CREATING A NEW SHORT MEASURE OF THE DARK TETRAD

by

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ABSTRACT

The four dark personality traits of Machiavellianism, psychopathy, narcissism, and sadism have been studied together under an overarching construct called the Dark Tetrad. As this field of study is relatively new, the most effective and efficient way to measure the Dark Tetrad is still debated. While there are ethical and practical needs of a short measure of the Dark Tetrad, a validated measure of the construct has yet to emerge. The purpose of the current study was to begin the process of creating a new short measure of the Dark Tetrad. Study 1 selected potential items and created two potential factor structures for the new short measure. Study 2 cross-validated and compared the two potential factor structures. Results demonstrated that the empirical-based factor structure was a more accurate representation of the Dark Tetrad compared to the theory-based factor structure, indicating that the Dark Tetrad would be better represented as an overarching construct compared to four separate traits. Results also revealed potential items for the new short measure of the Dark Tetrad. Further research needs to examine the factor structure of the Dark Tetrad before a new short measure is created.

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CHAPTER I: INTRODUCTION

Overview

There is an ever-growing literature on dark personalities, which are characterized by socially offensive traits that are not extreme enough to garner clinical attention. For example, there has been ongoing research on how dark personality traits relate to the Big Five personality traits of agreeableness, neuroticism, openness, conscientiousness, and extraversion (Jakobwitz & Egan, 2006), their links with clinical disorders (Krupp et al., 2013), and their genetic and environmental origins (Vernon et al., 2008).

In addition, there is an increasing amount of dark personality trait literature in the field of Industrial and Organizational psychology. This includes research on how dark personality traits affect leadership (Harms et al., 2012; Hogan, 2007; O'Boyle et al., 2012; Grijalva et al., 2015; Mathieu et al., 2014), bullying in the workplace (Pilch & Turska, 2015), employees (Jonason et al., 2012), and counterproductive workplace behaviors (Wu & Lebreton, 2011). Indeed, the literature on the dark personality traits continues to grow and be examined within different sectors of the field of psychology.

The increase of popularity in dark personality traits and how they relate to each other led to the creation of the Dark Triad. Paulhus and Williams (2002) coined the term "Dark Triad" to group together the three dark personality traits of Machiavellianism, psychopathy, and narcissism. After the Dark Triad was created, a new term, the "Dark Tetrad" was created to include the personality trait of sadism into the triad (Buckels et al., 2013).

It is important to note that the Dark Tetrad focuses on subclinical levels of the dark personality traits. Psychopathy, narcissism, and sadism all have origins in the

clinical field of psychology and are associated with different diagnoses found in the Diagnostic and Statistical Manual of Mental Disorders (DSM), but "normal," subclinical levels of all of these personality traits exist. More recently, researchers have been examining how normal levels of the dark personality traits affect everyday life using the Dark Tetrad.

Since the creation of the Dark Tetrad, researchers have pursued the best way to examine the four main dark personality traits. Since this is an emerging area of study, there are still disagreements and controversies within the field about the Dark Tetrad. One aspect of this literature looks into how to accurately measure the Dark Tetrad and the dark personality traits it consists of. Researchers have attempted to create short measures of these traits, but a good, validated, short measure of the Dark Tetrad has yet to emerge. In addition, research has provided evidence on the limitations of the currently used short measures of the Dark Triad, further hindering the progress to a valid, reliable short measure of all the dark personality traits.

The purpose of the current paper is to (a) summarize the literature on measuring each construct of the Dark Tetrad, (b) note key issues in measuring the Dark Tetrad, (c) discuss the current short measures of the Dark Triad, and to ultimately (d) create a new short measure of the Dark Tetrad.

Dark Tetrad Constructs

Machiavellianism

The term "Machiavellianism" is coined after the Italian Renaissance diplomat Niccoló Machiavelli. Machiavelli wrote a book called *The Prince* where he discusses how those in power should not trust others and should try to retain their power through

every means possible, even by using manipulation and unethical behavior (Machiavelli, 1513/1981). In the 1960s, Richard Christie used passages from *The Prince* to study Machiavellianism as a trait of human behavior (Christie & Geis, 1970). Since Christie and Geis introduced the concept, other researchers have expanded the literature on this personality trait that is marked by manipulativeness, callous affect, a strategic-calculating orientation, deceptiveness, and deceitfulness (Jones & Paulhus, 2014; Plouffe et al., 2017). People who score high on Machiavellianism plan their actions ahead of time, form relationships with others, maintain a good reputation, and use the people in their life to get ahead even if it hurts the people around them. Out of the original Dark Triad constructs, Machiavellianism is the only construct that does not have clinical origins.

When creating the term in the 1960s, Christie and Geis (1970) also created a measure to examine Machiavellianism, the MACH-IV. Even though other measures of Machiavellianism have been created, such as the Machiavellianism Personality Scale (Dahling et al., 2009), MACH* (Rauthmann, 2013) and the Organizational Machiavellianism Scale (Kessler et al., 2010), the MACH-IV is still one of the most widely used measures of Machiavellianism. The MACH-IV consists of 20 items that use a 7-point Likert scale to assess how much the participant agrees or disagrees with statements derived from principles originating from *The Prince* (Christie & Geis, 1970). This scale is intended to measure how much a person thinks in a cold strategic way, has cynical views of the world, is emotionally detached and callous, is motivated by money and status, and uses manipulation to achieve their goals (Christie & Geis, 1970).

Even though the MACH-IV is one of the most common measuring tools for Machiavellianism, it has its limitations. Although previous research has demonstrated the

MACH-IV as a reliable and valid scale (Fehr et al., 1992; Jones & Paulhus, 2009),

problems with the scale have been recognized. Some of these problems include varying

reliabilities, response biases, low content and construct validity, and varying factorial

structures (Fehr et al., 1992). Out of these issues, the varying factorial structures seems to

be the most concerning, as factorial structures that include one to five factors have been

proposed for the MACH-IV. Indeed, researchers cannot seem to agree whether the scale

measures a unitary or multidimensional construct of Machiavellianism (Rauthmann,

2013; Ahmed & Stewart, 1981)

Psychopathy

Research on psychopathy began in the realm of clinical research of mental

illnesses in the early 19th century, but the first detailed description of clinical psychopathy

was not given until Cleckley's Mask of Sanity (Hare, 1999). In this book, psychopathy is

defined as being marked by two key elements: deficits in affect and limited self-control

(Cleckley, 1951). The key symptoms of psychopathy include lack of remorse and

empathy, shallow emotions, glibness, grandiosity, impulsivity, poor behavior controls,

and need for excitement (Hare, 1999). People who score high on psychopathy tests act in

the moment without thinking of consequences, are highly impulsive and thrill seeking,

and demonstrate low levels of empathy.

Out of all of the original Dark Triad constructs, psychopathy is the newest

construct to be considered out of the clinical realm. Thus, most of the research conducted

on psychopathy focuses on individual's who experience clinical levels of psychopathy.

Recently, there has been more of a focus on subclinical psychopathy, which is marked by

less extreme levels of psychopathic symptoms than clinical psychopathy (Hare, 1985,

Lilienfeld & Andrews, 1996). People with subclinical psychopathy engage in behaviors that break social norms while people with clinical psychopathy engage in more severe antisocial behaviors that could lead to imprisonment or institutionalization (Hall & Benning, 2006). Indeed, subclinical psychopathy, while not as harmful as clinical psychopathy, does exist and is a relevant topic of study as it affects everyday life.

Robert Hare, known for being on the forefront of psychopathy research, created the Psychopathy Check List (PCL; Hare, 1980), which became the gold standard in examining psychopathy (Paulhus & Williams, 2002). Conducting the PCL involves an extensive interview process with the participant and a trained clinician, the examination of the participant's criminal records, and potential interviews with other people who are familiar with the participant. The PCL was created to determine whether someone meets the clinical threshold of psychopathy, making it a less than ideal measure for examining subclinical psychopathy. Indeed, the use of criminal records and extensive interviews limits the PCL in examining subclinical psychopathy in a normal population, as participants might not have a criminal record and not enough time to complete the lengthy interview process.

In order to measure subclinical psychopathy, Levenson's Self-Report Psychopathy Scale (LSRP) was created (Levenson et al., 1995). The LSRP is a self-report questionnaire developed as an alternative to the lengthy interview process conducted for the PCL. In addition, the LSRP focuses on subclinical psychopathy instead of its clinical counterpart. The LSRP includes 26 items that are scored using a 4-point Likert scale (Levenson et al., 1995). This measure examines two factors of psychopathy: primary psychopathy and secondary psychopathy.

Primary psychopathy involves a callous, manipulative, and selfish use of others while secondary psychopathy involves impulsivity and poor behavioral controls (Levenson et al., 1995). In addition, primary psychopathy is seen as stemming from a predisposition from birth while secondary psychopathy is a result of environment factors (Karpman, 1948). Many researchers have theorized that psychopathy consisted of two factors, but it was Karpman that identified these two factors as primary and secondary psychopathy (Karpman, 1948). More recently, other researchers in the field have validated the work of Karpman by providing evidence that the construct of psychopathy has a factor structure consisting of two factors that are correlated, yet distinct, constructs (Hare, 1991; Harpur, et al., 1988). The LSRP identifies primary psychopathy as "Factor 1" and secondary psychopathy as "Factor 2".

Research that examines the psychometric properties of the LSRP has shown that it has strong construct validity by finding correlations between the LSRP total score and variables related to psychopathy, such as disinhibition, boredom susceptibility, harm avoidance, and thrill seeking. (Levenson et al., 1995; Brinkley et al., 2001, Lynam et al., 1999) Adequate reliability of the LSRP have also been demonstrated, but it should be noted that Factor 2 has been shown to have lower reliability than Factor 1 (Hicklin & Widiger, 2005; Miller et al., 2001). The two-factor structure of the measure has been replicated in multiple studies (Lynam et al., 1999; Levenson et al., 1995; Brinkley et al., 2001). However, other studies have shown that a three-factor model, which splits Factor 1 into two separate factors, is a better fit (Brinkley et al., 2008; Selbom, 2011). In addition, while Factor 1 has been shown to be associated with some psychopathic characteristics (e.g., grandiosity and manipulativeness), it fails to capture other important

aspects of psychopathy (e.g., glibness and dominance) and measures some constructs unrelated to psychopathy (e.g., negative emotionality) (Miller, et al., 2008). Indeed, it has been suggested that "the LSRP is a reasonable, albeit imperfect, measure of psychopathy" (Miller, et al., 2008, p. 450).

Narcissism

Like Machiavellianism and psychopathy, narcissism is marked by manipulation and callousness (Kernberg, 1975; Kohut, 1950). What differentiates narcissism from the other original constructs of the Dark Triad is that it involves grandiosity, entitlement, vanity, self-importance, and underlying vulnerability and insecurity (Kernberg, 1975; Kohut, 1950). People who score high on narcissism believe they are great, special, and should be admired by the people around them. But, there are some contradicting views in the literature about the facets of narcissism. Some researchers believe that the grandiose and vulnerable aspects of narcissism both exist within a single person (Rhodewalt, Madrian, Cheney, 1998). On the other hand, other researchers believe there are two distinct types of narcissism (Arble, 2008). The first type includes people who are more grandiose while the other type involves people who are more vulnerable (Arble, 2008). Grandiose narcissists are more outgoing and overt, while vulnerable narcissists are shier and more fragile (Konrath et al., 2014). This difference is more easily seen within clinical populations, but it is still important to distinguish the two different concepts in subclinical populations as well (Konrath et al., 2014).

Similar to psychopathy, the narcissism research began with the examination of clinical levels of narcissism. Subclinical narcissism is differentiated from clinical narcissism by less extreme levels of the key elements of narcissism and less of a focus on

insecurity (Jones & Paulhus, 2014). One of the most widely used measures of subclinical narcissism, the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979), was one of the first measures of narcissism to focus on the subclinical variant and helped steer researchers to examine subclinical narcissism more closely (Emmons, 1987). The most current version of the NPI is the NPI-40 (Raskin & Terry, 1988), which consists of 40 items that asks the participant to choose which of two statements better describes themselves. While the NPI-40 gives subscale scores, research has shown that the total score the NPI-40 provides is consistently more predictive than the subscale scores (Wallace & Baumeister, 2002). Indeed, total scores of the NPI-40 are used in narcissism research more frequently than subscale scores (Ames et al., 2006). In addition, shorter versions of the NPI that only give one total score, such as the NPI-16 (Ames et al., 2006) have been created to provide a shorter measure of subclinical narcissism.

Previous research has provided evidence for the construct validity, internal validity, predictive validity, four factor structure, alternate form reliability, and test-retest validity (Raskin & Hall, 1979; Raskin & Hall 1981; Emmons, 1984; Emmons, 1987, Ames et al., 2006) for the NPI. But, the NPI-40 has been shown to rely on internal consistency instead of the theory of narcissism (Raskin & Terry, 1988). In addition, one study showed that the NPI was not correlated with social desirability which is a core component of the construct (Auerbach, 1984). Another major limitation of the NPI is that it focuses on capturing the grandiosity side of narcissism (Miller & Campbell, 2008). Some researchers believe this is suitable for Dark Triad/Tetrad research as grandiose narcissism is the main variant of narcissism that this particular field of research is interested in (Jones & Paulhus, 2014). But, other researchers see the focus on grandiose

narcissism as a limitation as the measure fails to capture the vulnerable aspects of narcissism (Pincus et al., 2009).

Sadism

Compared to the other dark personality traits, sadism has an unclear origin and is vaguely defined in the literature. One potential explanation for this is that most sadism research is conducted using sexual offenders and thus focuses on sexual sadism (O'Meara et al., 2011). In addition, there are no current clinical diagnoses for sadism other than sexual sadism as Sadistic Personality Disorder was removed from the DSM in between the 3rd and 4th versions (American Psychiatry Association, 2000). Most sadism research focuses on clinical sadism and sexual fetish behavior, even though subclinical sadism, or everyday sadism, is relevant in our society as well (Baumeister & Campbell, 1999). Buckels and colleagues (2013) were able to provide evidence for the existence of everyday sadism by demonstrating that people with subclinical levels of sadism were willing to expend time and effort to attack an innocent person who would not fight back.

Sadism has been defined as "the dispositional tendency to engage in cruel, demeaning, or harmful behaviors for dominance behavior" and can involve seeking opportunities to enjoy cruelty inflicted on others (Min et al., 2019, p. 1). Indeed, everyday sadism can either involve the willingness to hurt others or the enjoyment of seeing others hurt. Consequently, two types of everyday sadism have emerged in the literature: direct sadism and indirect sadism. Direct sadism consists of causing pain to others for personal enjoyment in either a strong-willed or aggressive way, while indirect sadism consists of watching the pain of others for personal enjoyment.

Everyday sadism has been recently added to the Dark Triad to create the Dark Tetrad (Buckels et al., 2013). Sadism has been shown to be strongly related to psychopathy (Reidy, Zeichner, & Seibert, 2011) and like the other dark personality traits, sadism is marked by the enjoyment of cruelty in everyday life (Buckels et al., 2013). Although similar to the Dark Triad, research has shown that everyday sadism predicted antisocial behavior independently from its shared variance with the other dark personality traits (Reidy et at., 2011; Chabrol et al., 2009). Indeed, sadism is a separate but similar construct to the other dark personality traits and should be grouped together with them to create the Dark Tetrad (Book et al., 2016).

Since most sadism research focuses on sexual sadism, there is an absence of literature that focuses on the assessment of overall sadism. This lack of a sadistic measurement led to the creation of the Comprehensive Assessment of Sadistic Tendencies (CAST) (Buckels & Paulhus, 2014) which was based on the 16-item Varieties of Sadistic Tendencies (VAST) (Paulhus et al., 2011). The CAST is an 18-item measure that asks participants to agree/disagree with statements using a 7-point Likert Scale (Buckels & Paulhus, 2014). The CAST measures Direct Verbal Sadism, Direct Physical Sadism, and Vicarious Sadism. Unlike other sadism measures that have been published, the CAST assesses both direct and indirect (vicarious) sadism.

While creating this measure, Buckels and Paulhus (2014) were able to provide reliability and validity evidence for the assessment. Scores on items from the VAST that were used to create the CAST were shown to predict reports of animal abuse, fire setting, vandalism, and partner abuse (Paulhus et al., 2011). In addition, the authors of the CAST demonstrated that total scores of the CAST are correlated with but distinct from the Dark

Triad personality traits, providing more evidence that everyday sadism should be grouped with the Dark Triad (Paulhus & Dutton, 2016).

Unfortunately, the CAST is still an unpublished measure. This has limited the psychometric research examining the measure that has been done outside of its creators. One study examining the Assessment of Sadistic Personality (ASP) measure found significant, positive correlations between the ASP, Short Dark Triad, and the CAST, providing convergent validity evidence for both the ASP and CAST (Plouffe et al., 2019). A potential shortcoming of the CAST is its limiting description of sadism (Pfattheicher & Schindler, 2015), as it does not include the aspect of the sadism construct that involves behaving "in an overbearing manner toward others, showing absolute disregard for the other's needs" (O'Meara et. al, 2011, p. 530).

The Dark Tetrad

Everyday sadism was added to the Dark Triad to create the Dark Tetrad because it was shown to predict unprovoked aggression and antisocial behavior unassociated with the other dark personality traits (Reidy et al., 2011; Chabrol et al., 2009; Buckels et al., 2013). Indeed, everyday sadism is a socially offensive trait that is not extreme enough to garner clinical attention, and fits with the other dark personality traits that the Dark Triad consists of. The key controversial issues that are found within the field of Dark Triad/Tetrad research will be discussed below.

Construct Overlap

The four dark personality traits that make up the Dark Tetrad are all highly correlated with each other. Given the consistent intercorrelations among the four dark personality traits (Jonason et al., 2008) and the similarities of the constructs, some

researchers have argued that the Dark Tetrad does not consist of four personality traits, but rather one overall dark personality construct. Research on this controversy has shown that a single factor model best fits the Dark Triad concepts compared to a three or four factor model (Bertl et al.,) and that the Dark Triad is measured better as a single dimension (Jacokwitz & Egan, 2006) sometimes referred to as the Dark Factor of Personality (D) (Moshagen et al., 2018).

On the other hand, other researchers argue that the overlapping feature of the four dark personality traits is callousness (lack of empathy towards others), and that this concept can explain the empirical and theoretical overlap of the four constructs (Paulhus, 2014). In other words, these researchers argue that the reason that these four constructs are highly correlated with each other is that they all involve the characteristics of callousness. In addition, Paulhus and Williams (2002) were able to demonstrate that the Dark Triad constructs did not correlate with each other enough to be considered the same construct. Part of this controversy can also be explained by "Construct Creep," which is a term that explains the phenomenon of researchers unintentionally expanding their research that attempts to focus on one dark personality trait to cover other dark personality traits. This occurs due to the overlapping research and similarities that all of the dark personality traits have with one another (Paulhus, 2014; Furnham et al., 2013).

Another potential explanation for this controversy stems from how the Dark Tetrad constructs are measured. Research has provided support that the three dark personality traits that make up the Dark Triad all manifest differently, showing that they are all separate constructs (Rauthmann, 2012). While the Dark Tetrad constructs share the same characteristics (such as callousness and manipulativeness), how they manifest as

behaviors are different. For example, while each Dark Tetrad construct involves callousness, how callousness is presented through each Dark Tetrad construct is different (Paulhus, 2014). Subsequently, a potential solution to the construct overlap found in Dark Tetrad research is to measure the Dark Tetrad constructs using behavioral items instead of attitudinal items. Indeed, instead of creating items to measure callous attitudes, researchers should focus on creating items that measure the different behavioral presentations of callousness for each Dark Tetrad construct.

Overall, there is contradicting empirical research that provides support for each side of this argument. In addition, most of this research focuses on the Dark Triad and not the Dark Tetrad as the Dark Tetrad is still a new concept. However, Buckels et al., (2013) was able to provide evidence that everyday sadism was different than the Dark Triad personality traits. For the sake of this paper, we will treat the four dark personality traits as four individual concepts that are all highly correlated with each other.

Ethical Research Practices

Another issue that arises with Dark Tetrad research is remaining ethical while conducting research. When measuring the Dark Tetrad in a non-clinical sample, there is potential for a participant to obtain an exceedingly high score for one or more Dark Tetrad construct, suggesting that they could meet the DSM criteria for one of the clinical disorders associated with the Dark Tetrad. If this happens, the researcher is put into an ethical dilemma of whether they should 1) report these findings and consult a clinical professional or 2) protect the participant and their confidentiality. Before conducting any human research study, the researcher should determine what they would do in this situation. In addition, the limits of confidentiality should be discussed with every

participant before the study to confirm that every participant understands when and why their results would be disclosed to other sources.

Furthermore, researchers need to use methods that limit harmful effects on participants, such as participants believing that they are bad people after partaking in actions related to the Dark Tetrad (Paulhus, 2014). For example, one study involved participants killing bugs, which made some participants feel poorly (Buckels, et al., 2013). In addition, having a participant partake in extensive questionnaires can also be harmful to the participant as it can lead to participant fatigue (exhaustion due to participating in research). It is important to control for participant fatigue since it could lead to participants not answering questions as thoroughly or accurately.

Measuring the Dark Tetrad can cause this type of issue for researchers, as it consists of four personality traits. Some researchers have examined the Dark Tetrad by using a different measure for each personality trait, but using this method takes a long time and can cause participant fatigue. This issue especially becomes problematic in a study that wants to compare the Dark Tetrad to other constructs. Indeed, measuring each Dark Tetrad constructs in addition to other constructs of interest can easily cause the item pool to exceed over 100 items. One solution to this problem has been to create short measures of the Dark Triad, and subsequently, create a short measure of the Dark Tetrad. Currently, there are two main self-report short questionnaires for the Dark Triad, the Dirty Dozen (Jonason & Webster, 2010) and the Short Dark Triad (Jones & Paulhus, 2014), and one self-report measure of the Dark Tetrad, the Short Dark Tetrad (Paulhus et al., 2020).

Short Dark Triad Measures

The Dirty Dozen consists of 12 items, with 4 items for every Dark Triad construct. While creating the Dirty Dozen, Jonason and Webster (2010) were able to provide evidence for test-retest reliability, temporal reliability, convergent validity, and discriminant validity. In addition, they showed that the measure worked better as a three-factor model than a single construct measure, demonstrating that the Dirty Dozen measures three separate constructs instead of a unidimensional construct (Jonason & Webster, 2010).

While some researchers believe the Dirty Dozen is both accurate and efficient (Jonason & Luévano, 2013), other researchers recommend against the use of the measure. Some studies have shown that the Dirty Dozen does not measure all aspects of each Dark Triad construct and that only 4 items per construct is not enough to fully capture a personality trait (Miller et al., 2012). Other studies have argued that the Dirty Dozen does not actually measure three constructs, but only actually measures two constructs. Indeed, one study demonstrated that within the Dirty Dozen measure, Machiavellianism and psychopathy share the same core and are actually only one factor, while narcissism makes up most of the second factor (Kajonius et al., 2016)

The other short measure of the Dark Triad, the Short Dark Triad, consists of 27 items, with 9 items for every Dark Triad construct. While constructing the measure, Jones and Paulhus (2014) were able to provide evidence for reliability and validity of the measure and demonstrated that it is a more valid measure than the Dirty Dozen. But, the Short Dark Triad has its limitations as well. While the Dirty Dozen measures both grandiose and vulnerable narcissism, the Short Dark Triad only measures grandiose

narcissism (Maples et al., 2014). In addition, the factor structure of the Short Dark Triad has been questioned, similarly to how the factor structure of the Dirty Dozen has been questioned. One study demonstrated that the Short Dark Triad best fits a two-factor model, with one factor consisting of most of the Machiavellianism and psychopathy items and the other factor consisting of most of the narcissism items (Persson et al.,).

Even though both measures have their limitations, they both have sufficient validity and reliability (Maples et al., 2014; Furnham et al., 2014). But overall, research suggests that the Short Dark Triad is a more valid measure of the Dark Triad than the Dirty Dozen (Jones & Paulhus, 2014; Maples et al., 2014; Furnham, et al., 2014).

Both of these measurements can be beneficial to use in a study where time and participant fatigue are a concern. But, there is evidence that both of these short measures have less than ideal convergent validity (Harms et al., 2018). Furthermore, both measures are limited by construct overlap. One potential explanation for this limitation is that both short measures use attitudinal items. As discussed previously, each Dark Triad construct involves similar characteristics, but the behavioral manifestation of these characteristics differs with each dark personality trait. Subsequently, using behavioral items in lieu of attitudinal items could potentially reduce the amount of construct overlap found in these two short measures.

In addition, a recent unpublished study examined the relationship between each trait that both short scales measure (in other words, psychopathy scores on the Dirty Dozen scale were compared to psychopathy scores on the Dark Short Triad scale), and provided evidence that one construct on one scale correlated more with a different construct than the same construct on the other scale (Hein, 2019). In other words, the

psychopathy that is being measured through one scale is a different construct than the psychopathy being measured in the other scale. Indeed, even though both of these short measures are widely used, they both come with their limitations and are not measuring the same constructs.

Short Dark Tetrad Measure

The Short Dark Tetrad (SD4) consist of 28 items, with 7 items intended to measure each construct of the Dark Tetrad (Paulhus et al., 2020). While creating this measure, Paulhus and colleagues (2020) were able to provide evidence of reliability and a four factor structure for the measure. In addition, construct validity was demonstrated through significant evidence that the four Dark Tetrad constructs measured through this questionnaire were correlated with the Big Five personality traits in such a way that aligns with Dark Tetrad theory (Paulhus et al., 2020).

The SD4 is a relatively new measure. Indeed, as it was only published recently, there is currently no published literature that replicates the results found by Paulhus and colleagues. While the creators of this new measure did provide evidence that the SD4 is a valid and reliable measure, more research needs to be conducted in order to establish the psychometric properties of this measure. With no replication studies available, the validity, reliability, and factor structure of the SD4 remains undetermined.

Furthermore, another limitation of the SD4 is that it focuses on only the vicarious, indirect aspect of sadism. While creating the measure, it was found that the items created to measure direct sadism significantly overlapped with the items created to measure psychopathy. In order to clarify the overlap between sadism and psychopathy, the items created to measure direct sadism were removed (Paulhus et al., 2020). Consequently, the

sadism factor being measured in the SD4 focuses on indirect sadism and does not capture the direct, physical aspects of sadism.

The Current Study

Because of the limitations of the SD4 discussed in this literature review, there is still a need for the creation of a valid new short measure of the Dark Tetrad. The purpose of the current study is to add to the Dark Tetrad literature by creating a new short measure of the Dark Tetrad. As the use of everyday sadism along with the Dark Triad's three dark personality traits increases, there is more of a demand for a validated short measure that examines all four dark personality traits and all of the factors they consist of.

In addition to the limitations of the SD4, the current short measures of the Dark Triad are inconsistent and do not fully capture each dark personality trait. Both current short measures have been shown to only measure two factors instead of three, and it has been suggested that they both are not measuring the same constructs. One potential explanation is the use of attitudinal items instead of behavioral items to measure each dark personality trait, as the traits share similar internal characteristics that are manifested through different behaviors. Furthermore, the SD4 only measures one facet of sadism, thus not fully capturing the construct. In order to effectively contribute to the Dark Tetrad literature, the new measure will 1) consist of four distinct constructs, 2) consist of behavioral items, and 3) be measuring the same constructs as the separate well-established measures of each Dark Tetrad construct, providing convergent validity for the new measure.

It is important to have short measures of constructs as it simplifies the data collection process and reduces participant fatigue. But it is equally important for these short measures to be measuring the same construct as the widely accepted long standard measures. In the current study, we are aiming to not only create a new short measure of the Dark Tetrad, but to also create a measure that is consistent with the standard long measures of each construct comprising the Dark Tetrad. This includes measuring both facets of sadism, which the SD4 fails to accomplish. Overall, it is important for us to better measure the Dark Tetrad as sub-clinical levels of these characteristics are prevalent in our community. Better understanding them and how they manifest can help us better understand the workplace and our everyday lives.

The current research consists of two studies. Study 1 is an exploratory study aimed at identifying potential items for the new short measure by creating two models of the Dark Tetrad using both an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA). Study 2 will cross-validate the two models created in Study 1.

CHAPTER II: STUDY ONE METHODOLOGY

The purpose of Study 1 was to identify potential items that most closely measure and match the theoretical definitions of the Dark Tetrad constructs. Before the beginning of this study, researchers developed a 108-item pool that consisted of behavioral items intended to measure the behaviors of each Dark Tetrad trait. Using this newly developed measure, Study 1 will address the following research questions:

Research Question: Can a new valid new short measure of the Dark Tetrad be created using items from the Behavioral Dark Tetrad measure?

Participants

Participants ($n = 418$) consisted of a sample of undergraduate students enrolled in psychology classes at a Southeastern United States University. Ninety-four participants who took part in the study were not included in the sample due to missing data. Each participant provided consent and were given class credit for their voluntary participation. Participants were ages 18-41, with an average age of 19.31 ($SD = 2.47$). The final sample was composed of 68% females, 32% males, and 0.2% other. The ethnicities of the participants were as follows: 58% White/non-Hispanic, 19% African American, 4% Asian, 9% Hispanic, 0.5% American Indian/Native American, 4% Mixed Ethnicity, and 6% Other. In addition, 62% percent of the sample were in their first year in university, 25% were in their second year, 9% were in their third year, 3% were in their fourth year, and 2% had completed more than four years of university education.

Measures

Each participant enrolled in the study completed a battery of questionnaires, including the Behavioral Dark Tetrad Measure, the MACH-IV (Christie & Geis, 1970),

the Levenson Self-Report Psychopathy scale (LSRP: Levenson et al., 1995), the

Narcissistic Personality Inventory-40 (NPI-40: Raskin & Hall, 1979), and the

Comprehensive Assessment of Sadistic Tendencies (CAST: Buckels & Paulhus, 2014).

Participants also provided information about their age, ethnicity, GPA, year of study, and

employment. Cronbach's alphas reported for all assessment measures were calculated

using the current sample.

Behavioral Dark Tetrad Measure

This measure consists of 108 items that assesses how much a participant agrees

with items intended to examine the different facets of Machiavellianism ($\alpha = .92$),

psychopathy ($\alpha = .86$), narcissism ($\alpha = .90$), and sadism ($\alpha = .91$; Appendix A). This scale

uses a Likert scale from 1 (*does not describe me*) to 5 (*describes me extremely well*) to

measure how much a participant agrees with statements such as, "I let people know I am

the smartest in the room" and "I hide my true intentions from others." In order to create

this measure, researchers on a team each created 10 items for every Dark Tetrad

construct. All item-writers were instructed to write behaviorally phrased items. After all

items were created, researchers met and eliminated the items that were determined to not

be behaviorally based, did not match the definitions of each construct, or were duplicate

items.

The purpose of this measure is to evaluate and analyze potential items for a new

short measure of the Dark Tetrad. Unlike the current short measures available that focus

on assessing the attitudinal/cognitive components of each dark personality trait, this

measure focuses on the behavioral aspects of each trait.

Machiavellianism

The MACH-IV (Appendix B) consists of 20 items (α = .75) composed of

Machiavellianism principles that originate from The Prince (Christie & Geis, 1970). This

scale uses a Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*) to measure how

much a participant agrees with statements such as, "The best way to handle people is to

tell them what they want to hear" and "It is hard to get ahead without cutting corners here

and there." This scale is intended to measure how much a person thinks in a cold strategic

way, has cynical views of the world, is emotionally detached and callous, is motivated by

money and status, and uses manipulation to achieve their goals (Christie & Geis, 1970).

Ten items of this measure examine high Machiavellianism, while the other 10 examine

low Machiavellianism. Previous research has demonstrated the MACH-IV as a reliable

and valid scale (Fehr et al., 2009).

Psychopathy

The Levenson Self-Report Psychopathy Scale (LSRP) consists of 26 items that

assess psychopathic personality traits and behaviors in noninstitutionalized populations

(Levenson et al., 1995). This scale uses a Likert scale from 1 (*disagree strongly*) to 4

(*agree strongly*) to measure how much a participant agrees with statements such as,

"People who are stupid enough to get ripped off usually deserve it" and "Success is based

on survival of the fittest: I am not concerned about the losers." The LSRP measures two

factors of psychopathy: primary psychopathy (α = .84; Factor 1) that involves callousness

and manipulative behavior towards others, and secondary psychopathy (α = .69; Factor 2)

that consists of impulsivity and deficiency in behavioral controls. Previous research has

demonstrated the LSRP as a reliable and valid measure (Levenson et al., 1995; Brinkley

et al., 2001, Lynam et al., 1999), although Factor 2 has lower reliability– a trend found in previous research as well (Hicklin & Widiger, 2005; Miller et al., 2001).

Narcissism

The Narcissistic Personality Inventory (NPI) (Raskin & Hall, 1979), is intended to examine subclinical narcissism (Emmons, 1987). The most current version of the NPI is Raskin and Terry's (1988) NPI-40 (see Appendix D), which consists of 40 items ($\alpha = .85$) that ask the participant to choose which of two statements they believe most accurately described them. For each question, one statement reflects a narcissistic attitude (e.g., "I have a natural talent for influencing people") while the other statement does not (e.g., "I am not good at influencing people"). While the NPI-40 gives subscale scores (Leadership/Authority, Self-Absorption/Self-Admiration, Superiority/Arrogance, and Exploitiveness/Entitlement), research has shown that the total score that the NPI-40 provides is consistently more predictive than the subscale scores (Wallace & Baumeister, 2002). Previous research has provided evidence for the construct validity, internal validity, predictive validity, four factor structure, alternate form reliability, and test-retest validity for the NPI and NPI-40 (Raskin & Hall, 1979; Raskin & Hall 1981; Emmons, 1984; Emmons, 1987, Ames et al., 2006).

Sadism

The Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels & Paulhus, 2014) is an 18-item self-report measure of subclinical sadism (Appendix E). The CAST measures three subscales of sadism: direct physical ($\alpha = .70$), direct verbal ($\alpha = .70$), and vicarious sadism ($\alpha = .83$). This scale uses a Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*) to measure how much a participant agrees with statements

such as, "I enjoy playing the villain in games and torturing other characters" and "Perhaps I shouldn't have, but I never got tired of mocking certain classmates." Previous studies support the reliability and validity of this measure (Buckels & Paulhus, 2014).

Procedure

After obtaining IRB approval, researchers created the survey using Qualtrics. The first page of the survey obtained informed consent from each participant and confirmed that the participant was 18 years or older and willing to proceed with the study. The participants were then asked to provide responses to the Behavioral Dark Tetrad Measure, the MACH-IV (Christie & Geis, 1970), the Levenson Self-Report Psychopathy scale (Levenson et al., 1995), the Narcissistic Personality Inventory (Raskin & Hall, 1979), and the Comprehensive Assessment of Sadistic Tendencies (Buckels & Paulhus, 2014), among other measures. Quality assurance questions were used throughout the entire survey to ensure participants were paying attention while answering the items on the questionnaire. After completing the questionnaire, participants were asked to provide the following demographic information: sex, ethnicity, years in university, GPA, and employment status. After completing the entire survey, participants were compensated for their time with class credit.

CHAPTER III: STUDY ONE RESULTS

Data Analysis

Proposed CFA Model

      The proposed CFA model was created using the theoretical dimensions of each

Dark Tetrad construct. Both narcissism and Machiavellianism were considered as

unidimensional constructs for the current study, even though dimensions for both

constructs have been found in previous literature. This decision was made because

research has demonstrated that both the NPI-40 and MACH-IV perform better using a

total score compared to subscales (Wallace & Baumeister, 2002; Ames et al., 2006;

Rauthmann, 2013; Ahmed & Stewart, 1981). Indeed, as limitations have been found in

both measure's subscales, one dimension created using the total score of each measure

was used in the model. Covariances between every dimension were examined, as it is

well-established that dark personality constructs are highly correlated with each other.

CFA Data Analysis Procedure

      A previous EFA of the current dataset found no clear solution, so an empirical

keying method was implemented to determine which items in the Behavioral Dark Tetrad

measure would be used in the proposed model. To do this, participants were randomly

divided into two equal subgroups. The first subgroup ($n = 209$) was used to determine

which items of the Behavioral Dark Tetrad measure were significantly correlated with the

Dark Tetrad factors being tested. To achieve this, a correlation between Behavioral Dark

Tetrad measure item responses and scores from each Dark Tetrad construct measure was

conducted. Total scores from the MACH-IV and the NPI-40 were used to measure

Machiavellianism and narcissism respectively while subscale scores from the CAST and

LSRP were used to measure sadism and psychopathy.

To eliminate items that were tapping into more than one Dark Tetrad construct or

dimension, items from the Behavioral Dark Tetrad measure that were similarly correlated

with more than one Dark Tetrad construct or more than one subscale within a construct

were removed from the analysis. If there was less than a .20 difference in the correlation

coefficients between a Behavioral Dark Tetrad measure item and two or more different

Dark Tetrad well-established measure scores, that item was eliminated. To further

eliminate items, a .15 and finally a .10 difference in correlation coefficients were used.

Then, the strongest correlated items for each Dark Tetrad dimension were selected to be

used to create the CFA model. If a Dark Tetrad dimension had fewer than 10 strongly

correlated items, all strongly correlated items were used for the CFA model.

The fit of the CFA model was then tested using data from the remaining subgroup

of participants ($n = 209$). Covariances between each Dark Tetrad dimension were added

to the model as all Dark Tetrad constructs have been shown to be highly correlated with

one another. In order to control for high cross-loadings, Behavioral Dark Tetrad items

that had cross-loadings over .25 were eliminated. The CFA model was furthered modified

to improve model fit by adding four separate correlations of two error items.

EFA Data Analysis Procedure

In order to further investigate the factor structure created during the CFA, an EFA

was conducted with the 40 Behavioral Dark Tetrad measure items specified in the CFA.

Data from all participants ($n = 418$) were used during this analysis.

Using the items found in the CFA, a principal components analysis was conducted to investigate how many factors the new model should consist of. This step was taken before conducting the EFA to assess initial communality estimates in order to determine potential factor solutions. Then, a maximum likelihood extraction with promax rotation was conducted to examine several different potential factor solutions. A promax rotation was used as it allows factors to be correlated.

Results

Correlation Analysis

The initial correlational analyses were used to determine which Behavioral Dark Tetrad items best fit each factor and resulted in correlations between the Behavioral Dark Tetrad measure items and scores from well-established measures of each Dark Tetrad construct. Results of the correlation analysis are shown in Table 1-4, each table comprising of Behavioral Dark Tetrad items written to measure a specific Dark Tetrad construct. A duplicate item (#47) and quality check item (#92) were removed from the Behavioral Dark Tetrad measure during this analysis. Between 4 and 9 items were determined to best fit each Dark Tetrad dimension being examined (Table 5). Correlations between the well-established Dark Tetrad measures were also examined (Table 6).

Table 1.

Correlations between well-established Dark Tetrad measure scores and Behavioral Dark Tetrad measure narcissism items

Item	*M*	*SD*	CAST (Verbal)	CAST (Physical)	CAST (Vicarious)	LSRP (Prim.)	LSRP (Sec.)	NPI-40 Total	MACH_IV Total
1	2.27	1.07	.25*	.27*	.29*	.29*	.26*	.25*	.27*
2	1.52	0.98	.16*	.23*	.24*	.37*	.32*	.24*	.28*
3	2.64	1.27	.07	.19*	.09	.27*	.12	.24*	.14*
4	2.62	1.26	.08	.10	.03	.26*	.10	.27*	.13
5	2.47	1.18	.15*	.07	.08	.08	.16*	.15*	.16*
6	2.27	1.30	.03	.04	-.05	.09	-.05	.49*	.05
7	2.21	1.25	.09	-.06	-.04	.03	-.01	.44*	.05
8	1.78	1.10	.19*	.30*	.19*	.41*	.17*	.41*	.32*
9	1.49	0.81	.20*	.20*	.17*	.20*	.09	.29*	.15*
10	2.50	1.14	-.00	-.00	-.00	.09	.14*	.26*	-.06
11	2.49	1.26	.03	.05	-.05	.21*	-.06	.52*	-.02
12	2.01	1.14	.15*	.19*	.19*	.32*	.11	.26*	.27*
13	2.39	1.15	.26*	.24*	.25*	.36*	.14*	.18*	.37*
14	1.31	0.66	.19*	.17*	.12	.25*	.13	.26*	.22*
15	1.94	1.11	.26*	.20*	.24*	.28*	.36*	.13	.28*
16	1.43	0.81	.17*	.18*	.12	.27*	.16*	.29*	.18*
17	1.51	0.97	.12	.07	.06	.19*	.25*	.29*	.05
18	2.58	1.27	.12	.07	.15*	.08	.13	.07	.15*
19	2.42	1.25	.11	.03	.18*	.03	.09	-.07	.18*
20	2.10	1.06	.13	.11	.10	.23*	.05	.40*	.12
21	2.30	1.06	-.06	.06	-.08	.09	-.14*	.37*	-.09
22	1.61	0.94	.08	.04	.04	.13	.03	.37*	-.08
23	2.37	1.13	.07	.15*	.08	.21*	.01	.41*	.11
24	2.71	1.21	.05	.02	-.02	.12	-.01	.48*	-.08

* indicates *p* < .05

Table 2.
Correlations between well-established Dark Tetrad measures and Behavioral Dark Tetrad measure psychopathy items

Item	*M*	*SD*	CAST (Verbal)	CAST (Physical)	CAST (Vicarious)	LSRP (Prim.)	LSRP (Sec.)	NPI-40 Total	MACH_IV Total
25	1.19	0.58	.30*	.40*	.31*	.42*	.16*	.23*	.36*
26	1.88	1.08	.10	.16*	.21*	.26*	.38*	.14*	.20*
27	1.66	0.87	.26*	.37*	.37*	.49*	.31*	.08	.46*
28	1.12	0.43	.16*	.31*	.21*	.40*	.20*	.14*	.32*
29	1.39	0.75	.29*	.40*	.31*	.38*	.27*	.11	.35*
30	1.65	0.97	.31*	.39*	.35*	.46*	.29*	.28*	.41*
31	1.42	0.78	.29*	.39*	.17*	.39*	.30*	.22*	.27*
32	1.34	0.76	.25*	.44*	.24*	.43*	.18*	.27*	.41*
33	2.07	1.19	.16*	.23*	.27*	.28*	.21*	.30*	.24*
34	1.82	1.11	.20*	.02	.13	.23*	.25*	.17*	.05
35	2.08	1.30	.14*	.06	.10	.26*	.32*	.19*	.21*
36	1.40	0.88	.26*	.38*	.22*	.51*	.20*	.28*	.36*
37	1.34	0.76	.24*	.20*	.35*	.23*	.28*	.01	.26*
38	2.20	1.18	.09	.25*	.16*	.33*	.05	.43*	.15*
39	1.38	0.80	.15*	.27*	.20*	.41*	.22*	.06	.27*
40	2.63	1.31	.06	.14*	.22*	.17*	.21*	.29*	.19*
41	1.18	0.54	.23*	.43*	.27*	.40*	.19*	.14*	.32*
42	1.39	0.73	.23*	.36*	.26*	.45*	.25*	.20*	.35*
43	1.98	1.13	.27*	.23*	.25*	.19*	.37*	.02	.21*
44	1.79	0.99	.12	.09	.15*	.19*	.40*	.03	.08
45	3.11	1.24	.04	.03	-.02	.10	.20*	.35*	-.11
46	1.24	0.60	.14*	.33*	.16*	.47*	.23*	.24*	.31*

* indicates $p < .05$

Table 3.
Correlations between well-established Dark Tetrad measures and Behavioral Dark Tetrad Machiavellianism measure items

Item	M	SD	CAST (Verbal)	CAST (Physical)	CAST (Vicarious)	LSRP (Prim.)	LSRP (Sec.)	NPI-40 Total	MACH_IV Total
48	1.63	1.02	.25*	.33*	.36*	.45*	.20*	.18*	.42*
49	2.20	1.14	.16*	.29*	.22*	.34*	.30*	.15*	.38*
50	1.91	1.04	.46*	.25*	.35*	.41*	.31*	.03	.34*
51	1.37	0.74	.30*	.39*	.26*	.51*	.24*	.24*	.43*
52	2.49	1.21	.25*	.33*	.25*	.44*	.27*	.35*	.36*
53	2.48	1.26	.16*	.28*	.15*	.39*	.15*	.36*	.23*
54	2.28	1.13	.11	.16*	.11	.15*	.06	.23*	.17*
55	1.32	0.72	.24*	.53*	.29*	.51*	.26*	.27*	.46*
56	1.26	0.63	.23*	.51*	.28*	.52*	.31*	.22*	.43*
57	1.78	1.02	.39*	.28*	.30*	.41*	.29*	.11	.36*
58	1.85	1.14	.16*	.24*	.24*	.32*	.23*	.31*	.13*
59	1.19	0.57	.18*	.50*	.17*	.51*	.24*	.25*	.38*
60	1.45	0.87	.24*	.46*	.35*	.48*	.19*	.19*	.44*
61	2.40	1.35	.33*	.36*	.28*	.42*	.30*	.29*	.41*
62	1.89	1.03	.31*	.30*	.29*	.39*	.29*	.12	.38*
63	2.29	1.25	.07	.15*	.06	.26*	.12	.41*	.18*
64	1.53	0.92	.24*	.34*	.27*	.41*	.23*	.32*	.29*
65	2.41	1.27	.12	.15*	.15*	.22*	.02	.46*	.09
66	1.48	0.85	.22*	.42*	.28*	.51*	.29*	.17*	.39*
67	2.51	1.16	.13	.20*	.17*	.27*	.06	.22*	.23*
68	2.45	1.30	.08	.12	.06	.28*	.07	.31*	.25*
69	1.71	0.99	.17*	.38*	.17*	.42*	.25*	.28*	.33*
70	1.19	0.51	.18*	.38*	.27*	.44*	.11	.25*	.36*
71	2.77	1.31	.00	.04	.06	.21*	-.11	.36*	.10
72	1.28	0.60	.15*	.37*	.19*	.48*	.25*	.28*	.34*
73	1.75	1.08	.32*	.38*	.31*	.54*	.31*	.17*	.43*

* indicates $p < .05$

Table 4.
Correlations between well-established Dark Tetrad measures and Behavioral Dark Tetrad measure sadism items

Item	M	SD	CAST (Verbal)	CAST (Physical)	CAST (Vicarious)	LSRP (Prim.)	LSRP (Sec.)	NPI-40 Total	MACH_IV Total
75	1.08	0.36	.29*	.29*	.24*	.19*	.09	.12	.15*
76	1.36	0.73	.36*	.47*	.34*	.39*	.17*	.14*	.38*
77	1.85	1.16	.22*	.31*	.50*	.26*	.17*	.07	.25*
78	1.41	0.87	.19*	.29*	.37*	.13*	.16*	.04	.25*
79	1.19	0.57	.23*	.21*	.12	.21*	.09	.24*	.21*
80	1.42	0.86	.24*	.44*	.39*	.35*	.20*	.12	.39*
81	1.39	0.84	.27*	.50*	.44*	.42*	.26*	.23*	.48*
82	1.53	0.86	.54*	.31*	.37*	.26*	.26*	.02	.26*
83	1.07	0.32	.20*	.46*	.16*	.41*	.14*	.21*	.38*
84	1.14	0.46	.38*	.41*	.37*	.42*	.15*	.23*	.36*
85	1.39	0.79	.40*	.36*	.30*	.44*	.25*	.28*	.41*
86	1.45	0.88	.16*	.37*	.20*	.44*	.18*	.16*	.39*
87	1.25	0.61	.24*	.45*	.35*	.47*	.20*	.11	.50*
88	1.07	0.35	.23*	.22*	.13	.22*	.12	.23*	.10
89	1.42	0.73	.35*	.24*	.22*	.25*	.19*	.14*	.24*
90	1.17	0.54	.26*	.49*	.29*	.49*	.23*	.26*	.45*
91	4.05	0.63	.04	.11	-.01	-.09	-.14*	-.08	.01
93	1.29	0.66	.20*	.42*	.16*	.45*	.21*	.25*	.33*
94	1.62	0.96	.41*	.37*	.31*	.39*	.27*	.11	.36*
95	1.53	0.86	.28*	.21*	.26*	.26*	.37*	.05	.26*
96	1.86	1.27	.28*	.28*	.30*	.30*	.08	.16*	.28*
97	1.37	0.82	.18*	.34*	.21*	.16*	.15*	.09	.10
98	1.06	0.28	.20*	.20*	.26*	.35*	.14*	.14*	.26*
99	1.28	0.67	.13*	.39*	.18*	.47*	.20*	.36*	.29*
100	1.46	0.83	.48*	.19*	.41*	.17*	.20*	.01	.17*
101	1.11	0.40	.38*	.30*	.18*	.26*	.11	.24*	.19*
102	1.05	0.28	.13	.39*	.17*	.40*	.16*	.17*	.24*
103	1.07	0.43	.18*	.27*	.15*	.31*	.13	.15*	.23*
104	1.06	0.36	.13	.45*	.12	.39*	.10	.26*	.36*
105	1.05	0.25	.18*	.10	.17*	.12	-.02	.13	.12
106	1.46	0.84	.27*	.29*	.44*	.41*	.29*	.05	.46*
107	1.44	0.85	.34*	.39*	.45*	.48*	.29*	.11	.48*
108	1.18	0.56	.21*	.53*	.31*	.48*	.18*	.22*	.44*

* indicates *p* < .05

Table 5.

Correlations between well-established Dark Tetrad measures and selected Behavioral Dark Tetrad items

Item	CAST (Verbal)	CAST (Physical)	CAST (Vicarious)	LSRP (Prim.)	LSRP (Sec.)	NPI-40 Total	MACH_IV Total
82	**.54***	.31*	.37*	.26*	.26*	.02	.26*
89	**.35***	.24*	.22*	.25*	.19*	.14*	.24*
100	**.48***	.19*	.41*	.17*	.20*	.01	.17*
76	.36*	**.47***	.34*	.39*	.17*	.14*	.38*
80	.24*	**.44***	.39*	.35*	.20*	.12	.39*
97	.18*	**.34***	.21*	.16*	.15*	.09	.10
104	.13	**.45***	.12	.39*	.10	.26*	.36*
37	.24*	.20*	**.35***	.23*	.28*	.01	.26*
77	.22*	.31*	**.50***	.26*	.17*	.07	.25*
78	.19*	.29*	**.37***	.13*	.16*	.04	.25*
52	.25*	.33*	.25*	**.44***	.27*	.35*	.36*
66	.22*	.42*	.28*	**.51***	.29*	.17*	.39*
69	.17*	.38*	.17*	**.42***	.25*	.28*	.33*
73	.32*	.38*	.31*	**.54***	.31*	.17*	.43*
26	.10	.16*	.21*	.26*	**.38***	.14*	.20*
35	.14*	.06	.10	.26*	**.32***	.19*	.21*
44	.12	.09	.15*	.19*	**.40***	-.03	.08
95	.28*	.21*	.26*	.26*	**.37***	.05	.26*
6	.03	.04	-.05	.09	-.05	**.49***	.05
11	.03	.05	-.05	.21*	-.06	**.52***	-.02
24	.05	.02	-.02	.12	-.06	**.48***	-.08
71	.01	.04	.06	.21*	-.11	**.36***	.10
13	.26*	.24*	.25*	.36*	.14*	.18*	**.37***
49	.16*	.29*	.22*	.34*	.30*	.15*	**.38***
87	.24*	.45*	.35*	.47*	.20*	.11	**.50***
106	.27*	.29*	.44*	.41*	.29*	.05	**.46***

* indicates *p* < .05. Bold-faced indicates dimension membership

Table 6.

Correlations between well-established Dark Tetrad measures

Variable	M	SD	1	2	3	4	5	6
1. CAST Verbal Sadism	2.26	1.11						
2. CAST Physical Sadism	1.34	0.63	.45*					
3. CAST Vicarious Sadism	2.50	1.20	.58*	.49*				
4. LSRP Prim. Psychopathy	1.70	0.43	.43*	.59*	.45*			
5. LSRP Sec. Psychopathy	2.10	0.47	.31*	.35*	.30*	.47*		
6. NPI-40 Total	1.34	0.17	.12	.21*	.08	.34*	.06	
7. MACH_IV Total	3.40	0.69	.43*	.55*	.46*	.61*	.42*	.16*

* indicates $p < .05$

Confirmatory Factor Analysis

The proposed 7-factor model was explored using CFA in AMOS v. 26. As this is a data-based model, a restricted factor analysis was conducted. The items taken from the initial correlational analyses resulted in a model that moderately fit the data ($\chi 2 = 3331.57$, df = 1302, CFI = .74, RMSEA = .06, 90% RMSEA C.I. [.059, .064]). After the model was modified to only include 40 items with the best fit, a substantial increase in model fit was found ($\chi 2 = 868.14$, df = 278, CFI = .81, RMSEA = .07, 90% RMSEA C.I. [.07, .08]). Modification indices suggested four separate correlations of two error terms to improve model fit. After allowing for error terms to be correlated, model fit was slightly improved ($\chi 2 = 740.58$, df = 274, CFI = .85, RMSEA = .06, 90% RMSEA C.I. [.06, .07]). The final proposed model is shown in Figure 1. Estimates from the final model are shown in Table 7. Factor reliabilities and correlations between factors are shown in Table 8.
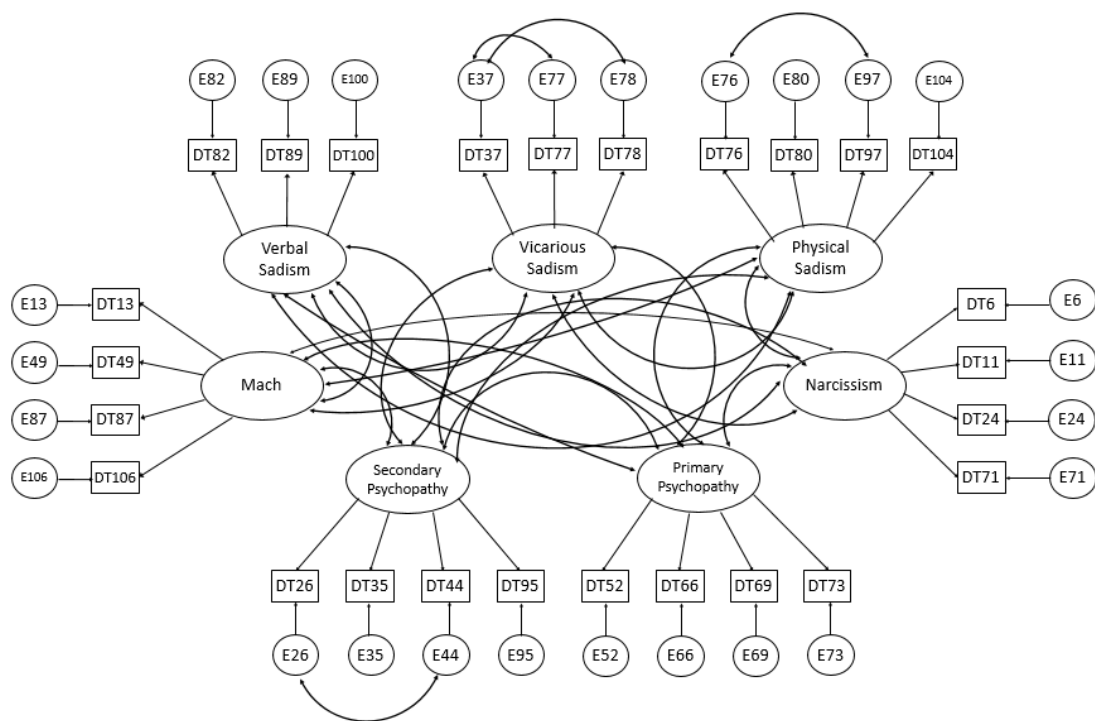
Figure 1. Proposed CFA Model of Potential Short Measure Items

Table 7.
Proposed CFA Model Estimates

Item	Vicarious Sadism	Verbal Sadism	Physical Sadism	Prim. Psych.	Sec. Psych.	Narc.	Mach.
37. I lie for no reason	.62						
77. I watch movies that include torture scenes.	.91						
78. I read books that include torture.	.69						
82. I make jokes at the expense of others.		.67					
89. I insult others.		.46					
100. I make fun of people because it is funny.		.58					
76. I have intentionally harmed another person.			.29				
80. I identify with the villain in stories and movies.			.58				
97. I engage in physically aggressive sexual acts towards my partner.			.17				
104. I look for the most painful way to cause stress for others.			.13				
52. I have talked my way out of punishment for my actions.				.73			
66. I calculate decisions without considering others' problems.				.53			
69. I flatter others to get what I want.				.59			
73. I hide my true intentions from others.				.67			
26. I take risks without thinking them through.					.63		
35. I have lost friends by being blunt.					.49		
44. I act without thinking about the outcomes.					.53		
95. I do the things that greatly annoy others.					.58		
6. I will try to be the leader in a new group.						.65	
11. I think highly of myself.						.95	
24. I add great value.						.91	
71. I plan how to get ahead.						.77	
13. I can easily find the flaws in others.							.53
49. I tell people what they want to hear.							.50
87. I think about hurting people.							.33
106. I root for the villain in movies.							.56

Note: Item numbers align with original item numbers found in Behavioral Dark Tetrad measure.

Table 8.
Study 1 Confirmatory Factor Analysis Correlational Matrix and Factor Reliability
Coefficients (Along the Diagonal)

Variable	M	SD	1	2	3	4	5	6	7
1. Verbal Sadism	1.47	0.66	(.75)						
2. Physical Sadism	1.30	0.45	.38	(.48)					
3. Vicarious Sadism	1.54	0.71	.41	.42	(.62)				
4. Prim. Psychopathy	1.86	0.76	.47	.48	.44	(.70)			
5. Sec. Psychopathy	1.82	0.75	.42	.31	.41	.47	(.66)		
6. Narcissism	2.56	0.95	.16	.20	.14	.38	.20	(.74)	
7. Mach.	1.82	0.64	.45	.54	.46	.59	.40	.29	(.58)

Exploratory Factor Analysis

The EFA was conducted using SPSS. The principle components analysis was conducted before the EFA to determine how many factors would emerge from the Behavioral Dark Tetrad measure items specified in the CFA. Initially, a six-, seven-, eight-, and nine-factor solution emerged as potential factor solutions. Then, a maximum likelihood extraction with promax rotation was used to investigate these solutions further. As this is a data-based model, a restricted factor analysis was conducted. Out of these initial factor solutions, the six- and seven-factor solutions were deemed suitable for this study due to larger pattern coefficients. While both factor solutions consisted of similar factors, the seven-factor solution contained a factor comprised of items tapping into manipulation that the six-factor solution did not contain. As manipulativeness is a common trait found in all Dark Tetrad constructs, the seven-factor solution was deemed more suitable for this study.

Each factor of the chosen seven-factor solution was labeled using themes found in item content: superiority, verbal abuse, immorality, impulsivity/selfishness, manipulation,

visual abuse, and physical abuse. Factor reliabilities and correlations between factors are

shown in Table 9. The pattern coefficients of each item are shown in Table 10. A

comparison between the CFA and EFA dimensions that each item loaded onto is shown

in Table 11.

Table 9.
Study 1 Exploratory Factor Analysis Correlational Matrix and Factor Reliability Coefficients (Along the Diagonal)

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Superiority	2.52	0.87	(.74)						
2. Verbal Abuse	1.49	0.62	.20	(.75)					
3. Immorality	1.38	0.62	.21	.48	(.72)				
4. Impulsivity/ Selfish	1.71	0.79	.27	.53	.40	(.73)			
5. Manipulation	1.90	0.70	.46	.57	.63	.51	(.69)		
6. Visual Abuse	1.63	0.92	.21	.38	.51	.40	.42	(.75)	
7. Physical Abuse	1.36	0.63	.26	.33	.35	.19	.44	.27	(.47)

Table 10.
Exploratory Factor Analysis Pattern Coefficients

Item	1	2	3	4	5	6	7
11. I think highly of myself.	**.82**	-.03	-.07	-.01	-.03	-.05	-.05
24. I add great value.	**.76**	.03	-.02	-.01	-.07	-.01	.00
71. I plan how to get ahead.	**.54**	-.08	.00	-.07	.22	.02	.01
6. I will try to be the leader in a new group.	**.51**	.08	.09	-.06	-.03	-.01	-.06
13. I can easily find the flaws in others.	**.28**	.06	.13	.04	.19	.02	.07
82. I make jokes at the expense of others.	.00	**.88**	-.08	-.04	-.02	.02	.06
100. I make fun of people because it is funny.	-.04	**.67**	.03	-.09	.12	-.04	-.02
89. I insult others.	.11	**.49**	.03	.10	-.03	.00	.10
95. I do the things that greatly annoy others.	.06	**.33**	.09	.24	.04	.07	-.13
80. I identify with the villain in stories and movies.	-.01	-.07	**.86**	.00	-.01	.01	-.02
106. I root for the villain in movies.	.02	.11	**.80**	.01	-.11	.02	-.07
87. I think about hurting people.	-.04	-.05	**.33**	-.12	.15	.09	**.28**
44. I act without thinking about the outcomes.	-.11	-.04	-.03	**.87**	.03	-.06	-.01
26. I take risks without thinking them through.	-.01	.00	-.02	**.79**	-.03	.04	-.01
66. I calculate decisions without considering others' problems.	.01	.06	.07	**.33**	**.30**	-.06	.09
35. I have lost friends by being blunt.	.18	-.06	.08	.25	-.08	.07	.16
69. I flatter others to get what I want.	.08	.05	-.09	-.08	**.70**	.04	-.03
52. I have talked my way out of punishment for my actions.	.06	-.01	-.17	.09	**.60**	.09	.02
49. I tell people what they want to hear.	-.08	.08	.14	.00	**.49**	-.12	-.06
73. I hide my true intentions from others.	.07	-.09	**.30**	.07	**.43**	-.08	.02
37. I lie for no reason.	-.13	.24	.02	.04	**.37**	.04	-.09
78. I read books that include torture.	-.10	-.02	.03	-.08	.06	**.93**	-.03
77. I watch movies that include torture scenes.	.08	.05	.03	.09	-.07	**.65**	.04
76. I have intentionally harmed another person.	-.06	.08	-.03	-.02	-.04	-.06	**1.03**
97. I engage in physically aggressive sexual acts towards my partner.	.05	-.07	-.05	.11	-.04	.22	**.30**

Note: Factor loadings > .25 are bold-faced. Item numbers align with the original item numbers found in the Behavioral Dark Tetrad measure.

Table 11.

Comparison of EFA and CFA Dimensions

Item	EFA Dimension	CFA Dimension
82. I make jokes at the expense of others.	Verbal Sadism	Verbal Abuse
89. I insult others.	Verbal Sadism	Verbal Abuse
100. I make fun of people because it is funny.	Verbal Sadism	Verbal Abuse
76. I have intentionally harmed another person.	Physical Sadism	Physical Abuse
80. I identify with the villain in stories and movies.	Physical Sadism	Immorality
97. I engage in physically aggressive sexual acts towards my partner.	Physical Sadism	Physical Abuse
104. I look for the most painful way to cause stress for others.	Physical Sadism	None-loading
37. I lie for no reason.	Vicarious Sadism	Manipulation
77. I watch movies that include torture scenes.	Vicarious Sadism	Visual Abuse
78. I read books that include torture.	Vicarious Sadism	Visual Abuse
52. I have talked my way out of punishment for my actions.	Prim. Psychopathy	Manipulation
66. I calculate decisions without considering others' problems.	Prim. Psychopathy	Impulsivity/Selfish
69. I flatter others to get what I want.	Prim. Psychopathy	Manipulation
73. I hide my true intentions from others.	Prim. Psychopathy	Manipulation
26. I take risks without thinking them through.	Sec. Psychopathy	Impulsivity/Selfish
35. I have lost friends by being blunt.	Sec. Psychopathy	None-loading
44. I act without thinking about the outcomes.	Sec. Psychopathy	Impulsivity/Selfish
95. I do the things that greatly annoy others.	Sec. Psychopathy	Verbal Abuse
6. I will try to be the leader in a new group.	Narcissism	Superiority
11. I think highly of myself.	Narcissism	Superiority
24. I add great value.	Narcissism	Superiority
71. I plan how to get ahead.	Narcissism	Superiority
13. I can easily find the flaws in others.	Machiavellianism	Superiority
49. I tell people what they want to hear.	Machiavellianism	Manipulation
87. I think about hurting people.	Machiavellianism	Immorality
106. I root for the villain in movies.	Machiavellianism	Immorality

Note. Item numbers align with the original item numbers found in the Behavioral Dark Tetrad measure

Discussion

The purpose of this study was to determine whether a new valid short measure of the Dark Tetrad could be created using items from the Behavioral Dark Tetrad measure. Previous literature has indicated a need for a short measure of the construct, as the use of the Dark Tetrad in lieu of the Dark Triad is increasing, and lengthy measures can be detrimental to some studies as they cause participant fatigue.

Confirmatory Factor Analysis

As expected, well-established Dark Tetrad measures scores were highly correlated with each other. In addition, a large number of intercorrelations between the Behavioral Dark Tetrad measure items and well-established Dark Tetrad measure scores were found. This significantly limited the amount of potential items that could be used for the new short measure of the Dark Tetrad, as items in a measure should distinctly measure only one construct. Of note, only four items were most correlated with MACH-IV scores (Items #13, #49, #87, #106). In addition to being highly correlated with Machiavellianism, all these items were also all highly correlated with primary psychopathy. Furthermore, one of these Machiavellianism items was also highly correlated with direct physical sadism while another was highly correlated with vicarious sadism. As these four items were the only to be most correlated with Machiavellianism, researchers decided to use them for the proposed model, even though these items do not distinctly only measure the Machiavellianism construct. All the items used to represent Machiavellianism in the proposed model all share a high amount of variance with other constructs of the Dark Tetrad, hindering the ability of the new measure to accurately measure Machiavellianism.

Although adequate model fit was found, some items in the proposed model had weak estimates. This was to be expected for the Machiavellianism factor due to the high intercorrelations found for the Machiavellianism items in the correlational analysis. Significantly weaker estimates for the physical sadism factor were also found. This is potentially due to an overlap between direct sadism and psychopathy. Indeed, Paulhus and colleagues (2010) also had issues creating items for sadism as items created to measure direct sadism significantly overlapped with the items created to measure psychopathy.

In addition, some of the factors created for this model have low reliabilities. While verbal sadism ($r = .75$), primary psychopathy ($r = .70$), and narcissism ($r = .74$) had sufficient reliability coefficients, physical sadism ($r = .48$), vicarious sadism ($r = .62$), secondary psychopathy ($r = .66$), and Machiavellianism ($r = .58$) did not. The reliability of these factors will need improvement before creating a new short measure of the Dark Tetrad.

Exploratory Factor Analysis

The seven factors proposed through the EFA do not align with the seven factors proposed through the CFA. Indeed, only one Dark Tetrad dimension created through the CFA (narcissism) had all items load onto the same factor created through the EFA (superiority). However, the seven factors proposed through the EFA do align with core features of the Dark Tetrad, including manipulation, enjoying the abuse of others, impulsivity, immorality, and superiority. Behavioral items were used during this study to investigate whether using behavioral items over attitudinal items would decrease the amount of construct overlap found within the new short measure of the Dark Tetrad. As

the factors are representative of the constructs that have been claimed to cause the construct overlap in the Dark Tetrad, these results suggest that behavioral measure items do not better distinguish between the Dark Tetrad constructs compared to attitudinal measure items.

Similarly to the proposed CFA model, the factor structure created through the EFA consists of some factors with low reliabilities. While superiority ($r = .74$), verbal abuse ($r = .75$), immorality ($r = .72$), impulsivity/selfishness ($r = .73$), and visual abuse ($r = .75$) had sufficient reliability coefficients, manipulation ($r = .69$) and physical abuse ($r = .47$) did not. Although the EFA model had more reliable factors compared to the CFA model, reliabilities need to be improved before creating a new short measure of the Dark Tetrad.

Overall, the results of Study 1 indicate that both factor structures created during this study are not sufficient enough to create a new short measure as neither model separates the factors clearly. Indeed, both proposed models creating during this study are not ideal and could potentially be improved before creating the new short measure of the Dark Tetrad. Because of this, further research will be conducted using these two models before items are chosen for the final version of the new short measure of the Dark Tetrad. In the next study, both proposed models created during this study will be replicated with a new sample to cross-validate and compare the two models. Results from Study 2 will be used to determine which proposed model performs better with new data and whether items from the Behavioral Dark Tetrad measure can be used for the new short measure of the Dark Tetrad.

CHAPTER IV: STUDY TWO METHODOLOGY

In order to further investigate which Behavioral Dark Tetrad measure items should be used for a new short measure of the Dark Tetrad, Study 2 addressed the following research questions:

Research Question 1: Do the two proposed models of the Dark Tetrad cross-validate with new data?

Research Question 2: How does the EFA factor solution compare to the CFA factor solution?

To investigate these questions, both models proposed in Study 1 were cross-validated with a new sample using CFA. In addition, the two models were compared in order to determine which model performs better with the new data.

Participants

Participants ($n = 272$) consisted of a sample of undergraduate students enrolled in psychology classes at a Southeastern United States University. Seventy-six participants who took part in the study were not included in the sample due to missing data. Each participant provided consent and were given class credit for their voluntary participation. Participants were ages 18-38, with an average age of 19.58 ($SD = 2.68$). The final sample was composed of 58% females, 41% males, and 1% other. The ethnicities of the participants were as follows: 65% White/non-Hispanic, 17% African American, 4% Asian, 7% Hispanic, 1% American Indian/Native American, 4% Mixed Ethnicity, and 2% Other. In addition, 59% percent of the sample were in their first year in university, 25% were in their second year, 12% were in their third year, 4% were in their fourth year, and 0% had completed more than four years of university education.

Procedure

The same Qualtrics survey was used in both Study 1 and Study 2. The first page of the survey obtained informed consent from each participant and confirmed that the participant was 18 years or older and willing to proceed with the study. The participants were then asked to provide responses to the Behavioral Dark Tetrad Measure, the MACH-IV (Christie & Geis, 1970), the Levenson Self-Report Psychopathy scale (Levenson et al., 1995), the Narcissistic Personality Inventory (Raskin & Hall, 1979), and the Comprehensive Assessment of Sadistic Tendencies (Buckels & Paulhus, 2014), among other measures. Quality assurance questions were used throughout the entire survey to ensure participants were paying attention while answering the items on the questionnaire. Participants who did not answer the quality assurance questions correctly were removed from the analysis. Eleven out of the seventy-six participants that were removed from the analysis were removed for this reason. After completing the questionnaire, participants were asked to provide the following demographic information: sex, ethnicity, years in university, GPA, and employment status. After completing the entire survey, participants were compensated for their time with class credit.

CHAPTER V: STUDY TWO RESULTS

Data Analysis

Results from the EFA conducted in Study 1 were used to create a second

proposed model of the Dark Tetrad. This model consisted of seven dimensions: verbal

abuse, physical abuse, immorality, manipulation, impulsivity, superiority, and visual

abuse. Covariances between each dimension were added to the model as these Dark

Tetrad-related dimensions have been shown to be highly correlated with one another. For

the reminder of the paper, the model created in Study 1 using empirical keying and CFA

will be referred to as the Empirical Keying Dark Tetrad model while the new CFA model

being created for Study 2 using the EFA results from Study 1 will be referred to as the

EFA Dark Tetrad model.

The fit of both the Empirical Keying Dark Tetrad model and the EFA Dark Tetrad

model were tested using CFA. Unlike Study 1, Behavioral Dark Tetrad items were not

eliminated to improve model fit, as these items were previously identified as suitable

items during Study 1. Results will allow us to determine whether both models can cross-

validate with new data. In addition, results of each model will be compared to examine

which model performs better with new data.

Both models were explored using CFA in AMOS v. 26. For the Empirical Keying

Dark Tetrad model, model fit was improved compared to Study 1 results ($\chi2 = 677.89$, df

$= 274$, CFI $= .84$, RMSEA $= .07$, 90% RMSEA C.I. [.067, .081]). Originally, this model

included the three pairs of correlated errors added during the Study 1 analysis. Results

using the new sample indicated that two of three correlated error pairs were significantly

correlated with each other. The non-significant correlation between error terms 79 and 97

was then removed from model and model fit was slightly changed ($\chi2$ = 679.31, df = 275, CFI = .84, RMSEA = .07, 90% RMSEA C.I. [.067, .081]). The final Empirical Keying Dark Tetrad model is shown in Figure 2. Estimates from the final Empirical Keying Dark Tetrad model are shown in Table 12. Factor reliabilities and correlations between factors are shown in Table 13.
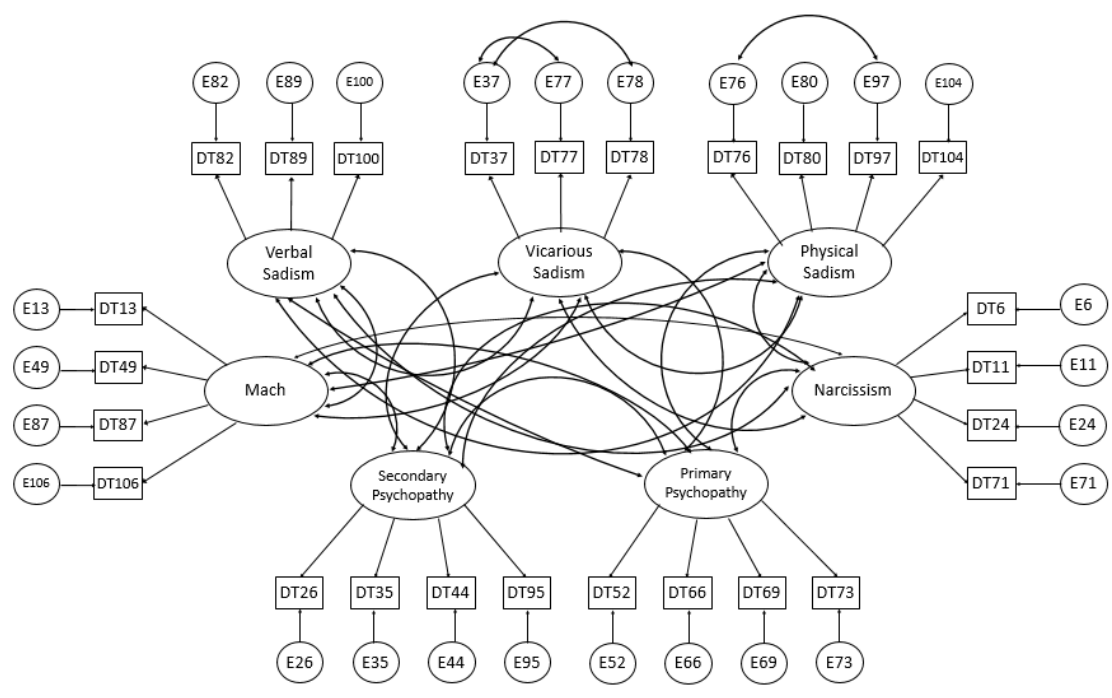
Figure 2. The Empirical Keying Dark Tetrad model

Table 12.
Empirical Keying Dark Tetrad Model Estimates

Item	Vicarious Sadism	Verbal Sadism	Physical Sadism	Prim. Psych.	Sec. Psych.	Narc.	Mach.
37. I lie for no reason	.62						
77. I watch movies that include torture scenes.	.94						
78. I read books that include torture.	.75						
82. I make jokes at the expense of others.		.79					
89. I insult others.		.67					
100. I make fun of people because it is funny.		.85					
76. I have intentionally harmed another person.			.34				
80. I identify with the villain in stories and movies.			.72				
97. I engage in physically aggressive sexual acts towards my partner.			.34				
104. I look for the most painful way to cause stress for others.			.13				
52. I have talked my way out of punishment for my actions.				.85			
66. I calculate decisions without considering others' problems.				.58			
69. I flatter others to get what I want.				.81			
73. I hide my true intentions from others.				.76			
26. I take risks without thinking them through.					.81		
35. I have lost friends by being blunt.					.45		
44. I act without thinking about the outcomes.					.53		
95. I do the things that greatly annoy others.					.65		
6. I will try to be the leader in a new group.						.74	
11. I think highly of myself.						.76	
24. I add great value.						.87	
71. I plan how to get ahead.						.81	
13. I can easily find the flaws in others.							.63
49. I tell people what they want to hear.							.36
87. I think about hurting people.							.27
106. I root for the villain in movies.							.56

Note: Item numbers align with original item numbers found in Behavioral Dark Tetrad measure.

Table 13.
Empirical Keying Dark Tetrad Model Confirmatory Factor Analysis Correlational
Matrix and Factor Reliability Coefficients (Along the Diagonal)

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Verbal Sadism	1.57	0.84	(.85)						
2. Physical Sadism	1.38	0.51	.46	(.52)					
3. Vicarious Sadism	1.58	0.78	.33	.53	(.71)				
4. Prim. Psychopathy	1.97	0.86	.47	.59	.54	(.76)			
5. Sec. Psychopathy	1.84	0.77	.41	.48	.42	.58	(.64)		
6. Narcissism	2.44	0.93	.18	.24	.12	.35	.14	(.73)	
7. Mach.	1.94	0.68	.53	.60	.51	.67	.43	.29	(.52)

The EFA Dark Tetrad model initially had acceptable fit ($\chi2 = 556.83$, df = 233, CFI = .86, RMSEA = .07, 90% RMSEA C.I. [.064, .079]). It should be noted that AMOS v. 26 would not run this analysis until the covariances between the Impulsivity and Visual Abuse factors and the Physical Abuse and Visual Abuse factors were removed. Modification indices suggested to cross-load Dark Tetrad item #13 between the item's initial factor, Superiority, and Verbal Abuse. This cross-loading was added to model, as the content of the item ("I can easily find the flaws in others") is relevant to both factors. After this change was made, model fit was slightly improved ($\chi2 = 512.57$, df = 232, CFI = .88, RMSEA = .07, 90% RMSEA C.I. [.059, .075]). The final EFA Dark Tetrad model is shown in Figure 3. Estimates from the final model are shown in Table 14. Factor reliabilities and correlations between factors are shown in Table 15.
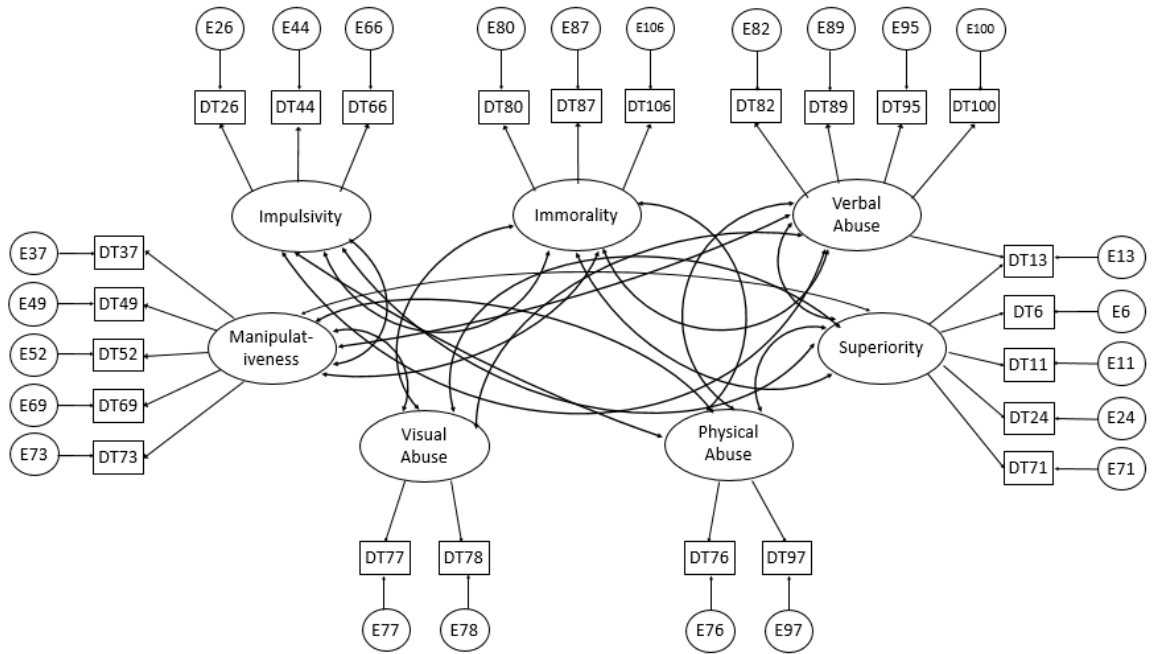
Figure 3. The EFA Dark Tetrad model

Table 14.
EFA Dark Tetrad Model Estimates

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
77. I watch movies that include torture scenes.	.95						
78. I read books that include torture.	.64						
76. I have intentionally harmed another person.		.42					
97. I engage in physically aggressive sexual acts		.36					
6. I will try to be the leader in a new group.			.72				
11. I think highly of myself.			.75				
24. I add great value.			.85				
71. I plan how to get ahead.			.81				
13. I can easily find the flaws in others.			..48	.47			
82. I make jokes at the expense of others.				.76			
89. I insult others.				.65			
95. I do the things that greatly annoy others				.63			
100. I make fun of people because it is funny.				.82			
80. I identify with the villain in stories and movies.					.79		
87. I think about hurting people.					.29		
106. I root for the villain in movies.					.80		
26. I take risks without thinking them through						.84	
44. I act without thinking about the outcomes.						.88	
66. I calculate decisions without considering others' problems.						.53	
37. I lie for no reason							.43
49. I tell people what they want to hear.							.54
52. I have talked my way out of punishment for my actions.							.83
69. I flatter others to get what I want.							.83
73. I hide my true intentions from others.							.73

Note: Factor 1 = Visual Abuse, Factor 2 = Physical Abuse, Factor 3 = Superiority, Factor 4 = Verbal Abuse, Factor 5 = Immorality, Factor 6 = Impulsivity, Factor 7 = Manipulativeness. Item numbers align with original item numbers found in Behavioral Dark Tetrad measure.

Table 15.
EFA Dark Tetrad Model Confirmatory Factor Analysis Correlational Matrix and
Factor Reliability Coefficients (Along the Diagonal)

Variable	M	SD	1	2	3	4	5	6	7
1. Visual Abuse	1.65	0.94	(.79)						
2. Physical Abuse	1.42	0.65	.32	(.36)					
3. Superiority	2.46	0.87	.18	.23	(.73)				
4. Verbal Abuse	1.77	0.78	.34	.46	.42	(.85)			
5. Immorality	1.56	0.76	.55	.37	.28	.44	(.71)		
6. Impulsivity	1.78	0.84	.33	.36	.12	.34	.39	(.76)	
7. Manipulativeness	2.00	0.81	.43	.41	.39	.54	.47	.49	(.77)

To explore the differences between the EFA and Empirical Keying Dark Tetrad models, a Chi-square difference test was conducted. This test used the Chi-square values and corresponding degrees of freedoms found for both revised, final models. With a Chi-square difference of 166.74 and a degrees of freedom difference of 43, the results of the Chi-square difference test indicated that the difference between the two models is significant ($p < .05$). Further examination concluded that the EFA Dark Tetrad model is the superior model, as it has higher estimates and reliabilities compared to the Empirical Keying Dark Tetrad model.

Discussion

The overall purpose of this research was to determine whether items from the Behavioral Dark Tetrad measure could be used to create a new short measure of the Dark Tetrad. Results from Study 1 indicated which Behavioral Dark Tetrad measure items would be the most suitable for the new short measure. In addition, Study 1 provided two potential factor structures of the Dark Tetrad that could be used to create the new short

measure. The purpose of Study 2 was to use a new sample to cross-validate and compare the two potential Dark Tetrad factor structures.

In Study 2, a CFA was conducted for both the EFA and Empirical Keying Dark Tetrad models to determine whether the results found in Study 1 were sample-specific. Both models demonstrated adequate fit, suggesting that both models cross-validated using the new sample. It should be noted that modification indices revealed strong correlations between Dark Tetrad item #66 and all seven factors of the EFA Dark Tetrad model, in addition to approximately two-thirds of all the other items included in this particular model. As the content of this particular item ("I calculate decisions without considering other's problems.") captures manipulation and a lack of empathy, core traits found in the Dark Tetrad, it makes sense why this item is highly correlated with other facets of the model. Indeed, this item should be removed from the EFA Dark Tetrad model as it captures the concept of the Dark Tetrad as a whole, and not just one particular factor of the construct. But, since this item is only one of three in the Impulsivity factor, it was decided to keep this item in the model. Without this item, the model would become unstable as there are already two factors consisting of only two items.

Both the Empirical Keying and EFA Dark Tetrad models consist of factors with low reliabilities. For the Empirical Keying Dark Tetrad model, Verbal Sadism ($r = .85$), Vicarious Sadism ($r = .71$), Primary Psychopathy ($r = .76$), and Narcissism ($r = .73$) had sufficient reliabilities while Physical Sadism ($r = .53$), Secondary Psychopathy ($r = .64$), and Machiavellianism ($r = .52$) did not. For the EFA Dark Tetrad model, Physical Abuse was the only factor with a suboptimal reliability ($r = .36$), while Visual Abuse ($r = .79$),

Superiority ($r = .73$), Verbal Abuse, ($r = .85$), Immorality ($r = .71$), Impulsivity ($r = .76$), and Manipulativeness ($r = .77$) all had sufficient reliabilities.

The Chi-square difference test revealed that there is a significant difference between the two analyzed models. Even with this result, it is not completely clear which model is ultimately the better factor solution. While the EFA Dark Tetrad model overall had higher estimates compared to the Empirical Keying Dark Tetrad model, the Empirical Keying Dark Tetrad model ultimately used fewer degrees of freedom, making it more parsimonious. In addition, the EFA Dark Tetrad model consists of two factors that only consist of two Behavioral Dark Tetrad items. Moreover, the 3-item Impulsivity factor consists of Dark Tetrad item #66, which is highly correlated with the entire model, making it a suboptimal item to include in the model. On the other hand, the EFA Dark Tetrad model had only one factor with suboptimal reliability, while the Empirical Keying Dark Tetrad model had three. Because of these reasons, the EFA Dark Tetrad model could be a better factor solution compared to the Empirical Keying Tetrad model.

Furthermore, the results of these studies illustrate a need to reevaluate how the Dark Tetrad is measured. Currently, most research examines the Dark Tetrad by analyzing the four traits it consists of. The results of the Study 1 CFA revealed that examining the Dark Tetrad by looking at these four traits is suboptimal, as these traits may lead to the same (or similar) behaviors. For example, both Study 1 and previous literature has been limited by the similarity of direct sadism and psychopathy, as the behavioral manifestations of these two constructs are too similar to separate (Paulhus et al., 2010).

In addition, the results of the Study 1 EFA demonstrated that when using an exploratory approach, items intended to measure the four traits of the Dark Tetrad will create factors aligning with the overlapping behaviors found in the Dark Tetrad rather than the Dark Tetrad traits themselves. This suggests that examining the Dark Tetrad through analyzing the overlapping behaviors instead of four Dark Tetrad traits could be a better approach. Study 2 results also provide evidence for this conclusion. A comparison of Table 13 and Table 15 indicates that behaviors found in the EFA Dark Tetrad model are less correlated with each other compared to the traits found in the Empirical Keying Dark Tetrad model, suggesting that the overlapping behaviors found in the Dark Tetrad are more separable and more identifiable constructs than the four Dark Tetrad traits. Indeed, while examining the Dark Tetrad through both traits and behaviors are both valid approaches, using a behavioral-based approach could lead to better results.

In summary, while the results provided useful information for the new short measure of the Dark Tetrad, more research needs to be done before the measure is broadly used. Study 1 determined which items from the Behavioral Dark Tetrad measure would be most suitable for the new short measure. Study 2 indicated that both the Empirical Keying Dark Tetrad model and the EFA Dark Tetrad model are valid factor structures for the new short measure, but the EFA Dark Tetrad model performed slightly better. Therefore, the new short measure should use the EFA Dark Tetrad model's factor structure. However, the EFA Dark Tetrad model was still limited by its weaker factors. More research needs to be done to solidify the EFA Dark Tetrad model and the items it consists of before the new short measure can be created.

Limitations

A major limitation of this study is that only self-report measures were used, potentially creating self-report bias (Shaddish, Cook & Campbell, 2002). Because of this, we cannot be certain whether the items selected for the new measure truly capture the Dark Tetrad, or only the perceptions ones has on where they lie on the Dark Tetrad continuum. We suggest to further examine this issue by having close informants (peers, spouses, relatives) corroborate the results of the measure. This is one the most credible ways to validate a self-report measure and is not threatened by social desirability (McCrae & Weiss, 2007). Moreover, a student sample from one university was used in the current study, creating a homogeneous subject pool. This could potentially lead to a sample that is not truly representative of the population. Further research using a more representative sample of the population should be conducted, increasing generalizability of the study.

A final limitation of this study involves the validity threat of history. It should be noted that COVID-19 pandemic began in the middle of data collection for the current study. Data for Study 1 was collected from January 2019 to April 2020, while data for Study 2 was collected from November 2020 to April 2021. With the COVID-19 pandemic hitting the United Stated near the end of Study 1 data collection, there is a potential for differences to occur between Study 1 participants and Study 2 participants due to the effects of the pandemic. These potential differences need to be considered when interpreting the results of the current study, as it is unclear how the pandemic could alter people's perceptions of themselves.

Future Directions

In the current study, behavioral items were used to measure the Dark Tetrad, as previous research that focused on attitudinal items resulted in highly correlated and unclear factor structures. The current study also did not illustrate a clear factor structure of the Dark Tetrad, and further investigation is warranted before a new short measure of the Dark Tetrad is created. As Study 2 results indicated that a behavioral-based factor structure could more accurately measure the Dark Tetrad compared to a trait-based factor structure, future research should focus on revising the EFA Dark Tetrad model presented in this study. This research should focus on creating new items that could be used in the weaker factors of the EFA Dark Tetrad model, such as the Physical Abuse, Visual Abuse, and Impulsivity factors.

It is also recommended that future researchers conduct another EFA study using items from well-established measures of each Dark Tetrad construct. The results of this future study will illustrate what factors will emerge using only items from validated measures of each Dark Tetrad construct, further investigating the construct overlap found in the Dark Tetrad. It should be examined whether items from well-established Dark Tetrad measures, when combined, create factors that align with each Dark Tetrad construct or create factors that align with the overlapping constructs of the Dark Tetrad. This research would provide more evidence on whether a behavioral-based or trait-based model would more accurately measure the Dark Tetrad.

Another potential reason that the current study could not create a clear facture structure of the Dark Tetrad stems from the measures utilized. While the NPI-40, CAST, LSRP, and MACH-IV are all well-established, validated measures of each Dark Tetrad

construct, there are other validated measures of the Dark Tetrad constructs that could potentially be better. For example, the SRP III (Paulhus & Hemphill, 2004) is another measure for psychopathy that has been used extensively in Dark Triad/Tetrad research (Furnham et al., 2014) that has been validated to measure psychopathy for non-clinical purposes (Forth et al, 1996). This measure could potentially be better at fully capturing psychopathy compared to the LSRP, which has been shown to have limitations involving its factor structure and theoretical nature. Indeed, well-established measures used in this study should be re-examined to ensure the best measures of each Dark Tetrad are used during the creation of the new short Dark Tetrad measure.

In addition, it is necessary to further investigate the validity of the Short Dark Tetrad (Paulhus et al., 2020). One potential validation method would be to conduct a study whereby participants complete the Short Dark Tetrad measure in addition to well-established measures of each Dark Tetrad construct, similar to the procedure conducted in the current study. Scores of the Short Dark Tetrad should then be correlated with scores on the well-established measure to examine the construct validity of the new short measure. As discussed above, this measure is limited as it does not examine indirect sadism, as it is highly correlated with psychopathy. As the current study also could not produce an indirect sadism factor that was not highly correlated with psychopathy, future research into this limitation is warranted. Specifically, the question of whether indirect sadism and psychopathy are different enough to be distinguished from one another should be investigated. Although, it should be noted that while it may not be necessary to measure indirect sadism, a valid short measure of the Dark Tetrad should measure both physical and verbal sadism, as they are important yet distinct facets of sadism.

Conclusion

As the Dark Tetrad increases in popularity, so does the need for a validated short Dark Tetrad measure. While there are two validated measures of the Dark Triad, a validated measure of the Dark Tetrad has yet to emerge. The only published short measure of the Dark Tetrad, the SD4, is limited as it was not able to fully capture sadism or psychopathy due to the overlapping nature of the constructs (Paulhus et al., 2020). The purpose of the current study was to create a new short measure of the Dark Tetrad. We experienced limitations similar to those found in Paulhus and colleagues (2020), which redirected our research to exploring the best factor structure for measuring the Dark Tetrad. While this study did not result in the new short measure, it did contribute meaningful steps towards a new short measure by providing a better understanding of the overlapping nature of the Dark Tetrad.

In this study, suitable items for a new short measure of the Dark Tetrad were selected from the Behavioral Dark Tetrad measure. These items were used to create two potential factor structures for the new short measure, one that encompassed the four Dark Tetrad constructs (the Empirical Keying Dark Tetrad model) and one that encompassed the overlapping traits found within the Dark Tetrad (the EFA Dark Tetrad model). The results of this study support the argument that the four Dark Tetrad constructs are inseparable, and that the Dark Tetrad is better measured through its overlapping traits. Further research examining the EFA Dark Tetrad model and its items is needed before the new short measure of the Dark Tetrad is solidified.

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APPENDICIES

APPENDIX A: Behavioral Dark Tetrad Measure

Please rate each item based on how well you feel it describes you on a scale of: (1) Does not describe me, (2) Describes me slightly well, (3) Describes me moderately well, (4) Describes me very well, (5) Describes me extremely well

1. I get annoyed when my ideas or suggestions are not used
2. I make friends as quickly as I lose them.
3. I would make better choices than the main character in most movies.
4. I would make better choices than the main character in most books.
5. I tell stories about myself.
6. I will try to be the leader in a new group.
7. I look for a way to stand out from the crowd.
8. I charm people into doing things my way.
9. I seek out opportunities to be the center of attention.
10. I talk about my accomplishments.
11. I think highly of myself.
12. I charm people into liking me.
13. I can easily find the flaws in others.
14. I let people know I am the smartest in the room.
15. I lash out if someone insults me.
16. I show others that I am superior.
17. I let people know how lucky they are to have me in their life.
18. I seek out admiration from others.
19. I seek praise from others.
20. I come up with ideas better than others.
21. I make the best decisions.
22. I am the most influential person I know.
23. People are better off when they listen to my advice.
24. I add great value.
25. I do not care when my actions harm others.
26. I take risks without thinking them through.
27. I lie to other people.
28. I do not look out for others.
29. I will blame others if I am suspected or accused of something.
30. I will get revenge after someone treats me poorly.
31. I do not think about how my actions affect others.
32. I get people to ignore the rules for me.
33. I will do something risky on a dare.
34. I have missed appointments because something more interesting came up.
35. I have lost friends by being blunt.

36. Seeing others upset does not affect me at all.
37. I lie for no reason.
38. I will get what I want.
39. I do not put effort into maintaining friendships.
40. I look for activities that will give me an adrenaline rush.
41. I will blame something on anyone even if they are not responsible.
42. I do not think about others when making decisions.
43. I act impulsively.
44. I act without thinking about the outcomes.
45. I say what I feel.
46. I do not pay attention to other people's feelings.
47. I look for activities that will give me an adrenaline rush.
48. I only tell people the real reason I do something when it benefits me.
49. I tell people what they want to hear.
50. I cut corners to get something done.
51. I sacrifice my morals to succeed.
52. I have talked my way out of punishment for my actions.
53. I work closest with people who will help me get ahead.
54. I win in negotiations that matter.
55. I manipulate other people.
56. I use deceit to get my way.
57. I cut corners to get ahead.
58. I do anything to win.
59. I would manipulate someone as long as it takes to get my way.
60. I use others' emotions to my advantage.
61. I am good at faking emotions.
62. I exaggerate the truth if it puts me in a better light.
63. I use my charm to talk to people.
64. I win using any means necessary.
65. People often choose my team in competitive situations.
66. I calculate decisions without considering others' problems.
67. I rely on my own intuition rather than my emotions.
68. I use my charm when I want to impress someone.
69. I flatter others to get what I want.
70. I take advantage of others for personal gain.
71. I plan how to get ahead.
72. I use people for my own benefit.
73. I hide my true intentions from others.
74. I strategically lie.
75. I post comments online to make people upset.
76. I have intentionally harmed another person.

77. I watch movies that include torture scenes.

78. I read books that include torture.

79. I tell others' secrets because I enjoy the aftermath.

80. I identify with the villain in stories and movies.
81. I identify with the villain in stories and books.
82. I make jokes at the expense of others.
83. My mood improves when I think about hurting others.
84. I have hurt people for fun.
85. I have embarrassed others to keep them in line.
86. I derive satisfaction from hurting someone who deserves it.
87. I think about hurting people.
88. I publicly humiliate others.

89. I insult others.

90. I control others for no reason.

91. I blackmail others because I can.

92. This is an attention check question, please select "Describes me very well."

93. I dismiss other people's feelings.

94. I push other people's buttons for fun.

95. I do the things that greatly annoy others.

96. I prefer to kill bugs myself rather than having someone else do it.

97. I engage in physically aggressive sexual acts towards my partner.
98. I lie in order to hurt others' feelings.
99. I often intimidate people to get them to do what I want.
100. I make fun of people because it is funny.

101. I humiliate others.

102. If I have the chance to harm someone, I take it.

103. I help others fail.

104. I look for the most painful way to cause stress for others.

105. I bully other people.

106. I root for the villain in movies.

107. I root for the villain in books.

108. I try to get the things that villains have.

APPENDIX B: MACH-IV

Please rate each item based on your level of agreement.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat Agree	Agree	Strongly Agree

1. Never tell anyone the real reason you did something unless it is useful to do so.
2. The best way to handle people is to tell them what they want to hear.
3. One should take action only when sure it is morally right.
4. Most people are basically good and kind.
5. It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.
6. Honesty is the best policy in all cases.
7. There is no excuse for lying to someone else.
8. It is hard to get ahead without cutting corners here and there.
9. All in all, it is better to be humble and honest than important and dishonest.
10. When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than reasons that might carry more weight.
11. Most people who get ahead in the world lead clean, moral lives.
12. Anyone who completely trusts anyone is asking for trouble.
13. The biggest difference between most criminals and other people is that criminals are stupid enough to get caught.
14. Most men are brave.
15. It is wise to flatter important people.
16. It is possible to be good in all respects.
17. Barnum was very wrong when he said there's a sucker born every minute.
18. Generally speaking, men won't work hard unless they're forced to do so.
19. People suffering from incurable diseases should have the choice of being put painlessly to death.
20. Most men forget more easily the death of their father than the loss of their property.

APPENDIX C: LSRP

Please rate each item based on your level of agreement.

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

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

APPENDIX D: NPI-40

Which of these two statements is closer to your own feelings about yourself?

1. A. I have a natural talent for influencing people.
    B. I am not good at influencing people.

2. A. Modesty doesn't become me.
    B. I am essentially a modest person.

3. A. I would do almost anything on a dare.
    B. I tend to be a fairly cautious person.

4. A. When people compliment me I sometimes get embarrassed.
    B. I know that I am good because everybody keeps telling me so.

5. A. The thought of ruling the world frightens the hell out of me.
    B. If I ruled the world it would be a better place.

6. A. I can usually talk my way out of anything.
    B. I try to accept the consequences of my behavior.

7. A. I prefer to blend in with the crowd.
    B. I like to be the center of attention.

8. A. I will be a success.
    B. I am not too concerned about success.

9. A. I am no better or worse than most people.
    B. I think I am a special person.

10. A. I am not sure if I would make a good leader.
    B. I see myself as a good leader.

11. A. I am assertive.
    B. I wish I were more assertive.

12. A. I like to have authority over other people.
    B. I don't mind following orders.

13. A. I find it easy to manipulate people.
    B. I don't like it when I find myself manipulating people.

14. A. I insist upon getting the respect that is due me.
     B. I usually get the respect that I deserve.

15. A. I don't particularly like to show off my body.
     B. I like to show off my body.

16. A. I can read people like a book.
     B. People are sometimes hard to understand.

17. A. If I feel competent I am willing to take responsibility for making decisions.
     B. I like to take responsibility for making decisions.

18. A. I just want to be reasonably happy.
     B. I want to amount to something in the eyes of the world.

19. A. My body is nothing special.
     B. I like to look at my body.

20. A. I try not to be a show off.
     B. I will usually show off if I get the chance.

21. A. I always know what I am doing.
     B. Sometimes I am not sure of what I am doing.

22. A. I sometimes depend on people to get things done.
     B. I rarely depend on anyone else to get things done.

23. A. Sometimes I tell good stories.
     B. Everybody likes to hear my stories.

24. A. I expect a great deal from other people.
     B. I like to do things for other people.

25. A. I will never be satisfied until I get all that I deserve.
     B. I take my satisfactions as they come.

26. A. Compliments embarrass me.
     B. I like to be complimented.

27. A. I have a strong will to power.
     B. Power for its own sake doesn't interest me.

28. A. I don't care about new fads and fashions.
     B. I like to start new fads and fashions.

29. A. I like to look at myself in the mirror.
    B. I am not particularly interested in looking at myself in the mirror.

30. A. I really like to be the center of attention.
    B. It makes me uncomfortable to be the center of attention.

31. A. I can live my life in any way I want to.
    B. People can't always live their lives in terms of what they want.

32. A. Being an authority doesn't mean that much to me.
    B. People always seem to recognize my authority.

33. A. I would prefer to be a leader.
    B. It makes little difference to me whether I am a leader or not.

34. A. I am going to be a great person.
    B. I hope I am going to be successful.

35. A. People sometimes believe what I tell them.
    B. I can make anybody believe anything I want them to.

36. A. I am a born leader.
    B. Leadership is a quality that takes a long time to develop.

37. A. I wish somebody would someday write my biography.
    B. I don't like people to pry into my life for any reason.

38. A. I get upset when people don't notice how I look when I go out in public.
    B. I don't mind blending into the crowd when I go out in public.

39. A. I am more capable than other people.
    B. There is a lot that I can learn from other people.

40. A. I am much like everybody else.
    B. I am an extraordinary person.

APPENDIX E: CAST

7-point scales with anchors: 1 = Strongly Disagree to 7 = Strongly Agree

Please rate each item based on your level of agreement.

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)
7. I enjoy physically hurting people.
8. I enjoy tormenting people.
9. I have the right to push certain people around.
10. I have dominated others using fear.
11. I enjoy hurting my partner during sex (or pretending to).
12. In video games, I like the realistic blood spurts.
13. I love to watch YouTube clips of people fighting.
14. I enjoy watching cage fighting (or MMA), where there is no escape.
15. I sometimes replay my favorite scenes from gory slasher films.
16. There's way too much violence in sports. (R)
17. I enjoy playing the villain in games and torturing other characters.
18. In professional car-racing, it's the accidents that I enjoy most.

APPENDIX F: IRB APPROVAL

IRB
INSTITUTIONAL REVIEW BOARD
Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129
FWA: 00005331/IRB Regn. 0003571

MIDDLE TENNESSEE
STATE UNIVERSITY

IRBN001 - EXPEDITED PROTOCOL APPROVAL NOTICE

Friday, October 02, 2020

Protocol Title	**Short Dark Tetrad Scale Development**
Protocol ID	**19-2232**
Principal Investigator	**Alexander Jackson** (Faculty)
Co-Investigators	Michael Hein, Sarah Dean, Sarah Tucker, Amanda Terry, and Jacob Stone
Investigator Email(s)	alexander.jackson@mtsu.edu and michael.hein@mtsu.edu
Department	Psychology
Funding	**NONE**

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU IRB through the **EXPEDITED** mechanism under 45 CFR 46.110 and 21 CFR 56.110 within the category *(7) Research on individual or group characteristics or behavior*. A summary of the IRB action is tabulated below:

IRB Action	**APPROVED for ONE YEAR**		
Date of Expiration	**5/31/2021**	Date of Approval: 5/16/19	Recent Amendment: 10/2/20
Sample Size	ONE THOUSAND (1,000)		
Participant Pool	Target Population: Primary Classification: **Healthy Adults (18 years or older)** Specific Classification: **MTSU Students**		
Type of Interaction	☒ Virtual/Remote/Online Interaction ☐ In person or physical Interaction – Mandatory COVID-19 Management		
Exceptions	1. Online consent and online data collection permitted (Qualtrics). 2. Recording participant identifiable information is permitted as described.		
Restrictions	**1. Mandatory ACTIVE Informed Consent. 2. Identifiable data/artifacts, such as, audio/video data, photographs, handwriting samples, personal address, driving records, social security number, and etc., MUST NOT BE COLLECTED. 3, Identifiable information must be destroyed as described in the protocol. 4. Mandatory Final report (refer last page). 5. The protocol details must not be included in the compensation receipt. 6. CDC guidelines and MTSU safe practice must be followed**		
Approved Templates	IRB Templates: Not Applicable Non-MTSU Templates: Not Applicable		
Research Inducement	Course Credit		
Comments	This notice is updated to the 2020-21 format (09/25/2020)		

Post-approval Requirements

The PI must read and abide by the post-approval conditions (Refer "*Quick Links*" in the bottom):

- *Reporting Adverse Events*: The PI must report research-related adversities suffered by the participants, deviations from the protocol, misconduct, and etc., within 48 hours from when they were discovered.
- *Final Report*: The PI must close-out this protocol by submitting a final report before 5/31/2021 (Refer to the Continuing Review section below); REMINDERS WILL NOT BE SENT. Failure to close-out or request for a continuing review may result in penalties including cancellation of the data collected using this protocol and/or withholding student diploma.
- *Protocol Amendments*: An IRB approval must be obtained for all types of amendments, such as: addition/removal of subject population or investigating team; sample size increases; changes to the research sites (appropriate permission letter(s) may be needed); alterations to funding; and etc.   The proposed amendments must be clearly described in an addendum request form. The proposed changes must be consistent with the approval category and they must comply with expedited review requirements.
- *Research Participant Compensation*: Compensation for research participation must be awarded as proposed in Chapter 6 of the Expedited protocol. The documentation of the monetary compensation must Appendix J and MUST NOT include protocol details when reporting to the MTSU Business Office.
- *COVID-19*: Regardless whether this study poses a threat to the participants or not, refer to the COVID-19 Management section for important information for the PI

Continuing Review   (Follow the Schedule Below)

This protocol can be continued for up to THREE years by requesting a continuing review before 7/31/2021.   Refer to the following schedule to plan your annual progress report; REMINDERS WILL NOT BE SENT.   Failure to obtain an approval for continuation will result in cancellation of this protocol.

Reporting Period	Requisition Deadline	IRB Comments
First year report	5/31/2020	A continuing review (CR) has been done in accordance with the Expedited Review Category 8. The progress report was submitted late. The CR was done in the light of the limitations posed by COVID-19 between March-July of 2020. The protocol has been extended for an additional year and administrative actions were performed (IRBCR2021-069 - 09/25/2020)
Second year report	5/31/2021	NOT COMPLETED
Final report	5/31/2022	NOT COMPLETED

Post-approval Protocol Amendments:

The current MTSU IRB policies allow the investigators to implement minor and significant amendments that would fit within this approval category.   *Only TWO procedural amendments will be entertained per year* (changes like addition/removal of research personnel are not restricted by this rule).

Date	Amendment(s)	IRB Comments
NONE	NONE.	NONE

Date	Amendment(s)	IRB Comments
10/08/2019	Ashley Miller (alf5n: CITI7590435), Sarah Graff (sag5p: CITI7460479), Christian Hayes McLeod (chm2v: CITI7434652), Andrea Meggison (acm6s: CITI4260400), and Macie E. Mussleman (mem6d: CITI6052690) have been added to the research team.	IRBA2020-061
10/02/2020	1. The investigators added in Amendment IRBA2020-061 hage been removed/ 2. The following student workers are added to the protocol: Sarah Dean (sfd2p - CITI8591508); Amanda Terry (aht2c - CITI3870526); Jacob Stone (jls2nc - CITI576322); and Sarah Tucker (set4a - CITI7845429).	IRBCR2021-069

Other Post-approval Actions:

The following actions are done subsequent to the approval of this protocol on request by the PI or on recommendation by the IRB or by both.

Date	IRB Action(s)	IRB Comments
09/25/2020	The investigating team is modified.	IRBCR2021-069

COVID-19 Management:
The PI must follow social distancing guidelines and other practices to avoid viral exposure to the participants and other workers when physical contact with the subjects is made during the study.

- The study must be stopped if a participant or an investigator should test positive for COVID-19 within 14 days of the research interaction. This must be reported to the IRB as an "adverse event."
- The MTSU's "Return-to-work" questionnaire found in Pipeline must be filled by the investigators on the day of the research interaction prior to physical contact.
- PPE must be worn if the participant would be within 6 feet from the each other or with an investigator.
- Physical surfaces that will come in contact with the participants must be sanitized between use
- **PI's Responsibility:** The PI is given the administrative authority to make emergency changes to protect the wellbeing of the participants and student researchers during the COVID-19 pandemic. However, the PI must notify the IRB after such changes have been made. The IRB will audit the changes at a later date and the PI will be instructed to carryout remedial measures if needed.

Data Management & Storage:
All research-related records (signed consent forms, investigator training and etc.) must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data must be stored for at least three (3) years after the study is closed. Additional Tennessee State data retention requirement may apply (*refer "Quick Links" for MTSU policy 129 below*). The data may be destroyed in a manner that maintains confidentiality and anonymity of the research subjects.

The MTSU IRB reserves the right to modify/update the approval criteria or change/cancel the terms listed in this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:
- Post-approval Responsibilities: http://www.mtsu.edu/irb/FAQ/PostApprovalResponsibilities.php
- Expedited Procedures: https://mtsu.edu/irb/ExpeditedProcedures.php
- MTSU Policy 129: Records retention & Disposal: https://www.mtsu.edu/policies/general/129.php