareness of threatening or dangerous situations. This may manifest in callous, impulsive, and risky behaviour, persons being undeterred by consequences and focused on immediate personal reward. Considering sadism's core characteristic – the enjoyment of another's suffering - goal directed behaviour may be focused on satisfying this intrinsic need for cruelty. The primary research study supported preliminary evidence that for individuals with increased sadistic traits, violent interactions generate amusement and enjoyment, and positive scenes generate negative emotions. If the BAS is activated in response to violence and cruelty, the BAS may help identify, plan, and move the individual towards similar scenarios which are equally reinforcing (elicit positive emotions). In other words, individuals with increased sadistic traits may be motivated to seek out violent scenes which are reinforcing (elicit positive emotions) and avoid positive/prosocial scenes which are not reinforcing (elicit negative emotions). For different individuals, the reinforcer might be gained via direct, verbal, or vicarious forms of sadism.

To extend the research presented in both Chapter Three and Chapter Four, the empirical study presented in Chapter Five examined what factors might increase sadistic traits and make antisocial cognitions more consciously available, in persons who are

temperamentally inclined to this disposition. To explore this, Excitation Transfer Theory (ETT; Zillmann, 1971) was used as a theoretical framework. It was hypothesised that increased emotional arousal would increase sadistic cognitions, as well as enhance subjective evaluations of sensational interests. Whilst initial examination of the results indicated that the effect of excitation transfer did not increase sadistic traits, these findings were considered in relation to the primary study.

In particular, it was observed that the audio-visual stimuli used to evoke varying emotional and physiological responses may not have had the desired effect for individuals with increased sadistic traits, for example, not being strong enough to elicit an effect. Based on results in the first study, that increased sadistic traits are associated with a deficit in the FFFS, this would mean insensitivity to threatening stimuli presented in the experimental condition. This would result in less emotional and/or physiological arousal being produced, which is required for excitation transfer to occur.

This notion could support results presented in the first study – that individuals with increased sadistic traits have a hypoactive FFFS and aberration in emotional processing. Overall, the influence of excitation transfer on sadistic cognitions cannot be dismissed, and further research is required. If further research is undertaken, changes in the methodology as advised in Chapter Five, should be considered to reliably assess excitation transfer effects.

The secondary research study presented in Chapter Five also examined how potential underlying mechanisms of sadism (presented in Chapter Four), related to higher level constructs. As such, the study examined the relationship between sadism and sensational interests. As hypothesised, correlational analyses revealed that sadism held the strongest correlation with sensational interests, over and above other dark personality and general

personality traits. These results supported findings in the first empirical study; where sadism was positively correlated with, experiencing positive emotions in response to watching violent[50] stimuli, and experiencing negative emotions in response to watching positive[51] stimuli. That is, the stimuli that elicited positive emotions for individuals with increased sadistic traits, could be construed as 'sensational' in content.

Both empirical studies provided preliminary evidence that individuals with increased sadistic traits enjoy sensational content, and that a lot of sensational content is socially acceptable and appropriate (i.e., popular entertainment discussed in Chapter Five). It remains of concern that some individuals with elevated sadistic traits may seek out violent situations or inflict distress and cruelty (as proposed by RST in relation to a hyperactive BAS approaching reinforcers and not being deterred by a hypoactive BIS/FFFS; see the systematic review in Chapter Three). It is proposed that the latter scenario is more strongly associated with direct sadism, whereas the former is associated with vicarious sadism.

Chapter Two examined the Varieties of Sadistic Tendencies (VAST) assessment, a measure used to examine trait-like proclivity towards sadistic behaviour. The VAST was used within both empirical studies to measure direct and vicarious sadism, so it was important that its psychometric properties were evaluated. A systematic search found the VAST had been used in twenty-three empirical studies and had been administered to over ten thousand individuals. The VAST demonstrated good construct validity, evidenced by good concurrent and predictive validity, as well as good reliability, which remained when translating and

[50] Violent Stimuli: Audio-visual stimuli that depicted aggression, cruelty and/or distressing interpersonal interactions

[51] Positive Stimuli: Audio-visual stimuli that depicted positive scenes – images that represented people in interactions that are characterised by pleasantness and satisfaction such as hugging or dancing or engaging in prosocial behaviours

adapting the measure. This psychometric critique was important, as it contributed to the validity and reliability of the research presented within this thesis.

1.3 Contributions to wider Dark Personality Research

1.3.1 The 'Dark Core' of Personality

Does sadism share the same 'dark core' with Dark Triad traits? This thesis incorporated a six-factor model of personality (HEXACO; Ashton & Lee, 2009) within analyses, results of which can be used to contribute to this debate. Previous research has noted that the HEXACO model is the most theoretically parsimonious model in identifying the core of the Dark Triad, as well as understanding behaviour that causes harm to others (Book et al., 2015). Findings have indicated that the Honesty-Humility domain, characterised by a lack of empathy and concern for others, accounts for the most variance amongst the Dark Triad (Book et al., 2015).

Following on from these findings, Book et al. (2016) aimed to examine if the HEXACO accounted for the dark core once sadism was introduced. Results found that low honesty-humility, low emotionality, low agreeableness, and low conscientiousness was the common core amongst the Dark Tetrad. Results within Chapter Five support Book et al.'s (2016) findings, as sadism was negatively correlated with[52] low honesty-humility, low emotionality, low agreeableness, low conscientiousness, and low extraversion. Book et al.'s (2016) study found that whilst sadism and psychopathy held similar relationships with facets of the HEXACO, results indicated that low emotionality (rather than honesty-humility) was the strongest predictor of sadism. Book et al. (2016) noted that this finding was consistent with

[52] Please note that the HEXACO domains are presented in line with the strength of the correlation (i.e., honesty-humility held the strongest correlation and low extraversion the weakest).

the literature “as sadism is conceptually related to the ability to not worry about the pain and suffering of others” (p. 272).

Within Chapter Five, a hierarchical multiple regression predicting sadism from sensational interests, personality variables, and aggression was completed. Interestingly, a lack of emotionality was the second strongest predictor of sadism, the strongest being physical aggression. According to the HEXACO scale description, individuals with low scores on the emotionality scale “are not deterred by the prospect of physical harm, feel little worry even in stressful situations, have little need to share their concerns with others, and feel emotionally detached from others” (Lee & Ashton, 2009, ‘Scale Descriptions).

Within the context of this thesis, this was a particularly interesting finding. As discussed, results indicated that increased sadistic traits were associated with deficits in the FFFS and BIS. These deficits are partially captured in the emotionality scale descriptor – “not deterred by the prospect of physical harm [and] feel little worry even in stressful situations”. That is, reduced FFFS sensitivity implies a lack of fear and anxiety in response to threatening stimuli; and reduced BIS sensitivity impacts the ability to make appropriate threat-based decisions. Overall, the RST of personality sheds light on why someone with increased sadistic traits may present as low on the emotionality scale within established models of personality.

Could temperamental predispositions be a shared Dark Core? This thesis contributes to the literature by examining sadism within RST framework. Results suggest that like psychopathy and narcissism (Włodarska et al. 2019), sadism could be considered a high-approach low-avoidance temperamental trait. Extending research in this area, the Structural Equation Model presented in Chapter Four indicates that in particular, a deficit in the BIS is characteristic of dark personality traits.

Are empathy deficits a shared Dark Core? Within the introduction chapter, it was discussed that the 'core' of the Dark Triad could be captured by a combination of callousness (lack of empathy) and interpersonal manipulation, low agreeableness[53], and low honesty-humility. This thesis offers alternative evidence that aberrations in sadism's emotional processing could account for lack of empathy (callousness), as the findings suggest a deficit in emotional empathy through the inability to respond appropriately to other's suffering: as demonstrated, increased sadism was associated with positive emotional responses to violent stimuli. To improve this research, it is recommended that a multidimensional measure of empathy is included within future studies.

Are aberrations in emotional processing a shared Dark Core? This thesis has contributed to the research base by examining the emotional processing of all dark traits. Results presented in Chapter Four showed a direct path from the Dark Tetrad to the latent 'emotional processing' variable. This suggests that pronounced dark personality traits could predict how an individual processes violent and positive stimuli . This thesis provides preliminary evidence that aberrations in emotional processing may underlie dark personality traits. It is posited that this might be a key factor underpinning callousness and lack of empathy amongst the dark traits.

1.3.2 The 'Dark Tetrad' of Personality

Is sadism a distinct construct within the dark personality cluster? In considering this question, it is important to hold in mind that it is the hedonic value of being cruel to others that defines

[53] Whilst previous literature has referred to agreeableness within the FFM of Personality. It is noted that increased sadism was associated with low agreeableness using the HEXACO model.

sadism and distinguishes it from other dark traits. By considering the empirical findings presented within this thesis, this question will be answered in relation to emotional processing, RST, and sensational interests.

With regards to emotional processing, results within Chapter Four identified that all dark traits (sadism, psychopathy, narcissism, Machiavellianism) experienced positive emotion in response to violent stimuli. Correlational analysis, however, demonstrated that the emotional responses of 'enjoyment' and 'amusement' in response to violent stimuli, were most strongly associated with sadism. This provides support that whilst sadism is an overlapping construct, it is distinct in its enjoyment and amusement of another's suffering.

Using RST as a theoretical framework, results suggested that like psychopathy and narcissism, sadism could be understood as a high-approach (hyperactive BAS) and low-avoidance (hypoactive BIS) temperamental trait. It is important, however, to consider conceptual differences between dark traits when interpreting these results. Whilst both sadism and psychopathy might overlap by being persistent in pursuing incentives (BAS-Drive) and responding with positive feelings when incentives are attained (BAS-Fun-Seeking), their reinforcers must be considered. For example, whilst psychopathy might be motivated and reinforced by extrinsic rewards, sadism is more likely be motivated and reinforced by another's suffering.

In relation to sensational interests, whilst all dark traits were associated with the militarism scale (inquisitiveness for violence), only sadism and psychopathy were significantly correlated with the violent occultism scale (unpleasant concepts often associated with death or violence). This indicates that each dark trait relates differently to sensational interests, supporting the view that each dark trait adds a unique element to the dark personality cluster.

With regards to sadism, it could be concluded that it held the strongest relationship with sensational interests (or content) because encompasses the suffering of others through violence and the macabre.

1.3.3 Sadism: The 'Dark Continuum'

Findings within this thesis have demonstrated the relationship between sadism and a range of outcomes, from a wide range of violent, antagonistic, and socially aversive behaviour, to interests prevalent within popular entertainment. Overall, the work presented within this thesis supports the notion that sadism is a dimensional construct, existing on a "continuum of interest, ranging from relatively benign sadistic attitudes to more pathological behavioural expressions" (O'Meara et al., 2011, p. 523). Similarly, it supports Paulhus and Jones' (2015) and Buckels' (2018) empirical work which has broadened the conceptualisation of sadism by delineating the following subtypes: physical sadism, verbal sadism, and vicarious sadism.

1.4 Practical Implications within the field of Forensic Psychology

1.4.1 Future Research Directions

Whilst interpersonal aggression is a complex phenomenon explained by several theoretical models, the systematic review within this thesis demonstrated that subclinical sadism possibly plays a role in the perpetration of aggressive and interpersonally harmful behaviour. Further research is required to develop a comprehensive understanding of subclinical sadism. This research is imperative, as it could inform the development of strategies and interventions aimed at reducing harm to individuals, as well as inform treatment interventions to reduce the risk of offending behaviour. One ongoing debate is whether dark personality traits should be reduced to a fundamental personality trait, or perhaps studied as one single construct? The results of this thesis would suggest that the Dark Tetrad provides an important

personality paradigm for understanding antagonistic behaviour, one which could help facilitate discussion, research, and inform interventions focused on reducing risk.

1.4.2 Interventions to reduce harm towards adults

Trait sadism helps explain common interpersonally harmful behaviours (e.g., bullying, trolling, cyberbullying, anti-social behaviour). Further research could enable the development of effective organisational and individual intervention strategies to reduce these behaviours across a variety of settings, for example, universities, and workplaces. Furthermore, screening processes could be developed and employed in organisations and institutions, to identify individuals at risk of engaging in such behaviour in order to provide interventions to reduce risk.

This thesis highlighted that pronounced sadistic traits were associated with several different types of aggressive and violent behaviour; the potential influence of this personality variable on offending behaviour should be considered. These findings could be used to inform the development of treatment and interventions focused on reducing offending - such interventions may need to consider the core characteristic of sadism, as well as the type of aggressive behaviour being considered. For example, an intervention addressing intimate partner violence, would likely be different to an intervention addressing trolling behaviour.

The thesis synthesised existing evidence between sadism and aggressive behaviour. In doing so, it also highlighted the importance of undertaking further research regarding other types of aggression that were not included in the systematic review (i.e., because there were no available empirical studies at the time). For example, the relationship between sadism and institutional violence and/or abuse could be examined. If a predictive relationship was found, screening procedures could be developed and applied when individuals apply for positions of

authority (e.g., police force, prison staff) or for positions with vulnerable populations (e.g., healthcare workers, nursing staff, teachers) to reduce institutional violence and abuse. As sadism's core characteristic is the enjoyment of another's suffering, vulnerable populations and/or populations with reduced control over the environment, could be at risk of humiliation, harm, cruelty, and violence.

The rapid development of technology has resulted in new social issues and has provided a new platform for harmful behaviour against children (Finkelhor et al., 2021), young people (Machimbarrena et al., 2018), and adults (Ferguson, 2021). It is noteworthy that the systematic review found a stronger relationship between sadism and the perpetration of aggressive behaviour online, indicating that anonymity could unleash the darker side of personality. Regarding the evolving online world, policy makers and moderators of social networking sites/online applications should consider the results and implications of this research. Future research needs to understand further the links between sadism and online behaviour, in order to develop strategies to reduce interpersonally harmful behaviour and to mitigate online risks.

1.4.2 Interventions to reduce harm between children and young people

As noted, Chabrol et al.'s (2009) study contributed a significant advancement in dark personality research, highlighting that sadistic traits exist within non-clinical samples. Due to exclusion criteria, however, Chabrol et al.'s (2009) study, and other studies with non-adult samples were not included in the systematic review. The results of these studies will be considered briefly within this section as it is important that this population is not overlooked.

Overall, there were five empirical studies identified which used samples between 14-21 years old (some studies included a mixed sample with adults and non-adult participants).

Chabrol at al.'s (2009) study found sadistic traits predicted delinquent behaviours in males under 18 years of age. Following this study, Chabrol et al. (2015) found a dark tetrad cluster (15% of the sample) characterized by antisocial behaviours and suicidal ideations. Van Geel et al. (2017) examined the relationship between sadism and both traditional bullying and cyberbullying within a large sample (*n* =1568). All dark tetrad traits were significantly positively correlated with traditional bullying and cyberbullying. Psychopathy had the strongest association with traditional bullying, and sadism the strongest relationship with cyberbullying. Examining aggressive behaviours perpetrated online, Shahnawaz et al. (2019) found that sadism held a direct relationship with cyber aggression. Velimirović et al. (2018) found that sadism was negatively correlated with empathy, and positively correlated with anti-social behaviour.

These results demonstrate trait sadism exists in young people, and that increased sadism scores are associated with bullying (traditional and online) and antisocial behaviour. Dark traits are not given to some young people on their 18th birthday. Whilst for some, school can be a positive life experience where relationships are developed and knowledge is learnt, for others, attending school can result in being the victim of cruel and aggressive behaviour inflicted by peers. The latter can result in a range of adverse consequences, from the development of mental health difficulties to suicide attempts (Pfattheicher et al. 2021). Whilst there are only a small number of empirical studies examining trait sadism in samples of young people, this research indicates that sadistic behaviour exists within the school setting. Furthermore, sadism was associated with cyberbullying, a method that makes bullying even more pernicious and pervasive – now cruelty can be perpetrated both in-person and online.

Overall, further research is warranted in order to develop management strategies to prevent or reduce perpetration of cruel behaviour between young people. Screening processes and treatment interventions, for example, could be developed to reduce risk of bullying within the school setting, or bullying via social media and other online platforms. This research could prove invaluable in addressing cruel behaviour perpetrated within such settings. It is also recommended that future research should aim to adapt and validate measures of sadism for young people.

Chabrol et al.'s (2015) study also finds dark personality traits associated with suicidal ideation – this may indicate that dark temperament, adverse childhood experiences and traumatic experiences could predispose an individual to developing increased sadistic traits. Whilst this is speculative, future research should examine the relationship between trauma and increased sadistic traits, as it would be important in terms of developing trauma-informed intervention strategies to support individuals with increased sadistic traits as well as reduce risk of harm to others. Whilst the systematic review focused on the relationship between sadism and aggression, a future research direction may be to examine sadism and self-harming or suicidal behaviour.

1.5 Limitations and Ethical Considerations

1.5.1 Limitations

Throughout this thesis, the limitations of each chapter have been addressed. However, the key limitations are outlined as follows:

- *Cross-Sectional Research:* The primary empirical study presented in Chapter Four utilised a cross-sectional design. This is limiting because the direction of relationships between variables cannot be identified. This is also a limitation of the secondary empirical study

presented in Chapter Five – whilst the study provided insight on the relationship between sadism and sensational interests, the exact causal relationship could not be inferred. Longitudinal research would be particularly fruitful in providing information regarding the temporal order of trait sadism, emotional processing, and sensational interests. This would be able to answer a key question of whether sensational interests reinforce and escalate sadistic traits.

- *Online Research:* Due to the study being undertaken via an online platform, this meant that there was a lack of experimenter oversight. This means that it was not possible to know whether participants strictly adhered to the instructions provided or whether other environmental factors impacted engagement. Whilst this limitation was addressed through analysis of missing data, it is recognised that the study would have benefitted from including reading comprehension checks.
- *Participant Fatigue:* The research within this thesis produced a lengthy online study (due to high numbers of questionnaire measures and the use of audio-visual stimuli). It is acknowledged that this may have increased the risk of participant fatigue and increased the risk of inaccurate responding.
- *Experimental Methodology:* There were some limitations in the methodology used within the experimental study presented in Chapter Five. It was recognised that a manipulation check and provocation condition were not employed, which limits interpretation of the results presented.
- There were limitations with regards to how the audio-visual stimuli was chosen within the empirical research. The stimuli for the empirical research were chosen by the researcher. There are limitations to this process because it was informed by the researcher's

subjective opinion. It is recommended that future studies address this limitation by using focus groups to derive the audio-visual material and descriptive terms.

- *Social Desirability Bias:* Individuals completing the study may be less likely to disclose socially undesirable aspects of their personality. Whilst anonymity can protect against this limitation, a blunted effect size could be consequential.
- *Dark Personality Research:* Previous researchers which have highlighted the difficulties in recruiting participants for dark personality research. For example, Cracker and March (2016), who studied trolling behaviour, reported that participants high in dark personality traits might purposely report false and misleading questions - i.e., troll the questionnaire. This may result in inaccurate information.
- *The 'Perils of Partialling':* Within this thesis, multivariate approaches have been used to understand sadisms incremental validity, over and above overlap with other similar variables (e.g., Dark Triad traits). For example, in Chapter Five multiple regression analyses were completed in Chapter Five and Structural Equation Modelling was used in Chapter Four. It is important to highlight that this approach has been criticised (Lynam et al., 2006; Sleep et al., 2017; Vize et al. 2017) because it "forces readers to interpret revisualized variables, which are not comparable to the raw variables, as the variance associated with covariates has been removed (i.e., the perils of partialling)" (Kowalski et al., 2021, p.6). On the other hand, some researchers still recommend the use multivariate analysis, explaining that it as an important method in personality research because it provides a useful method to examine unique variance associated with each variable (Buckels, 2018). Not all behaviours and constructs can be directly observed in psychology, and this is particularly the case for dark behaviours, so they are inferred by patterns of co-occurring associations. Sleep et al. (2017) recommends one address any problems with multivariate

analysis by transparency, so bivariate correlations (and no partial correlations) have been presented within both research studies. Additionally, as also advocated by Sleep et al. (2017), key theory regarding each dark personality trait has been provided within the thesis.

1.5.2 Ethical Considerations

When completing research, it is vital that all ethical considerations pertinent to the research are considered. Prior to completing this research, an application was completed and approved by the University of Nottingham's Ethics Committee. When completing research, it is important that informed consent is gathered, that participants are provided with appropriate support, that any unnecessary distress is avoided, and contact details are provided should participants have any concerns. With regards to this study, participants were informed that they would be asked to watch audio-visual stimuli that may be distressing in nature (the audio-visual stimuli were nothing more than might be seen on an 18-rated film). Participants were therefore advised of the likely content and only asked to participate if they believe themselves sufficiently resilient to face such content. It was made clear that only adults aged 18 or over could participate in the study. Support information was provided following the study, as well as the researchers contact details, to ensure participants had access to support should any distress have been experienced.

There are some complexities when completing dark personality research. For example, it was noted by Paananen and Reichl (2019) that when recruiting from the online platform Reddit®, the researchers received aggressive responses/behaviour from some participants who 'doxed' one of the researchers. This indicates that individuals may have been

distressed when viewing and/or engaging with this type of research. As noted above, it is important that any participants who experience distress receive the right support.

1.6 Concluding Remarks

In order to develop interventions aimed at reducing the risk of harmful behaviour, further research on subclinical sadism is warranted. Firstly, research is required to understand the factors that predispose an individual to the development of pronounced sadistic traits. Secondly, it is important to develop understanding regarding the mechanisms that result in the experiencing of another's suffering as enjoyable. Finally, research should aim to understand if there are factors might increase sadistic traits; for example, are sensational interests cathartic, or do they reinforce and escalate sadistic tendencies.

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Appendices

Appendix 1.A - SSIS - (O'Meara et al. 2011)

Short Sadistic Impulse Scale
SSIS

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

[a] Reverse scored.

Appendix 1.B – Preliminary VAST (Paulhus et al. (in preparation) as cited in Buckels, 2012)

Varieties of Sadistic Tendencies Scale (VAST)

VAST Core sadism (Relationships)

1. I enjoy hurting people.
2. I would never purposely humiliate someone. (R)
3. I was purposely mean to some people in high school.
4. I enjoy hurting my partner during sex (or pretending to).
5. I dominate others using fear.
6. I enjoy seeing people suffer.
7. There's nothing as enjoyable as helping someone in need. (R)

VAST Vicarious Sadism (Media & Sports)

1. In video games, I like the realistic blood spurts.
2. I sometimes replay my favorite scenes from slasher films.
3. I take advantage of the free porn on the internet.
4. I sometimes look away in horror movies. (R)
5. I enjoy cage fighting (or MMA), where there is no escape.
6. In professional car-racing, it's the accidents that I enjoy most.

VAST Political Sadism

1. Our country should stay out of all wars. (R)
2. If lives were threatened, I would be in favor of torturing a terrorist.
3. We have to be careful about who we let immigrate into my country.
4. Politicians cannot win unless they use nasty tactics.
5. I feel bad seeing a homeless person. (R)

Appendix 1.C – Syntax used in Searches

OVID

Varieties of sadistic tendencies.mp. or VAST.mp.

AND

everyday sadism.mp. OR subclinical sadism.mp. OR soft sadism.mp. OR dark tetrad.mp.

(("Varieties of sadistic tendencies" or "VAST") and ("everyday sadism" or "subclinical sadism" or "soft sadism" or "dark tetrad")).af.

OVID: APA PsychInfo 1806 to 2022

26 results

OVID: Embase 1980 to 2022

Final Search: 0 results

OVID: MEDLINE 1996 to 2022

Final Search: 0 results

Scopus

({varieties of sadistic tendencies} OR {VAST})

AND

({everyday sadism} OR {subclinical sadism} OR {soft sadism} OR {dark tetrad})

Final Search: 3 results

Web of Science

TS=("Varieties of Sadistic Tendencies" OR "VAST")

AND

TS=("everyday sadism" OR "subclinical sadism" OR "soft sadism" OR "dark tetrad")

("Varieties of Sadistic Tendencies" OR "VAST") AND ("everyday sadism" OR "subclinical sadism" OR "soft sadism" OR "dark tetrad")

Final Search: 5 results

Google Scholar

("varieties of sadistic tendencies" OR "VAST")

AND

("everyday sadism" OR "subclinical sadism" OR "soft sadism" OR "dark tetrad")

Final Search: 484 results

Appendix 1.D – Data Extraction from excluded studies that used Preliminary VAST (Paulhus et al., in preparation as cited in Buckels, 2012) measure

Author(s)	Sample Demographics and Location	Measure and/or subscales used	Aim(s) and result(s) of the study	Reliability Information	Validity Information
Buckels (2012) Published version: Buckels et al. (2013)	Study 2: 136 students from the University of British Columbia.	Preliminary VAST (core, vicarious, and political sadism).	Study 2: "Study 2 followed Jones and Paulhus (2010) by examining the relationship between core sadism and aggression. Unlike Dark Triad aggression, sadistic aggression should be less context-dependent because the behavior is directly reinforcing. In some situations, only sadists should aggress" (p. 33). "Using a white noise aggression paradigm, we found that core sadists, vicarious sadists, psychopaths, narcissists, and those low in dispositional empathy and perspective-taking were especially likely to aggress against an innocent person when aggression was easy. Of the Dark Tetrad, however, only core sadists increased the intensity of their attack once they realized that the innocent person would not fight back; and they were even willing to work (i.e., expend time and energy) to hurt the innocent person" (p.48).	Study 2: Preliminary VAST: Core Sadism: α = .61 Substitutive sadism: α = .71 Political Sadism: α = .50"	"VAST core sadism scale is also strongly correlated with SSIS sadism, thus providing convergent validity evidence for the scale" (p.14). [$r(135) = .60$, $p < .001$]. "There was, however, evidence that the two scales functioned somewhat differently in men and women (see Appendix G): the correlation between the SSIS and VAST core sadism scales was only .36 among women (compared to .72 among men)" (p.35). Correlations with Core Sadism: Psych: .53 *** Mach: .49 *** Narc: .24 ** Correlations with Substitutive Sadism: Psych: .43 *** Mach: .32 *** Narc: .23 **

					Correlations with Political Sadism: Psych: .33 *** Mach: .44 *** Narc: .18 *
Međedović & Damjanović (2018)	211 individuals Serbia? M age: 29	VAST (preliminary measure Buckels, 2012) Core Sadism Scale (Direct)	Study 2: "The Triarchic personality model of psychopathy represents one of the most prominent operationalizations of psychopathy. According to this model, psychopathy is characterized by Meanness, Boldness and Disinhibition" (p.7). Study 2 "investigated the relations between new psychopathy scales, the Dark Tetrad traits, and substance use" (p.7). "Psychopathy and sadism were positively related to all Triarchic psychopathy measures" (p.17).	Core Sadism: α = .69	Correlation with Triarchic Psychopathy measures: Boldness: .15* Meanness: .46** Disinhibition: .34** Sadism and psychopathy: .55**
Mededovic´ and Petrovic´ (2015)	483-485 Participants M Age: 28.3	VAST (preliminary measure Buckels, 2012) Core Sadism Substitutive Sadism Political Sadism	"In the present study, we tested a hypothesis proposing that these four traits are expressions of one superordinate construct: The Dark Tetrad" (p.228). "Analysis has shown that Dark Tetrad traits can be located in the space of basic personality traits, especially on the negative pole of the Honesty-Humility, Agreeableness, Conscientiousness, and Emotionality dimensions. We conclude that sadism behaves in a similar manner as the other dark traits, but it cannot be reduced	Core Sadism: α =.70 Substitutive Sadism: α =.75 Political Sadism: α =.59	Correlations with callous affect: Core Sadism: 50** Substitutive Sadism: .51** Political Sadism: .26** Correlations with antisocial behaviour: Core Sadism: .22** Substitutive Sadism: .22** Political Sadism: .07

			to them. The results support the concept of ‘‘Dark Tetrad’’ (p.228).		
Tetreault et al. (2018)	342 Students. Sweden. UK. Aged 18-67. Mean A: 27.	Core VAST (relationships): Authors reported “The second sadism scale consisted of the seven core relationship sadism items on the VAST”	Examining the relationship between Intimate Partner Violence and the Dark Tetrad.	Core VAST: The reliability was very poor, excluding it from further analysis (α = .25).	No VAST data available for correlations with the SSIS. “While the SSIS reached a good reliability, the items from the VAST did not. Despite good results and reliability in North American samples (Buckels et al., 2013; Buckels et al., 2014), in a sample of 128 participants from Sweden (Tetreault & Hoff, in preparation), the VAST items also failed to reach useable reliability, raising the question of cultural measurement issues for subclinical sadism” (p. 16). “We were unable to attain a usable reliability level with the VAST sadism scale that has consistently produced reliable results predominantly in North American samples, indicating that there are potential cultural differences either in measuring subclinical sadism and/or the trait itself. This highlights the importance of further assessment of subclinical sadism with a more cross-cultural perspective and sensitivity” (p.19).

Appendix 1.E – Data Extraction Sheet for studies identified in the systematic search that met inclusion criteria and were included in the results.

Author(s)	Sample Demographics and Location	Measure and/or subscales used	Aim(s) and result(s) of the study	Reliability Information	Validity Information
Anderson & Marcus (2019)	Sample 1: 362 adults. US citizens. Aged 16 to 69. Sample 2: 694 undergraduate students. USA University. Aged 18 to 48.	Both direct and vicarious subscale used.	"This study explored associations between the meanness dimension of psychopathy and sadism by comparing a single-factor, two-factor, and bifactor model. Findings suggested that although people high in sadism are likely to be callous/unemotional, callous/unemotional people may not be sadistic."	Sample 1: Direct Sadism: α = 0.80 Vicarious Sadism: α = 0.77 Sample2: Direct Sadism: 0.75. Vicarious sadism: α = 0.81.	Bivariate Correlations with SSIS: Direct: .78** Vicarious: .41** SCorrelation between Direct and Vast: .45** "Correlations between the psychopathy scales and sadism scales ranged from 0.21 to 0.78 in Sample 1 and from 0.21 to 0.64 in Sample 2, suggesting that these are distinct but overlapping constructs" (p.194). Factor loadings for antagonism assessed. Included several variables: measures of psychopathy and callousness, SSIS, and VAST. Sample 1: Antagonism (latent) sig path to: SSIS: .65 VAST Direct: .52 VAST Vicarious: .52

					Sig path from sadism (latent) to: SSIS: .55 VAST Direct: .59 VAST Vicarious: .14 Sample 2: Antagonism (latent) sig path to: SSIS: .69 VAST Direct: .61 VAST Vicarious: .60 Sig path from sadism (latent) to: SSIS: .26 VAST Direct: .76 VAST Vicarious: .23
Berndsen et al. (2017)	Study 1: 213. 85% Australian. Mean age = 43. Study 2: 210 Romanian. 18 or older. Mean age = 34.	Both direct and vicarious subscale used. Study 2: Romanian translation of VAST measure used.	"The purpose of the current research is to explore how mode of identification (glorification versus attachment) results in either schadenfreude "with a bad conscience" (S-BC) about disadvantaged people, or prosocial emotional responses (sympathy and guilt) towards them through appraisals of entitlement, realistic threat, and blame" (p. 166). Findings: "We found in both the Australian and Romanian samples that each form of sadism was positively associated with S-BC and that the prosocial emotions of sympathy and guilt were negatively associated with S-BC thereby supporting the construct validity of S-BC" (p. 192).	Study 1: Direct Sadism: α = .88 Vicarious Sadism: α = .76 Study 2: Direct Sadism: α = .77 Vicarious Sadism: α = .73	Study 1: "Convergent validity would be established by the existence of positive correlations between: (a) S-BC and vicarious sadism, and, perhaps, (b) S-BC and direct sadism. Table 5 (see supplementary file) shows that the correlation between S-BC and vicarious sadism was significant and of large size, $r = .51$, $p < .001$, and so was the correlation between S-BC and direct sadism, $r = .57$, $p < .001$" (p.178). Study 2: "Moreover, Study 1 showed that the glorification instructions also

					heightened self-enhancement, vicarious, and direct sadism; constructs that are related to S-BC. In the current study, we found the opposite pattern; ratings of self-enhancement, vicarious, and direct sadism were the lowest in the attachment condition whereas the glorification and control condition did not differ in the ratings of self-enhancement and each type of sadism" (p.186).
Blötner et al. (2021)	594. Mean Age:28. Adults recruited via social media.	German translation of VAST (total) used.	"The present study examined the nomological network of the Short Dark Tetrad scale (SD4)" (p.1). Findings "suggests that the SD4 can be validly interpreted and used for the assessment of narcissism, psychopathy, Machiavellianism, and sadism" (p.1).	Total VAST: α = .78 SD4 (Sadism): α = .69	"When the TOSTs were significant (both psTOST < .05) and the difference test was not significant (pdiff .05), we concluded equivalence between the expected and observed coefficients" (p.5). Total VAST correlation with SD4 Sadism: Observed: 0.65, pdiff =0.02, Ptost <.001.
Buckels et al. (2014)	Study 1: 418. United States. Mean Age: 29.	Both direct and vicarious subscale used.	The aim of this research was to examine comprehensive personality profiles of Internet trolls. Findings indicated that "of all personality measures, sadism showed the most robust associations with trolling and, importantly, the relationship was specific to trolling behavior. Enjoyment of other online	Study 1: Direct Sadism: α = .61 Vicarious Sadism: α = .69	Study 1: The VAST direct sadism subscale is conceptually equivalent to the SSIS, and the scores were highly correlated in this sample (r = .73, p < .001).

			activities, such as chatting and debating, was unrelated to sadism. Thus, cyber-trolling appears to be an Internet manifestation of everyday sadism" (p.97).		
Chester et al. (2019)	Study 8: 207 undergraduates.	Nb. No specific results in relation to the VAST as it used the SSIS and VAST Direct subscale to develop a Sadism Index as the study was focused on direct and physical forms of sadistic aggression.	Study 8 examined the "role of victim suffering in sadistic aggression by manipulating how much participants perceived that the victim of their aggression was truly harmed by the aggressive act and then measuring the extent to which they experienced pleasure in response to the suffering" (p.35).	Study 8: Sadism Index (SSIS and VAST Direct Subscale) α = .95	Validity: Direct Subscale combined with SSIS and created high reliability/internal consistency.
Chung & Sheridan (2021)	269 Malaysian Participants. Aged 18 to 71. M Age: 28. 167 English Participants. Aged 18 to 66. M Age: 23	VAST Total.	"This study expanded on preliminary work by Chung and Sheridan (2020) by exploring how participants' personality variables, using the HEXACO model and the Dark Tetrad, influence perceptions of stalking" (p. 2). Findings: "Correlational analyses revealed narcissism, psychopathy, and sadism scores to be negatively associated with perceived severity. All Dark Tetrad traits were positively associated with perceived victim responsibility" (p.1).	α = .85	Correlations with VAST Total: Perceived severity of stalking: − 0.16* Perceived victim responsibility: 0.23* SD3 Psych: 0.69* SD3 Mach: 0.38* SD3 Narc: 0.21* HEXACO: Honesty-humility: − 0.44* Emotionality: -0.32*

					Extraversion: -0.11 Agreeableness: -0.17* Conscientiousness: -0.33* Openness: 0.01
Costello et al. (2010)	Study 1: 401 MTurk community members. United States. M Age:36	Both direct and vicarious subscale used.	"Investigated the nature and correlates of sexual objectification in two mixed-gender community samples, with the overarching aim of examining the extent to which psychopathic personality and a broad swath of allied individual difference variables, including narcissism, impulsivity, empathy, sadism, and general personality bear implications for Interpersonal Sexual Objectification Scale – Perpetrator Version (ISOS-P)" (p.8). "Dark personality traits were strongly associated with sexual objectification; sadism, low affective empathy, narcissism, disinhibition, and meanness emerged as the largest correlates" (p.1).	Study 1: Direct Sadism: α = 0.82 Vicarious Sadism: α = 0.78	Correlations of ISOS-P Attitudes: Direct Sadism: .58*** Vicarious Sadism: -.21*** Correlations of ISOS-P Behaviours: Direct Sadism: .65*** Vicarious Sadism: -.10*
Dinić et al. (2020)	443 participants from the general population in Serbia. Aged 19 to 40 M Age: 28	Serbian adaption of VAST	"The aim of this study was to evaluate psychometric properties of three sadism scales: Short Sadistic Impulse Scale (SSIS), Varieties of Sadistic Tendencies (VAST, which measures direct and vicarious sadism), and Assessment of Sadistic Personality (ASP)" (p.1). "The results of the joined CFA on sadism and the Dark Triad items clearly indicated that sadism formed a factor separate from	Direct Sadism: α = 0.67 Vicarious Sadism: α = 0.74	"In the case of VAST, the two-factor model was significantly better than the one-factor model ($\Delta\chi2(1) = 7.22$, $p < .001$) and it had good fit indices, although the SRMR was slightly above the recommended criteria" (p.9). Direct Sadism and Vicarious Sadism Correlation: .30***

			the Dark Triad traits, and that two forms of sadism (direct or "core" and vicarious sadism) could be distinguished" (p.12).		VAST Direct correlations with other Sadism measures: SSIS: .51*** ASP: .56*** VAST Vicarious correlations with other Sadism measures: SSIS: .43*** ASP: .55*** VAST Direct correlations with SD3: Psyc: .30*** Narc: .16*** Mach: .15*** VAST Vicarious correlations with SD3: Psyc: .33*** Narc: .11 Mach: .25*** VAST Direct correlations with HEXACO: Honesty-humility: -.28*** Emotionality: -.06 Extraversion: . 05 Agreeableness: -.08 Conscientiousness: -.18*** Openness: -.10 VAST Vicarious correlations with HEXACO: Honesty-humility: -.22***

					Emotionality: -.03 Extraversion: -.07 Agreeableness: -.06 Conscientiousness: -.15*** Openness: -.01 VAST Direct correlations with: Anger: .18*** Vengefulness: .31*** Dominance: .27*** Hostility: .12 Positive Attitudes towards Dangerous groups: .27*** VAST Vicarious correlations with: Anger: .24*** Vengefulness: .27*** Dominance: .26*** Hostility: .21*** Positive Attitudes towards Dangerous groups: .08
Dinić et al. (2019)	624 adults Serbia Aged 18 to 76 M Age: 33	Serbian adaption. VAST Total Direct Sadism Vicarious Sadism	"The aim of this research was to determine whether the person-centered or the variable-centered approach is better at describing the covariance between the Dark Triad and Dark Tetrad traits in the community sample" (p. 17). "High dark traits profile based on the combination with the SSIS sadism scale was characterized by both higher aggression	VAST Total: α = .80 Direct Sadism: α = .64 Vicarious Sadism: α = .77	Correlations with SSIS: VAST Total: .54*** Direct Sadism: .43*** Vicarious Sadism: .48***

			and alcohol use, while the same profile based on the combination with the VAST sadism measure was characterized only by higher aggression" (p.17)		
Duan et al. (2021)	Study 1: 1183 undergraduates China. Aged 17–22 years. M Age: 18	Chinese adaption. VAST Total. Direct Sadism Vicarious Sadism	"Study 1: exploring the relationship between sadistic/ impulsive traits and aggression using scales" (p.3) Correlational analyses found "that sadism is positively correlated with proactive and reactive aggression" (p.3).	Study 1: VAST Total: α = .86 Direct Sadism: α = .82 Vicarious Sadism: α = .71	Duan et al. (2021) reported that the VAST has been demonstrated to have high reliability and validity in Chinese individuals (Yang, Yin, Cheng, Liu, & Zhang, 2018).
March (2019)	733 Adults recruited via online social media. Global locations (North-West Europe, Oceania, USA, South-East Asia, South-East Europe, and Other) Aged 18 - 74 years. M Age: 24	Direct Sadism Vicarious Sadism	"The current study attempted to, for the first time, include all previous significant predictors of Internet trolling in one model; specifically the utility of gender, primary psychopathy, sadism (direct and vicarious), affective empathy, cognitive empathy, negative social potency in predicting Internet trolling" (p.133). "Results indicated that primary psychopathy, direct sadism, vicarious sadism, and negative social potency were all significant positive predictors of Internet trolling" (p.133).	Direct Sadism: α = .65 Vicarious Sadism: α = .70 A potential limitation is the lower reliability coefficients of the direct sadism subscale of the VAST. The VAST has previously been criticised for its potential limiting description of sadism (see Plouffe, Saklofske, & Smith, 2017).	Correlation between direct and vicarious sadism: 0.43*** Correlation with primary psychopathy: Direct: 0.54*** Vicarious: 0.33*** Correlation with internet trolling: Direct: 0.50*** Vicarious: 0.39***

Masui (2019)	513 adults who were registered with research company. Japanese. Aged 20-69 years. M Age: 47	Japanese version of the VAST (VAST-J; Shimotsukasa & Oshio, 2016). VAST Total	"The present study investigated the influence of Dark Tetrad (DT) personality traits and loneliness on internet trolling behavior" (p.1). "Results revealed that each of the Dark Triad personality traits and loneliness were positive predictors of internet trolling" (p.1).	VAST Total: α = .79	Correlation with trolling: VAST Total: .39*** Correlation with loneliness: VAST Total: .16**
Međedović (2017)	Study 1: 116 Freshmen Psychology Students Serbia.	Direct Sadism Subscale	Study 1: "The aim of the present research is to further describe the emotional aberrations related to sadism, and especially the emotional processes which discriminate sadism from psychopathy" (p.274). "Results from Study 1 support the general view of emotional functioning in sadism: it is based on increased levels of positive emotions while images depicting violent interactions are being presented" (p.276).	VAST Total: α = .69	Correlation with Positive emotions on violent pictures: .56** Correlation with Negative emotions on peaceful pictures: .42** Sadism and psychopathy: .57**
Međedović & Kovačević (2020) Hand-searched	246 Male Participants. Serbia. M Age: 27.	Direct Sadism	"In the present research, we examined the Dark Tetrad traits (narcissism, Machiavellianism, psychopathy, and sadism) and criminal attitudes (Violence, Entitlement, Antisocial intent, and Associates) in a group of active football fans (N= 128) and a control group (N= 118)" (p.9). "Dark Tetrad traits contributed to the prediction as well: sadism was the most important predictor of criminal attitudes,		Direct Sadism measure were adapted and validated for their application in the Serbian-speaking areas(Dinić,Petrović,&Jonason,2018; Međedović& Petrović,2015). Direct Sadism, correlations with: Violence: 46** Antisocial Intent: .39** Criminal Attitudes: 45**

			followed by psychopathy, and Machiavellianism, while narcissism had the fewest associations with the criteria measures. Finally, sadism was the only dark trait which significantly mediated the link between club supporting and criminal attitudes" (p.9).		Dirty Dozen Questionnaire (Jonason & Webster, 2010). Direct Sadism, correlations with: Psychopathy: .33** Mach: .41** Narc: .23**
Međedovic & Petrović (2016)	402 participants from online survey M Age: 28	VAST Total Direct Sadism Vicarious Sadism	"The aim of this study was to explore the relations of Moral foundations with general (HEXACO personality model) and "dark" personality traits (psychopathy, Machiavellianism, narcissism, and sadism)" (p.186). Results confirmed the existence of fundamental differences between moral foundations. Sadism predicts Ingroup judgments (Moral Foundations Questionnaire (MFQ; Graham, et al., 2011)).	VAST Total: α .78	Correlations unavailable. The results of this research have shown low incremental validity of the Dark Tetrad traits, which suggested that general personality traits have enough possibilities to explain variance of the moral foundations. But, it must be noticed that Dark Tetrad traits also showed interpretable and replicable associations with the moral foundations.
Nickisch et al. (2020)	438 individuals from two subsamples (psychology students from German Universities) and an online sample. Germany. Aged 14-63 years.	German Translated VAST. Direct Sadism. Vicarious Sadism.	"The present study investigated the relation between the Dark Tetrad and avoidant and anxious attachment styles" (p.1). Results revealed positive associations between Machiavellianism, psychopathy, sadism, and both attachment styles, whereas grandiose narcissism was found to be negatively correlated with anxious attachment. Sadism only had specific overlap with avoidant and psychopathy with anxious attachment. Findings point	VAST Total: α = .82 Direct Sadism: α = .72 Vicarious Sadism: α = .77	Sadism, correlations with: Psychopathy: 0.57** Mach: 0.40** Narc: 0.32** Correlations with attachment anxiety: 0.19** Correlations with attachment avoidance: 0.28** "The current findings support the validity of scores for all four Dark

			out that grandiose narcissism diverges from the other traits in terms of its relations with attachment styles (p. 1).		Triad constructs and highlight the usefulness of jointly looking at the Dark Triad and attachment" (p.5).
Pfattheicher & Schindler (2015)	99 University of Ulm students. Germany. M Age: 21	Six items of the VAST. Authors noted "1 The full scale consists of seven items. We did not assess the item 'I enjoy hurting my partner during sex (or pretending to)' because of ethical reasons"	"In public goods situations, a specific destructive behaviour reliably emerges when individuals face the possibility of costly punishing others: antisocial punishment, that is, costly punishing cooperative individuals. So far, however, little is known about the individual differences and situational factors that are associated with the dark side of costly punishment" (p. 498). "Therefore, we expect that individuals who report a disposition for everyday sadism are particularly likely to engage in antisocial punishment when their self has been threatened (by thinking about one's own death). In a study (N= 99), we found empirical support for this assumption" (p. 498).	VAST (6-Item): α = .67	No correlations available.
Pfattheicher et al. (2017)	Study 1: 150 individuals (50 for each condition). Germany. The subject pool can be classified	Study 1: Six items of the VAST. Authors noted "1 The full scale consists of seven items.	"Building on the Social Heuristics Hypothesis and arguing that antisocial punishment reflects the basic characteristics of sadism, namely, aggressive behavior to dominate and to harm other individuals it is assumed that everyday sadists intuitively engage in antisocial punishment" (p.337).	Study 1: VAST (6-Item): α = .75 Study 2: VAST (6-Item): α = .68	No correlation matrix.

	to "protestant Europe" (Gächter et al. 2010). Study 2: 129 men. Germany. M Age: 22.	We did not assess the item 'I enjoy hurting my partner during sex (or pretending to)' because of ethical reasons"	"In sum, the present research suggests that sadistic tendencies executed intuitively play a crucial role regarding antisocial punishment in public goods situations" (p.337).		
Themelidis & Davies (2021)	323 adults recruited via social media, email, and university pool. Aged 18-69.	Total Vast	"This research examines the extent to which sadistic interest or tendencies can be influenced through a specifically developed and very brief mood induction procedure" (p.1). "Analysis showed that increased sadistic interest was reported by those in the experimental condition who had higher levels of baseline sadism. The findings indicate that a brief and simple procedure can be used to enhance pre-existing sadistic Interest" (p.1).	Total Vast: α = .79	No correlations reported to enable comparison with SSIS.
Thibault (2016)	Time 1: 416 adults. English Speaking. Aged 18-77. M Age: 42 Time 2: 212 adults from Time 1	Direct Sadism Vicarious Sadism Development of dark traits at work scale.	"The purpose of this study was to create and validate a workplace-specific measure of the Dark Tetrad (i.e., narcissism, Machiavellianism, psychopathy, and sadism)" (p.6). "Each scale trait was positively associated with, and predicted, measures of workplace deviance even above and beyond pre-established measures. These results	Time 1: Direct Sadism: α = .81 Vicarious Sadism: α = .81 Time 2: Direct Sadism: α = .81	Time 1: Construct and criterion-related validity of the scale assessed. All dark traits at work positively correlated. "The SD3 psychopathy scale is also highly correlated with the VAST direct sadism subscale indicating that the strong relationship between psychopathy and sadism exists in the established subscales as well" (p.28).

	completed Time 2. Aged 22-78 M Age: 43		support the use of a context specific personality measure for organizational research and have implications for developing new research on the Dark Tetrad in the workplace" (p.6).	Vicarious Sadism: α = .80	Direct Sadism, correlations with SD3: Psychopathy: .77*** Mach: .50*** Narc: .29*** Vicarious Sadism, correlations with SD3: Psychopathy: .61*** Mach: .42*** Narc: .34*** Correlation between direct and vicarious sadism: .61** Correlation with "Dark Tetrad at work" sadism subscale: Direct Sadism: .73*** Vicarious Sadism: .54*** Correlations with workplace bullying behaviour: Direct sadism: .67*** Vicarious sadism: .44*** Time 2: CFA: "The fit indices for the SD3 and VAST scales suggest that the model with the best fit is the 5-factor model (one for each of the Triad and two for sadism- direct and vicarious)" (p.47)

					Assessment of test-retest reliability: Correlations between the Dark Tetrad trait measures at Time 1 and Time 2 show that the Dark Tetrad at work (as well as the SD3 and the VAST) possesses test-retest reliability. Longitudinal uncorrected (Pearson's *r*) correlations (both possessed a longitudinal disattenuated correlation of 1.00): Direct Sadism: .71*** Vicarious Sadism: .80*** "the SD3 psychopathy scale is also highly correlated with the VAST direct sadism subscale indicating that the strong relationship between psychopathy and sadism exists in the established subscales as well. Based on the Pearson's r correlations, DTW sadism is more highly correlated with DTW psychopathy. However, based on the disattenuated correlations, DTW sadism is most strongly correlated with VAST direct sadism" (p.50).
Tucaković & Marković, (2021)	170 participants recruited via social media.	Direct Sadism	"The aim of this research was to examine the relationship between personality and visual aesthetic preferences" (p.448).	Direct Sadism: α = .55	Vicarious Sadism, correlations with SD3: Psychopathy: .65** Mach: .43**

	Aged 18-66 years. M Age: 29.09		"It was shown, based on looking at zero-order correlations that only narcissism positively correlates with the preference for paintings with violent motives" (p.448). No significant results for sadism.		Narc: .21** Correlation with preference for violent paintings: -.00. No other dark trait significant except for Narc .18**
Wyngaarden (2020)	161 students from Appalachian State University. Mean A: 19	Total VAST	"Mind perception serves as a basis for how people make judgments about the moral value of other beings. Perception of a greater capacity for experience (e.g., joy, suffering) in another being leads to greater attributions of value (i.e., greater wrongness of harming that being). Current research has primarily focused on the concept of "dehumanization," where reducing one's perception of mind in another being leads to reduced moral valuations of that being, opening the door to mistreatment. The present study investigates this mechanism in reverse, testing whether having a name serves to enhance perceived mindedness and increase moral value" (p.iv) "In general, participants higher in empathy offered more money to save the bug during the extermination task, whereas participants higher in sadistic tendencies offered less money. However, neither personality measure was significantly correlated with either measure of mindedness" (p.17).	Direct Sadism: α = .84 Vicarious Sadism: α = .79	Correlations with an amount of money to pay to save a 'bug' in an experimental design: Sadism: -.22** Correlations between empathy and sadism: -.46***

			Sadism predicted predict the amount of money offered to save the bug, β = -0.64, t(139) = -2.63, *p* = .01.		
Book et al. (2016) Hand Searched	490 undergraduate students M Age: 20	Total VAST	"The purpose of the current study was to determine whether the HEXACO model best accounts for the core of dark-personality traits with the addition of sadism" (p.269). "Loadings suggest that the core is represented by low Honesty-Humility, Emotionality, Agreeableness, and Conscientiousness, with Honesty-Humility having the largest impact. Individual regressions highlight potential conceptual differences between the dark personalities, though all were predicted by honesty-humility and agreeableness" (P.269).	No Cronbach's Alpha reported	Correlations with SD3: Psyc: .69*** Mach: .56*** Narc: .24*** Correlations with HEXACO: Honesty-humility: −.53*** Emotionality: −.52*** Extraversion: −.13** Agreeableness: −.32*** Conscientiousness: −.13** Openness: -32***

Appendix 1.F – CAST (Buckels, 2018)

1. Comprehensive Assessment of Sadistic Tendencies (CAST)

Physical sadism

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).

Verbal sadism

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. (R)

Vicarious Sadism

1. In video games, I like the realistic blood spurts.
2. I enjoy watching cage fighting (or MMA), where there is no escape.
3. I love to watch YouTube clips of people fighting.
4. I sometimes replay my favorite scenes from gory slasher films.
5. There's way too much violence in sports. (R)
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 1.G – ASP (Plouffe et al. 2017)

Assessment of Sadistic Personality (Plouffe et al., 2017)

1. I have made fun of people so that they know I am in control.
2. I never get tired of pushing people around.
3. I would hurt somebody if it meant that I would be in control.
4. When I mock someone, it is funny to see them get upset.
5. Being mean to others can be exciting.
6. I get pleasure from mocking people in front of their friends.
7. Watching people get into fights excites me.
8. I think about hurting people who irritate me.
9. I would not purposely hurt anybody, even if I didn't like them. (R)

Appendix 2.A - Syntax used in Final Searches

OVID

aggress*.mp. OR violen*.mp. OR ang*.mp. OR crim*.mp. OR antisocial.mp. OR behav*.mp.

AND

measur*.mp. OR assess*.mp. OR test*.mp. OR psychometric*.mp. OR implicit.mp. OR explicit.mp. OR paradigm.mp.

AND

everyday sadism.mp. OR subclinical sadism.mp. OR soft sadism.mp. OR dark tetrad.mp.

OVID: APA PsychInfo 1806 to 2020

Final Search: 28.06.2020 – 46 Results

OVID: Embase 1980 to 2020

Final Search: 28.06.2020 - 9 Results

OVID: MEDLINE 1946 to 2020

Final Search: 28.06.2020 - 8 results

Scopus

(aggress* OR violen* OR ang* OR crim* OR antisocial OR behav*)

AND

(measur* OR assess* OR test* OR psychometric* OR implicit OR explicit OR paradigm)

AND

({everyday sadism} OR {subclinical sadism} OR {soft sadism} OR {dark tetrad})

Final Search: 28.06.2020 - 36 Results

PubMed

(aggress* OR violen* OR anger OR crim* OR antisocial OR behave*)

AND

(measur* OR assess* OR test* OR psychometric* OR implicit OR explicit OR paradigm)

AND

(“everyday sadism” OR “subclinical sadism” OR “soft sadism” OR “dark tetrad”)

Final Search: 28.06.2020 – 9 Results

Web of Science

TS=(aggress* OR violen* OR ang* OR crim* OR antisocial OR behav*)

AND

TS=(measur* OR assess* OR test* OR psychometric* OR implicit OR explicit OR paradigm)

AND

TS=(“everyday sadism” OR “subclinical sadism” OR “soft sadism” OR “dark tetrad”)

Final Search: 28.06.2020 – 39 Results

NCJRS

Phrase Search of Everyday Sadism, Subclinical Sadism, Soft Sadism and Dark Tetrad

Final Search: 28.06.2020 – 0 Results

Google Scholar

(~aggression OR ~violent OR ~anger OR ~crime OR ~antisocial OR ~behavior OR ~behaviour)

AND

(measure OR assessment OR test OR psychometric OR implicit OR explicit OR paradigm)

AND

("everyday sadism" OR "subclinical sadism" OR "soft sadism" OR "dark tetrad")

Final Search: 28.06.2020 – 480 Results

OpenGrey

(aggress* OR violen* OR ang* OR crim* OR antisocial OR behav*)

AND

(measur* OR assess* OR test* OR psychometric* OR implicit OR explicit OR paradigm)

AND

("everyday sadism" OR "subclinical sadism" OR "soft sadism" OR "dark tetrad")

Final Search: 28.06.2020 – 0 Result

Appendix 2.B - Full-Text Assessment – Excluded full texts with reasons for exclusion

		Inclusion Criteria				
	References	**Everyday Sadism Measure**	**Aggression Measure**	**Reasons for Exclusion**	**Excluded**	**Extra Notes**
1	Anderson, A. E., & Marcus, D. K. (2019). A bifactor model of meanness, cold-heartedness, callousness, and sadism. *Personality and Individual Differences, 137,* 192-197. https://doi.org/10.1016/j.paid.2018.09.006	SSIS, VAST	No	Distinguishing sadism and psychopathy. No aggression measure.	Excluded	
2	Bates, E., Tetrault, C., & Bolam, L. T. (2016). *Intimate Partner Violence and the Dark Tetrad: An investigation of aggression and personality*. In: 6th International Family Violence and Child Victimization Research Conference, 10-12 July 2016, University of New Hampshire, USA.	-	-	Poster Presentation, not journal article/thesis paper.	Excluded	

	(Unpublished). https://insight.cumbria.ac.uk/id/eprint/3466/					
3	Buckels, E. E., & Paulhus, D. L. The Joys of Hurting Others: Everyday Sadism and the Dark Tetrad of Personality. Studies, 2, 3.	-	-	Poster Presentation, not journal article/thesis paper.	Excluded	
4	Burris, C. T., & Leitch, R. (2018). Harmful fun: Pranks and sadistic motivation. *Motivation and Emotion, 42*(1), 90-102. DOI:10.1007/s11031-017-9651-5	SSIS	-	No aggression measure. Prank experience assessment. Two items assessing the perceived likelihood that each victim experienced long-term physical and/or psychological harm served as manipulation	Excluded	
5	Chabrol, H., Melioli, T., Van Leeuwen, N., Rodgers, R., & Goutaudier, N. (2015). The Dark Tetrad: Identifying personality profiles in high-school students. *Personality and Individual Differences,*	-	-	Population under 18 years	Excluded	

	83, 97-101. https://doi.org/10.1016/j.paid.2015.03.051					
6	Córdova, P., Delgado, J., & Fernández, A. M. (2018). Behavioural Evidence of Everyday Sadism in a novel sample of Chilean students. *Human Ethiology Bulletin, 33*(4) 49-60. DOI: 10.22330/heb/334/049-060	CAST	No	Paradigms used in experimental design did not meet criteria for aggression measure.	Excluded	
7	Duspara, B., & Greitemeyer, T. (2017). The impact of dark tetrad traits on political orientation and extremism: an analysis in the course of a presidential election. *Heliyon, 3*(10), e00425. https://doi.org/10.1016/j.heliyon.2017.e00425	ASP	No	No aggression measure. Focus on political orientation.	Excluded	
8	Embrescia, E. E. (2018). *Everyday Sadism and Antisocial Punishment in the Public Goods Game: Is There Evidence of Gender Differences?* Marietta College.	VAST	No	Potentially non-aggressive behaviour. Public Goods Game not considered to be concrete	Excluded	

				measure of aggression. Game involved taking away Money Units.		
9	Foulkes, L. (2019). Sadism: Review of an elusive construct. *Personality and Individual Differences, 151*. https://doi.org/10.1016/j.paid.2019.07.010	No	No	Literature review: excluded.	Excluded	
10	Highhouse, S., Nye, C. D., & Zhang, D. C. (2019). Dark motives and elective use of brainteaser interview questions. *Applied Psychology, 68*(2), 311-340. https://doi.org/10.1111/apps.12163	SSIS	No	Brainteaser Interview Questions. Potentially non-aggressive.	Excluded	
11	Karandikar, S., Kapoor, H., Fernandes, S., & Jonason, P. K. (2019). Predicting moral decision-making with dark personalities and moral values. *Personality and Individual Differences, 140*, 70-75. https://doi.org/10.1016/j.paid.2018.03.048	CAST	No	Potentially non-aggressive. Excluded as measures could represent morality more, rather than their own propensity for aggressive behaviour. Measures: (1) Moral dilemmas: A subset of personal and impersonal	Excluded	

				moral dilemmas from Greene et al.'s (2001) study. (2) Moral foundations questionnaire: 32-item format (Graham et al., 2011).		
12	Kircaburun, K., & Griffiths, M. D. (2018). The dark side of internet: Preliminary evidence for the associations of dark personality traits with specific online activities and problematic internet use. *Journal of Behavioral Addictions, 7*(4), 993–1003. https://doi.org/10.1556/2006.7.2018.109	SSIS	No	Potentially non-aggressive. (Spitefulness measure).	Excluded	
13	Lee, S. A. (2019). The Dark Tetrad and callous reactions to mourner grief: Patterns of annoyance, boredom, entitlement, schadenfreude, and humor. *Personality and Individual Differences, 137,* 97-100. https://doi.org/10.1016/j.paid.2018.08.019	~	No	No aggression measure / potentially non-aggressive / measure of reaction to mourners.	Excluded	

14	Lobbestael, J., van Teffelen, M., & Baumeister, R. F. (2020). Psychopathy subfactors distinctively predispose to dispositional and state-level of sadistic pleasure. *Journal of behavior therapy and experimental psychiatry, 67*, 101458. DOI: 10.1016/j.jbtep.2019.02.003	SSIS	Number of bugs killed as measure of aggression.	N/A	Excluded	
15	March, E., & Steele, G. (2020). High Esteem and Hurting Others Online: Trait Sadism Moderates the Relationship Between Self-Esteem and Internet Trolling. *Cyberpsychology Behavior and Social Networking, 23*(7), 441-446. doi:10.1089/cyber.2019.0652	~	~	**Unable to access**	Excluded	
16	Međedović, J., & Petrović, B. (2016). Can there be an immoral morality?: Dark personality traits as predictors of Moral foundations. *Psihologija, 49*(2), 185-197. DOI: 10.2298/PSI1602185M	VAST	No.	Potentially non-aggressive. Measure included: 30-item Moral Foundations Questionnaire (MFQ; Graham, et al., 2011). Excluded as	Excluded	

				measures could represent morality more, rather than their own propensity for aggressive behaviour		
17	Paulhus, D. L., Curtis, S. R., & Jones, D. N. (2017). Aggression as a Trait: The Dark Tetrad. *Current Opinion in Psychology, 19,* 88-92.	~	~	Review paper.	Excluded	
18	Paulhus, D. L., & Jones, D. N. (2016). Individual differences in aggression. In B . J. Bushman (Ed.), *Aggression and Violence A Social Psychological Perspective* (pp. 105-118). Routledge.	~	~	Review paper.	Excluded	
19	Pfattheicher, S., & Schindler, S. (2015). Understanding the dark side of costly punishment: The impact of individual differences in everyday sadism and existential threat.	VAST	No	Potentially non-aggressive behaviour. Public Good Games. Considered not constitute current	Excluded	

	European Journal of Personality, 29(4), 498-505. DOI:http://dx.doi.org/10.1002/per.2003			definintion of aggression. Game involved taking away Money Units		
20	Pfattheicher, S., Keller, J., & Knezevic, G. (2017). Sadism, the intuitive system, and antisocial punishment in the public goods game. *Personality and Social Psychology Bulletin, 43*(3), 337-346.	VAST	No	Public Goods Game / Amount of Punishment. Potentially non-aggressive behaviour. Considered not constitute current definition of aggression. Game involved taking away Money Units.	Excluded	
21	Pfattheicher, S., Keller, J., & Knezevic, G. (2019). Destroying things for pleasure: On the relation of sadism and vandalism. *Personality and Individual Differences, 140,* 52-56.	CAST	No	Six items to assess individuals' tendency to vandalize things for fun. Potentially non-aggressive. Measure of vandalism does not include element of aggression - measure looks understanding motivations.	Excluded	

22	Russell, M. (2019). *A Functional Perspective on Everyday Sadism.* (Thesis). University of New Mexico	SSIS and corresponding vignette measure	No	Measure: Prosocial Aggression Motivation Scale (PAMS), and a corresponding vignette measure. Novel Aggression Measure based on SSIS examining new concept of "prosocial sadism" rather than aggressive behaviour. New concept of "prosocial sadism" acting as an IV and not an outcome variable. Therefore, no measure of aggressive behaviour as outcome variable]. Focus on examining the evolutionary function of sadism. Therefore excluded.	Excluded	
23	Russell, T. D., & King, A. R. (2017). Mean girls: PID-5 personality traits and everyday sadism predict	CAST	No	Excluded following examination of "HTW" measure - does not include	Excluded	

	hostile femininity. *Personality and Individual Differences, 104,* 252-257. http://dx.doi.org/10.1016/j.paid.2016.08.020			aggressive behaviour in measure, more so attitudes. (Measure: Revised Hostility towards Women scale (HTW; Lonsway & Fitzgerald, 1995)		
24	Schumpe, B. M., & Lafrenière, M.-A. K. (2016). Malicious joy: Sadism moderates the relationship between schadenfreude and the severity of others' misfortune. *Personality and Individual Differences, 94*, 32-37.	SSIS	No	Potentially non-aggressive. Measure of Schadenfreude.	Excluded	
25	Shahnawaz, M. G., Nasir, S., & Rehman, U. (2019). Sadism and Cyber Aggression: Moral Identity as a Possible Moderator. *Journal of Aggression, Maltreatment & Trauma, 29*(8),1-15.	SSIS	Cyber Aggression Questionnaire	Participants under the age of 18 years.	Excluded	
26	Tortoriello, G. K., Hart, W., & Richardson, K. (2019). Predicting perceived harmful intent from	ASP	No	Potentially non-aggressive. Behavior likelihood of expressing	Excluded	

	the Dark Tetrad: A novel cognitive account of interpersonal harm. *Personality and Individual Differences, 147*, 43-52. http://dx.doi.org/10.1016/j.paid.2019.04.020			(a) ironic criticism, (b) direct criticism, (c) an empathic response, and (d) no response to a target measured. Direct/ironic criticism decided not to meet aggressive criteria.		
27	Trémolière, B., & Djeriouat, H. (2016). The sadistic trait predicts minimization of intention and causal responsibility in moral judgment. *Cognition, 146,* 158-171. DOI:10.1016/j.cognition.2015.09.014	SSIS	No	Excluded as measures could represent morality more, rather than their own propensity for aggressive behaviour. Measures included: Moral Scenarios: Adapted from Cushman (2008) and Young et al. (2010).	Excluded	
28	van Geel, M., Goemans, A., Toprak, F., & Vedder, P. (2017). Which personality traits are related to traditional bullying and cyberbullying? A study	~	~	Population ranged from 16-21 years. Population were not divided upon inspection of full text.	Excluded	

	with the Big Five, Dark Triad and sadism. *Personality and Individual Differences, 106, 5,* 231-235.					
29	Velimirović, M., Bojanić, M., & Dinić, B. (2018). Cognitive empathy distinguishes sadism from psychopathy: Effects on antisocial behaviour. *Empirical Studies in Psychology, 50*(32), 38.	SSIS	~	Population ranged from 16-19 years. Population not divided upon inspection of full text.	Excluded	

Appendix 2.C - Data Extraction Columns

Extracted Data Values

Citation	Study	Sample Size	IV, Independent Variable	Measure of IV	DV, Dependant Variable	Measure of DV	Statistical Analyses	Odds Ratio	*d,* ANOVA	*r*, Correlation Coefficient	ß, Standardised Beta Coefficient	ß, Standardised Regression Weight for SEM	*r*, Partial Coefficient transformed from Standardised Regression Weight	Notes

Study Characteristics

THEME	Reference	Notes	Location	Study Design	Aims	N	Mean Age (*SD*)	Gender %	Additional population info	Recruitment	Dark Trait Measure	Personality Measure	Limitations	NOTES

Appendix 2.D - Adapted Quality Assessment Tool

Citation:				
	Question	**Yes**	**No**	**Don't know/ Comment**
Introduction				
1	Were the aims/objectives of the study clear?			
Methods				
2	Was the study design appropriate for the stated aim(s)?			
3	Was the sample size justified?			
4	Was the target/reference population clearly defined? (Is it clear who the research was about?)			
5	Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?			
6	Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?			
7	Were measures undertaken to address and categorise non-responders?			
8	Were the risk factor and outcome variables measured appropriate to the aims of the study?			

9	Were the risk factor and outcome variables measured correctly using instruments/measurements that had been trialed, piloted, or published previously?			
10	Is it clear what was used to determined statistical significance and/or precision estimates? (e.g. p-values, confidence intervals)			
11	Were the methods (including statistical methods) sufficiently described to enable them to be repeated?			
Results				
12	Were the basic data adequately described?			
13 **R**	Does the response rate raise concerns about non-response bias?			
14	If appropriate, was information about non-responders described?			
15	Were the results internally consistent?			
16	Were the results presented for all the analyses described in the methods?			
Discussion				
17	Were the authors' discussions and conclusions justified by the results?			
18	Were the limitations of the study discussed?			
Other				
19 **R**	Were there any funding sources or conflicts of interest that may affect the authors' interpretation of the results?			
20	Was ethical approval or consent of participants attained?			
If the study is a Controlled Intervention study, please complete the following:				
	Screening Question	☐		If yes, mark the box and continue:

	Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT?			
21	Was the method of randomisation adequate?			
22	Was the treatment allocation concealed (so that assignments could not be predicted)?			
23	Were study participants and providers blinded to treatment group assignment?			
24	Were the people *assessing the outcomes* blinded to the participants' group assignments?			
25	Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?			
26	Were there any dropouts across the groups?			
27	Was there high adherence to the intervention protocols for each treatment group?			
28	Were other interventions avoided or similar in the groups (e.g., similar background treatments)?			
29	Were outcomes reported or subgroups analysed prespecified (i.e., identified before analyses were conducted)?			
30	Were all randomized participants analysed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?			

Appendix 2.E - All inputted data and subsequent transformations by CMA Software

	Study name	Correlation	Sample size	Effect direction	Correlation	Std Err	Fisher's Z	Std Err	Type of Aggression	Gender
1	Arteta-Garcia (2015)	0.200	416	Auto	0.200	0.047	0.203	0.049	Aggression	Blank
2	Buckels (2018)	0.750	90	Auto	0.750	0.047	0.973	0.107	Aggression	Blank
3	Buckels et al. (2013)	0.320	71	Auto	0.320	0.109	0.332	0.121	Aggression	Blank
4	Buckels et al. (2013) [Study 2]	0.570	71	Auto	0.570	0.082	0.648	0.121	Aggression	Blank
5	Chabrol et al. (2017)	0.220	511	Auto	0.220	0.042	0.224	0.044	Aggression	Blank
6	Chester et al. (2019)	0.250	147	Auto	0.250	0.078	0.255	0.083	Aggression	Blank
7	Chester et al. (2019) [Study 2]	0.160	149	Auto	0.160	0.081	0.161	0.083	Aggression	Blank
8	Chester et al. (2019) [Study 3]	0.180	125	Auto	0.180	0.088	0.182	0.091	Aggression	Blank
9	Chester et al. (2019) [Study 4]	0.190	182	Auto	0.190	0.072	0.192	0.075	Aggression	Blank
10	Chester et al. (2019) [Study 5]	0.460	152	Auto	0.460	0.065	0.497	0.082	Aggression	Blank
11	Chester et al. (2019) [Study 6]	0.210	237	Auto	0.210	0.062	0.213	0.065	Aggression	Blank
12	Chester et al. (2019) [Study 7]	0.140	356	Auto	0.140	0.052	0.141	0.053	Aggression	Blank
13	Chester et al. (2019) [Study 8]	0.040	204	Auto	0.040	0.070	0.040	0.071	Aggression	Blank
14	Dinic et al. (2019)	0.370	624	Auto	0.370	0.035	0.388	0.040	Aggression	Blank
15	Fentem (2018)	0.690	153	Auto	0.690	0.043	0.848	0.082	Aggression	Blank
16	Jonason et al. (2017)	0.390	1236	Auto	0.390	0.024	0.412	0.028	Aggression	Blank
17	Koscielska et al. (2019)	0.370	151	Auto	0.370	0.071	0.388	0.082	Aggression	Blank
18	Mededovic & Bulut (2017)	0.530	341	Auto	0.530	0.039	0.590	0.054	Aggression	Blank
19	Mededovic & Kovacevic (2020)	0.430	128	Auto	0.430	0.073	0.460	0.089	Aggression	Male
20	Mededovic & Petrovic (2015)	0.220	463	Auto	0.220	0.044	0.224	0.047	Aggression	Blank
21	Morgades-Bamba et al. (2018)	0.200	643	Auto	0.200	0.038	0.203	0.040	Aggression	Female
22	Plouffe et al. (2020)	0.050	360	Negative	-0.050	0.053	-0.050	0.053	Aggression	Blank
23	Russell (2016)	0.250	612	Auto	0.250	0.038	0.255	0.041	Aggression	Male
24	Russell et al. (2017)	0.250	592	Auto	0.250	0.039	0.255	0.041	Aggression	Female
25	Russell et al. (2017) [Sample 2]	0.230	439	Auto	0.230	0.045	0.234	0.048	Aggression	Female
26	Russell & King (2016)	0.360	489	Auto	0.360	0.039	0.377	0.045	Aggression	Male
27	Tetreault et al. (2018)	0.120	342	Auto	0.120	0.054	0.121	0.054	Aggression	Blank
28	Thibault (2016)	0.670	416	Auto	0.670	0.027	0.811	0.049	Aggression	Blank
29	Buckels el al. (2018)	0.710	345	Auto	0.710	0.027	0.887	0.054	Online	Blank
30	Buckels et al. (2018) [Study 2: Sample A]	0.460	1134	Auto	0.460	0.023	0.497	0.030	Online	Blank
31	Buckels et al. (2018) [Study 2: Sample B]	0.440	236	Auto	0.440	0.053	0.472	0.066	Online	Blank
32	Buckels et al. (2014) [Study 2]	0.680	797	Auto	0.680	0.019	0.829	0.035	Online	Blank
33	Cracker & March (2016)	0.350	396	Auto	0.350	0.044	0.365	0.050	Online	Blank
34	Duncan & March (2019)	0.420	587	Auto	0.420	0.034	0.448	0.041	Online	Blank
35	Gibb (2016)	0.080	393	Auto	0.080	0.050	0.080	0.051	Online	Blank
36	Kircaburn et al. (2018)	0.470	761	Auto	0.470	0.028	0.510	0.036	Online	Blank
37	March (2019)	0.500	733	Auto	0.500	0.028	0.549	0.037	Online	Blank
38	March et al. (2017)	0.250	357	Auto	0.250	0.050	0.255	0.053	Online	Blank
39	March et al. (2020)	0.340	405	Auto	0.340	0.044	0.354	0.050	Online	Blank
40	Masui (2019)	0.390	513	Auto	0.390	0.038	0.412	0.044	Online	Blank
41	Mayshak et al. (2020)	0.180	1009	Auto	0.180	0.031	0.182	0.032	Online	Blank
42	Nocera (2019)	0.500	404	Auto	0.500	0.037	0.549	0.050	Online	Blank
43	Paananen & Reichl (2019)	0.630	347	Auto	0.630	0.033	0.741	0.054	Online	Male
44	Pina et al. (2017)	0.160	100	Auto	0.160	0.099	0.161	0.102	Online	Blank
45	Sest & March (2017)	0.620	415	Auto	0.620	0.030	0.725	0.049	Online	Blank
46	Smoker & March (2017)	0.390	689	Auto	0.390	0.032	0.412	0.038	Online	Blank
47	Brown et al. (2019) - Sample 1	0.110	294	Auto	0.110	0.058	0.110	0.059	Online	Male
48	Brown et al. (2019) - Sample 2	0.130	371	Auto	0.130	0.051	0.131	0.052	Online	Female
49	Brown et al. (2019) - Sample 3	0.260	90	Auto	0.260	0.100	0.266	0.107	Online	Male
50	Brown et al. (2019) - Sample 4	0.110	350	Auto	0.110	0.053	0.110	0.054	Online	Female
51	Brown et al. (2019) - Sample 5 (Asian Males)	0.240	329	Auto	0.240	0.052	0.245	0.055	Online	Male
52	Brown et al. (2019) - Sample 6	0.110	448	Auto	0.110	0.047	0.110	0.047	Online	Female
53										

Appendix 2.F - Risk of bias in individual studies. Lower percentages show lower quality and subsequent increased risk of bias.

Study Reference	Reporting Bias	Selection Bias	Response Bias	Measurement Bias	Performance Bias	Attrition Bias
Cross Sectional Studies						
Buckels, (2012). Study 1.	75%	33%	67%	100%	-	-
Buckels, (2018). Study 1.	88%	66%	0%	75%	-	-
Buckels et al. (2013). Study 1	75%	33%	0%	100%	-	-
Chabrol, et al. (2019)	100%	66%	0%	100%	-	-
Chabrol et al. (2017)	88%	66%	0%	50%	-	-
Chester et al. (2019)	75%	33%	67%	75%	-	-
Dinić et al. (2019)	63%	50%	33%	100%	-	-
Fentem (2018)	50%	33%	33%	100%	-	-
Jonason et al. (2017)	87%	33%	0%	100%	-	-
Klann, (2017)	63%	33%	67%	100%	-	-
Koscielska et al. (2019)	100%	66%	0%	100%	-	-
Međedović & Petrovic (2015)	63%	33%	67%	100%	-	-
Međedović & Bulut (2017)	88%	33%	0%	100%	-	-
Međedović & Kovacevic (2020)	88%	75%	0%	75%	-	-
Morgades-Bamba et al. (2018)	100%	66%	0%	100%	-	-

Plouffe et al. (2020). Study 2.	88%	66%	100%	50%	-	-
Russell (2016)	88%	66%	67%	100%	-	-
Russell & King (2016)	88%	66%	0%	100%	-	-
Russell, Doan, & King (2017)	88%	66%	67%	100%	-	-
Tetreault et al. (2018)	88%	66%	0%	100%	-	-
Thibault (2016)	88%	66%	0%	100%	-	-
Brown et al., (2019)	25%	66%	0%	50%	-	-
Buckels et al. (2014). Study 1 +	63%	33%	0%	50%	-	-
Buckels et al. (2014). Study 2.	63%	33%	0%	50%	-	-
Buckels et al. (2018). Study 1.	100%	66%	0%	75%	-	-
Buckels et al. (2019). Study 2. Sample A.	88%	66%	0%	50%	-	-
Buckels et al. (2019). Study 2. Sample B.	88%	66%	0%	50%	-	-
Craker & March (2016)	88%	66%	67%	75%	-	-
Duncan & March (2019)	75%	100%	33%	75%	-	-
Gibb (2016). Study 1.	50%	100%	33%	100%	-	-
Kircaburun et al. (2018).	75%	66%	0%	50%	-	-
March, et al. (2017)	88%	75%	33%	50%	-	-
March et al. (2020)	88%	66%	0%	100%	-	-
March (2019)	88%	66%	33%	75%	-	-

Masui (2019)	75%	33%	0%	75%	-	-
Mayshak et al. (2020)	75%	100%	33%	50%	-	-
Nocera (2019)	63%	66%	67%	50%	-	-
Paananen & Reichl (2019)	100%	100%	67%	100%	-	-
Pina et al. (2017)	88%	66%	0%	50%	-	-
Sest & March (2017)	75%	66%	100%	50%	-	-
Smoker & March (2017)	75%	66%	33%	75%	-	-
Cohort Studies						
Arteta-Garcia (2015)	90%	60%	67%	80%	100%	0%
Buckels et al. (2013). Study 2	80%	40%	0%	100%	66%	0%
Chester et al. (2018) Study 2.	80%	40%	67%	66%	66%	0%
Chester et al. (2018). Study 3.	80%	40%	67%	66%	66%	0%
Chester et al. (2018). Study 4.	70%	40%	67%	66%	66%	0%
Chester et al. (2018). Study 5.	80%	40%	67%	80%	66%	0%
Chester et al. (2018). Study 6.	80%	40%	67%	66%	66%	0%
Chester et al. (2018). Study 7.	80%	40%	67%	80%	66%	0%
Chester et al. 2018. Study 8.	80%	40%	67%	66%	66%	0%

Appendix 2.G - *Sensitivity Analysis via removal of all studies classed as medium-high risk of bias (see Table 3).*

Measure	Number of Studies (k)	Q Statistic	Significance Level	I^2 (inconsistency)	Total Sample Size	Pooled Correlation Coefficient (*r*)	95%CI	*z*	*p*
Across All Studies	19	415.25	0.001	95.65	9931	0.37	0.28, 0.45	7.88	0.001
ES and Aggressive Behaviour	14	263.144	0.001	95.06	2472	0.34	0.23,0.43	6.14	0.001
ES and Aggressive Behaviour perpetrated online	8	156.02	0.001	95.51	4249	0.42	0.30, 0.53	6.13	0.001

ES=Everyday Sadism; Significance level for Q statistic; Pooled correlation coefficient (r)=pooled studies included in each meta-analysis; CI = *Confidence intervals; z = Fishers Z transformation; p = significance value of z; significant results considered as p < .001.*

Appendix 3.A - Participant Recruitment Poster

University of Nottingham
UK | CHINA | MALAYSIA

'One man's pain is another man's pleasure . . .'

Forensic Psychology Research!

Please click on the link to take part in a short online study!

This study looks at why people some people enjoy another person's discomfort, and others do not.

Please note:
No identifying or personal information will be collected during this study.



Nottingham.ac.uk/psychology

Appendix 3.B - Participant Information Sheet

Hello and thank you for taking time to complete this short study. Before you decide to take part, it is important that you understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please do not hesitate to contact me if there is anything that is not clear or if you would like further information.

What is the study about?

The study you are about to take part in looks at why people some people enjoy another person's discomfort, and others do not. No identifying or personal information will be collected during this study.

Do I have to take part?

No, it is entirely your decision to take part in this study.
If you decide to take part, you will be asked to sign a consent form but you are free to withdraw from the study at any point without giving a reason. After the experiment is complete, your data will be included in the study and you will no longer be able to withdraw your data.

What will I need to do?

If you agree to take part in the research you will be asked to complete some questionnaires about personality. After this, you will watch several short video clips and be asked to label the emotion you associate with the video, and rate the intensity of this emotion. You will then be asked to watch a video clip which is slightly longer. After this, you will complete some short questionnaires. The videos used within this study include content which may be distressing to some participants, please keep this in mind prior to giving consent to take part in the study. You may, of course, withdraw from the study at any time and leave the experiment without reason.

Will my identity be disclosed?

No personal information will be used in the experiment. The only information used for analysis will be the answers to the questions you give.

What will happen to the information?

No identifying or personal information will be collected during the study. It is anticipated that the research may, at some point, be published in a journal or report, and therefore your data will be

used in this report. The responses to the questions you give may be used in the write up, but again, these will be completely anonymous.

Who can I contact for further information?

If you require any further information about the research, please contact either myself or the project supervisor:

Researcher

Name: Leah Thomas

E-mail: msxlt4@nottingham.ac.iuk

Supervisor

Name: Dr Vince Egan

E-mail: vincent.egan@nottingham.ac.uk

Appendix 3.C - Participant Consent Form

Please, tick each box to continue:

- ○ I confirm that I have read and understood the information on the previous page
- ○ I confirm am 18 years old and/or older
- ○ I understand that my participation is voluntary, and I can end the study at any time and withdraw my data before the end of the experiment by clicking the EXIT button.
- ○ I understand that my answers will be anonymous.
- ○ I understand the overall anonymized data from this study may be used in the future for research (with research ethics approval) and teaching purposes.

Appendix 3.D - Descriptions of Audio-Visual Stimuli (sourced from YouTube)

'Violent Stimuli' – Video-clips including scenes which depicted aggression, violence, cruelty or distressing interpersonal interactions:

Video-clip 1 - Entitled: You've Been Framed 6.

Real life scenes taken from the TV show 'You've been framed'. This scene involved watching individuals (children and adults) get hit with a bat.

Video-clip 2 - Entitled: Brutal First-Person Melee Assault in GTA 5 - IGN Plays.

'Grand Theft Auto (GTA)' video game. This scene involved watching an animated character (from first-person viewpoint) violently assault bystanders using a range of weapons.

Video-clip 4 - Entitled: Frog jumps on kids face.

Real life scene. This scene involved an adult filming a child crying because there was a frog on his arm. The young child screams loudly as the frog subsequently jumps on his face.

Video-clip 7 - Entitled: Top 20 Knockouts in UFC History.

Real life scene. This scene involved UFC fighting. There is blood on the fighter's face and in the ring. The video-clip ends with one fighter throwing a punch which results in the opponent falling to the ground and lying on the floor.

Video-clip 8 - Entitled: Dead by Daylight | Launch Trailer.

'Dead by Daylight' video game. This scene involved watching an animated character (young female) running away from another character, who was wearing a mask and holding a weapon. The female runs into a basement and hides in a wardrobe. The scene involves a first-person view from the wardrobe – from this view, the female watches where the other character walks, she also sees an individual who has been hung; they are dead and suspended from the ceiling.

Video-clip 12 - Entitled: Amazing Rat Catching with Farm Dogs Kill About 500 Rats!

Real life scene. This scene included watching farmers who had ordered/encouraged their dogs to chase and kill rats. The rats are violently killed as the dogs shake them. At one point a rat is held on a pitchfork and given to the dogs.

Video-clip 14 - Entitled: Fox Call - Part 1

Real life scene. This scene included watching two men ride on a quad bike to the centre of a field. Here, they use a specific call to attract a fox who runs out into the field – when the fox is on the field, it is shot dead by the two men.

'Positive Stimuli' – Video-clips including scenes characterised by pleasantness and satisfaction such as hugging or dancing or engaging in prosocial behaviours:

Video-clip 3 - Entitled: Crazy Stupid Love – The Big Move

This was a scene taken from the movie 'Crazy Stupid Love' which is a romantic comedy. The video-clip involved watching a romantic scene where two individuals share an intimate moment. It involved romantic music, laughter, dancing, and hugging.

Video-clip 5 - Entitled: Best movie ending of my life.

This was a scene taken from the movie 'Homeward Bound'. In this film, three animals go missing from their owners. The video-clip involved the animals returning to their owners – the children in the scene run towards the animals as they suddenly arrive home. It involved 'happy/hopeful' music and hugs between the owners and lost animals.

Video-clip 6 - Entitled: The Most Emotional & Beautiful Moments You Have ever SEEN in Football #RESPECT.

Real life scene. This was a scene where a child ran on to a football pitch in an attempt to meet a footballer. He was carried away by security guards, however, the footballer runs after the security guards and stops them taking the child away. He offers comfort to the child as well as a photo together. This scene involved compassion and care.

Video-clip 9 - Entitled: Forest Gump Bus Scene

This was a scene taken from the movie 'Forest Gump'. The scene involves a young boy who has a pleasant interaction with a young girl. The young girl offers a seat next to her on the school bus. The narrator explains how the children became close friends. This scene involved compassion, care, and friendship.

Video-clip 10 - Entitled: Best Football Dance Dab.

Real life scene. This video-clip included a collation of footballers celebrating goals and dancing on the football pitch. This scene included laughter, dance, and achievement. It had upbeat music playing in the background.

Video-clip 11 - Entitled: Faith in Humanity Restored 2015/2016

Real life scene. This video-clip included a diver helping a turtle underwater by detangling some string/plastic which was stuck on the turtle's flipper. The turtle is subsequently able to swim away. This video-clip included care and had slow music playing in the background.

Video-clip 13 - Entitled: The Pursuit of Happiness – Ending Scene

This was a scene taken from the movie 'The Pursuit of Happiness'. The scene involves an adult male running through crowded streets, he eventually runs into a building where he picks up, hugs, and embraces his child. Slow music plays in the background.

Appendix 3.E - Participant Debriefing Statement

Prior to this experiment, you were informed that the study was about understanding why people take pleasure in another person's discomfort, and others do not. This is an indirect way of saying "sadism", the enjoyment of inflicting psychological or physical pain on others, as well as other aspects of personality. Sadism is sufficiently common to not be an exclusively psychopathological concept ie. not everyone who laughs at a person who gets hurt in a comedy is a sadist.

Currently, there is no formal diagnosis of sadism. This study, therefore, aimed to examine behaviours which implicate a subclinical form of sadism, such as 'sensational interests', which involve an interest in lurid, morbid, or violent topics. The study also looked at the underlying causes of sadism by examining individual differences in emotional responses to different video clips, and understanding whether physiological arousal could increase sadistic traits and make antisocial cognitions more consciously available.
The true aims of the study could not have been given prior the study as participants may have acted in a way that would have distorted their initial responses.

Research into dark personality traits such as psychopathy, narcissism, and Machiavellianism (subclinical expressions of disagreeable personality traits) is plentiful, but the exploration into 'subclinical sadism' is somewhat lacking. Through this and future research, one can understand further the relationship between personality, sadism, sensational interests and criminal offending, as many people with these traits and interests do not offend.

……
…
If you have any questions about this research or would like to get in touch, please do not hesitate to contact the researcher of this study:

Leah Thomas, MSc, (Trainee Forensic Psychologist)
Email: msxlt4@nottingham.ac.uk

If you feel you have been affected by this study, please contact either the researcher or the following helpline: The Samaritans, 08457 90 90 90

Appendix 3.F - Principal Axis Factoring

Factor analysis was used to assess the latent structure of the 12-item questionnaire that measured emotional responses to 14 video clips. It was assumed that factors would be correlated so an oblique rotation (Promax) was used. Results confirmed that a two-factor solution explained the observed measures variance. The first factor was interpreted as positive affect (Eigenvalue = 7.80; 64.99% of explained variance) and the second factor was interpreted as negative affect (Eigenvalue = 1.80; 14.97% of explained variance). The loadings of each emotion on to each factor can be viewed in the Table below; all emotions had loadings >0.30 for the extracted factor. A high negative correlation (*r* = -0.63) for both extracted factors was identified.

Factor Analysis of emotional responses to audio-visual stimuli

Emotion	Factor	
	1 (Positive Affect)	2 (Negative Affect)
Entertained	**0.90**	
Active	**0.87**	
Amused	**0.85**	
Determined	**0.83**	
Inspired	**0.83**	0.11
Attentive	**0.82**	
Alert	**0.64**	0.20
Upset		**0.95**
Afraid		**0.93**
Nervous		**0.91**
Hostile		**0.89**
Ashamed		**0.86**

N. b. Figures highlighted in bold are emotions which had loadings over >.30 for the extracted factor.

Appendix 3.G - Regression weights for all pathways in the SEM Model

			Estimate	S.E.	C.R.	P	Label
Sadism.SD4	<---	Dark.Tetrad	1.000				
Emotion.Processing	<---	Dark.Tetrad	.591	.233	2.540	.011	
Emotion.Processing	<---	BIS.BAS.System	-.300	.172	-1.744	.081	
Psychopathy.SD4	<---	Dark.Tetrad	1.475	.252	5.854	***	
Narcissism.SD4	<---	Dark.Tetrad	1.373	.299	4.590	***	
Machiavellianism.SD4	<---	Dark.Tetrad	.608	.137	4.445	***	
PosvideoPosemotion	<---	Emotion.Processing	1.000				
NegativeVideo.NegativeAffect	<---	Emotion.Processing	1.369	.414	3.305	***	
PostiveVideo.NegativeAffect	<---	Emotion.Processing	1.793	.576	3.113	.002	
BASDriveSystem	<---	BIS.BAS.System	1.343	.206	6.511	***	
BASFunSeekingSystem	<---	BIS.BAS.System	1.000				
FFFS	<---	BIS.BAS.System	-.882	.226	-3.898	***	
BIS.Anxiety	<---	BIS.BAS.System	1.000				
NegvideoPositiveEmo	<---	Sadism.SD4	.227	.034	6.692	***	
NegativeVideo.NegativeAffect	<---	Sadism.SD4	-.144	.042	-3.379	***	
BIS.Anxiety	<---	Dark.Tetrad	-.919	.201	-4.564	***	
NegvideoPositiveEmo	<---	Emotion.Processing	1.405	.390	3.603	***	

Appendix 4.A - Audio-visual stimuli used within the experimental conditions

Experimental Condition 1: Audio-Visual Stimuli used which aimed to increase physiological and/or emotional arousal. Link 1 – "Climbing Shanghai Tower" - https://ytcropper.com/cropped/gL5d263400b552c

Experimental Condition 2: Audio-Visual Stimuli used which aimed to increase physiological and/or emotional arousal. Link 2 – "Relaxing Sleep Music" - https://ytcropper.com/cropped/1Z5d2632832aee3

Experimental Condition 3 (Control Condition): Audio-Visual Stimuli used which aimed to neither increase nor decrease physiological and/or emotional arousal. Link 3 – "End credits to a film" - https://ytcropper.com/cropped/Cr5d26333ae7e88

Appendix 4.B - Bootstrapped paired-samples t-test examining sensational interest scores and measures of sadism, following decreased emotional arousal.

	Pre-Video		Post-Video		*t*(69)	95% CI for *t*		Cohen's *d*
Sensational Interest	*M*	*SD*	*M*	*SD*		*LL*	*UL*	
Militarism (SIQ-R)	2.76	.79	2.75	.82	0.36	-.07	.09	0.04
Violent Occultism (SIQ-R)	2.55	.67	2.50	.67	1.44	-.02	.11	0.17
Sadism	*M*	*SD*	*M*	*SD*		*LL*	*UL*	
VAST	1.89	.59	1.86	.61	0.70	-.04	.08	0.09
Direct Sadism (VAST)	1.80	.61	1.76	.63	1.12	-.03	.10	0.13
Vicarious Sadism (VAST)	1.99	.76	1.99	.77	0.08	-.09	.09	0.01

Bootstrap results are based on 2000 bootstrap samples.

*p<.05. **p<.01. ***p<.001.

Appendix 5.1: Poster Presentation for Division of Forensic Psychology (DFP) Annual Conference 2021

University of Nottingham
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Examining the Underlying Mechanisms of Subclinical Sadism: Reinforcement Sensitivity Theory and Dark Personality

Leah Thomas &
Dr Vincent Egan



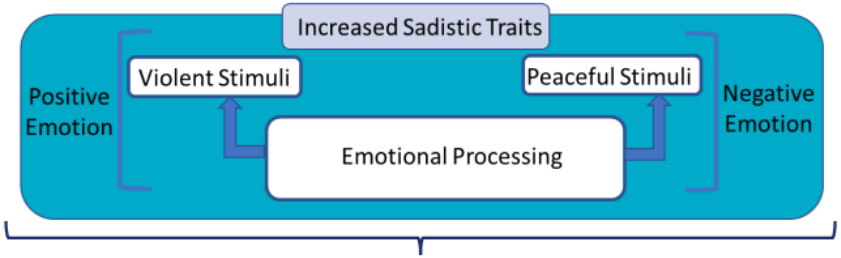
Subclinical sadism is unique among the **dark personality** traits that form the **Dark Tetrad**. Whilst it shares the Dark Core of personality with subclinical psychopathy, narcissism, and Machiavellianism, it is theoretically distinct from the other members in that it **involves an appetite for cruelty.**

Research Methodology

Objectives	To explore emotional processing of violent stimuli in individuals with subclinical sadistic traits.
Design	Cross-Sectional within-subjects design.
Method	Participants (n=255) were recruited from the general population and asked to complete self-report measures, before rating their emotional responses to audio-visual stimuli.

Results

The results of this study suggest an **abnormality in the emotional processing of 'everyday sadists'**, indicating a pattern of emotional responding which opposes usual emotional activity. The experience of positive emotion in response to violent stimuli and lack of positive emotion in response to peaceful stimuli was a significant predictor of trait sadism.



Examining the mechanisms that may underlie this phenomenon of emotional responding, the current study presented **Reinforcement Sensitivity Theory (Gray, 1972)** as a possible explanation. **Decreased sensitivity** in the **Behavioural Inhibition Subsystem (BIS-Anxiety)**, and **increased sensitivity** in the **Behavioural Activation Subsystems (BAS-Drive and BAS-Fun-seeking)** were significant predictors of trait sadism.

Conclusions

- Aberrations in sadism's emotional processing could account for its **deficit in affective empathy** and **propensity towards interpersonal violence and aggression.**
- Overactivation of specific BAS-Systems may result in **increased impulsivity** for **personal profit.**
- Negative emotional responding may be inhibited (low BIS sensitivity) to cues of punishment, presenting with low anxiety and **behaviour undeterred by consequences.**

Appendix 5.2: Ethical Approval Confirmation for Empirical Studies

University of Nottingham
UK | CHINA | MALAYSIA

Email: FMHS-ResearchEthics@nottingham.ac.uk

Faculty of Medicine & Health Sciences
Research Ethics Committee
c/o Faculty PVC Office
School of Medicine Education Centre
B Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham, NG7 2UH

2 May 2019

Leah Thomas
Doctorate in Forensic Psychology Student
c/o Dr Vince Egan
Associate Professor of Forensic Psychology Practice
Centre for Family and Forensic Psychology
Psychiatry and Applied Psychology
B23, Yang Fujia Building
Jubilee Campus
Wollaton Road
Nottingham, NG8 1BB

Dear Ms Thomas

Ethics Reference No: 210-1902 **– please always quote**	
Study Title: Examining the underlying neuropsychological substrates of everyday sadism: Reinforcement Sensitivity Theory and its links to Dark Personality Traits.	
Chief Investigator/Supervisor: Dr Vince Egan, Associate Professor of Forensic Psychology Practice/Director of MSc Forensic Psychology by Research, Division Psychiatry and Applied Psychology	
Lead Investigators/student: Leah Thomas, Doctorate in Forensic Psychology	
Proposed Start Date: 01/02/2019	**Proposed End Date:** 31/07/2020

Thank you for submitting the above application and the following documents were received:

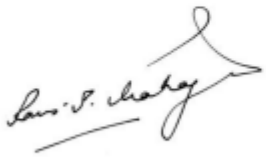
- FMHS REC Application form and supporting documents version 1.0: 27.02.2019

These have been reviewed and are satisfactory and the study has been given a favourable opinion.

A favourable opinion has been given on the understanding that:

1. The protocol agreed is followed and the Committee is informed of any changes using a notice of amendment form (please request a form).
2. The Chair is informed of any serious or unexpected event.
3. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely



Professor Ravi Mahajan
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee