

The Dark Tetrad and Depressive Symptoms: Exploring the role of Rumination.

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(1)

Statement

I declare that the data used in this research was collected as part of a unique study, and that no secondary data analysis was used.

I declare that this research report is my own work, and that to the best of my knowledge and belief, it does not contain material from published sources without proper acknowledgement, nor does it contain material which has been accepted for the award of any other higher degree or graduate diploma in any university.

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Rowena Tracy

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Date

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The Dark Tetrad and Depressive Symptoms: Exploring the role of Rumination.

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Abstract

Psychopathy, narcissism, Machiavellianism, and sadism comprise the Dark Tetrad; a group of socially aversive, non-clinical personality traits characterised by callousness, dishonesty, and manipulation. Psychopathy has been further differentiated into primary and secondary psychopathy, while two variants of narcissism, grandiose and vulnerable, have also been identified. Few studies have investigated the mental health correlates of the dark traits, thus the current study examined the relationship between the Dark Tetrad and depression, and explored the role of rumination in this relationship. Two subtypes of rumination were considered: brooding and reflection. The sample comprised 316 individuals aged between 18 and 68 years, 53.8% of whom were members of the community while 46.2% were current university students. Participants completed an anonymous online survey, with a cross-sectional, correlational design. Results largely supported the hypotheses, indicating that the dark traits fall along a continuum of depressive symptoms. Vulnerable narcissism and secondary psychopathy were shown to significantly predict higher depression levels, while grandiose narcissism was significantly connected to lower depression scores. Rumination was found to moderate the relationship between the Dark Tetrad and depression, however this was only the case for the brooding subtype. This research indicated that dark personality traits likely influence the selection and use of coping strategies, such as rumination, and illustrated the impact this can have on depressive symptoms. Further exploration of these connections would offer a greater understanding of socially aversive behaviours and how individuals with these traits function in the world, with implications for existing models of personality and psychopathology.

The Dark Triad of Personality

In 2002, Paulhus and Williams presented a group of aversive and offensive personality traits which they termed the ‘Dark Triad’: psychopathy, narcissism, and Machiavellianism. Links between these traits had been noted for some time, however they had typically been studied independently. In proposing the Triad, Paulhus and Williams (2002) introduced the notion of a cluster of dark personalities; socially aversive traits conceptualised as related but distinct. Since this pioneering study many intrapersonal, interpersonal, and behavioural aspects of the Triad have been explored, however few researchers have examined the potential mental health correlates of the dark traits (Jonason, Baughman, Carter, & Parker, 2015). There is considerable theoretical and practical utility in studying the variables that predict or are associated with the dark traits, particularly when the implications for the assessment and treatment of psychopathology are considered (Bartlett & Bartlett, 2015; Chabrol, Melioli, Van Leeuwen, Rodgers, & Goutaudier, 2015). The current study intended to address this gap in the literature by exploring the relationship between the dark traits and depression, and seeking to identify factors that may influence this relationship.

The Triad is characterised by disagreeableness, callousness, dishonesty, duplicity, aggressiveness, malevolence, and a tendency towards self-promotion (Aghababaei & Blachnio, 2015; Paulhus & Williams, 2002; Southard, Noser, Pollock, Mercer, & Zeigler-Hill, 2015). Individuals with these traits tend to be self-serving and deceptive, which is evident in their thought patterns and actions (Giammarco & Vernon, 2015; Paulhus & Williams, 2002). This empirical overlap between the traits has lead researchers to conclude the Triad are likely connected by a common core. At present, the literature is divided regarding what this core may be,

however candidates include disagreeableness, interpersonal antagonism, exploitativeness, callousness, callous manipulation, and low honesty/humility (Aghababaei & Blachnio, 2015; Furnham, Richards, & Paulhus, 2013; Southard et al., 2015).

Although aversive, the dark traits are considered to exist within the ‘normal’ range of functioning, and represent sub-clinical variants of clinical personality traits (Furnham et al., 2014; Paulhus, 2014). The extent to which the dark traits are present varies within the general population, and they are readily observed in community samples (Aghababaei & Blachnio, 2015; Furnham et al., 2013). The dark traits are distinct from clinical personality traits/disorders, which generally refer to extreme cases which require psychological or forensic intervention (Furnham et al., 2013; Paulhus, 2014), such as the three clusters of personality disorders outlined by the current Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association [APA], 2013). It is important to note that while narcissism and psychopathy originated in the clinical literature, there is strong evidence supporting non-clinical variants of these traits (Furnham et al., 2014).

Psychopathy. This trait is associated with profound emotional deficits, including interpersonal exploitation and a lack of empathy and remorse (Giammarco & Vernon, 2015; Paulhus, 2014). Impulsive, erratic, and thrill-seeking behaviours are seen in those high on this trait (Glenn & Sellbom, 2015; Paulhus & Williams, 2002; Southard et al., 2015). Two variants of psychopathy have been identified; a distinction first proposed by Karpman (1948). Primary psychopathy is associated with insensitivity, selfishness, and untruthful behaviour, and is believed to have a genetic underpinning. A tendency to manipulate others using superficial charm is often seen, coupled with a lack of interpersonal affect (Bartlett & Bartlett, 2015;

Jakobwitz & Egan, 2006; Levenson, Kiehl, & Fitzpatrick, 1995). Secondary psychopathy manifests as tendencies towards neuroticism (emotional disorder) and extreme impulsivity (antisocial behaviour), which are thought to result mainly from environmental factors (Levenson et al., 1995; Bartlett & Bartlett, 2015). It has been suggested that those with secondary psychopathic traits may have more capacity for empathy than the primary group (Hughes, Moore, Morris, & Corr, 2012).

Narcissism. Narcissism is characterised by self-importance, cravings for attention, dominance, and a sense of entitlement (Barlett & Bartlett, 2015; Paulhus & Williams, 2002). Similar to psychopathy, two forms of narcissism have been identified. Grandiose narcissism is the stereotypical portrayal of a narcissist; confident, self-centred, arrogant, and exhibitionistic (Egan, Chan, & Shorter, 2014; Southard et al., 2015). These individuals repress the negative aspects of themselves and distort external information, leading to inflated self-image, often without corresponding accomplishment or skills (Pincus et al., 2009; Thomas, Wright, Lukowitsky, Donnellan, & Hopwood, 2012). Vulnerable narcissism has been described as similar, however these individuals are also hypersensitive, hostile, and experience considerable shame (Egan et al., 2014; Pincus et al., 2009). Their sense of grandiosity is more fragile, and lower self-esteem renders them defensive and sensitive at times (Miller et al., 2010; Pincus et al., 2009; Thomas et al., 2012). For this reason, vulnerable narcissists can be more interpersonally problematic than their grandiose counterparts (Egan et al., 2014). Vulnerable narcissism, together with secondary psychopathy and Borderline Personality Disorder, form the Vulnerable Dark Triad (VDT). This group of personality styles presents with aspects of the dark traits, negative emotionality, and emotional dysregulation (Miler et al., 2010).

Machiavellianism. Named for Niccolò Machiavelli, a political advisor in the 1500s well known for his style of social influence, Machiavellianism is associated with manipulation, and an amoral and unprincipled belief system (Furnham et al., 2013; Furnham, Richards, Rangel, & Jones, 2014; Paulhus & Williams, 2002). A cynical world view, and the belief that interpersonal manipulation is the key to success is also common (Furnham et al., 2013; Southard et al., 2015). Behaviour in this group is self-interested and expedient, and they typically seek to acquire and maintain power (Bedell, Hunter, Angie, & Vert, 2006; Furnham et al., 2014). These individuals employ deceit, dishonesty, and flattery (Bartlett & Bartlett, 2015), and can be quite charismatic leaders (Bedell et al., 2006). Machiavellianism is often associated with business success for this reason. The lack of concern for morality and poor emotional bonds shared by Machiavellianism and psychopathy have earned them the title of the ‘Malicious Two’ (Aghababaei & Blachnio, 2015; Crysel, Crosier, & Webster, 2013).

A Dark Tetrad: More Than Three of a Kind?

As research in the area has progressed, an extended taxonomy of dark personalities has been proposed. Sadism has been shown to relate strongly to the Triad, and thus a ‘Dark Tetrad’ has been introduced (Buckels, Jones, & Paulhus, 2013; Mededovic & Petrovic, 2015; Paulhus, 2014; Southard et al., 2014). Those with sadistic tendencies intentionally inflict physical, sexual, or emotional pain on others for pleasure, or to assert power, dominance, or control (Mededovic & Petrovic, 2015; O’Meara, Davis, & Hammond, 2011; Southard et al., 2015). The experience of causing hurt is considered pleasurable, exciting, and may be sexually arousing (Buckels et al., 2013). Sadism is also linked with the use of cruel and demeaning behaviours to punish or humiliate others (Mededovic & Petrovic, 2015).

See Table 1 (recreated from Paulhus' 2014 paper) for a summary of the key features of the Dark Tetrad.

Table 1

Key Features of the Dark Tetrad

	Psychopathy	Narcissism	Machiavellianism	Sadism
Callousness	++	++	++	++
Impulsivity	++	+		
Manipulation	++	+	++	
Criminality	++		White-collar only	
Grandiosity	+	++		
Enjoyment of cruelty				++

Note. ++ denotes high levels of a feature relative to the average population.

+ denotes slightly elevated levels relative to the average population.

A blank cell indicates average levels of a trait.

Relative Darkness: A Continuum

While the Tetrad share numerous features, they are considered distinct traits which possess unique properties (Paulhus, 2014). Thus, it follows that these traits will impact individuals in different ways. These differences are often explored by examining the actual or perceived benefits and detriments of each trait, i.e. how 'light or 'dark' traits are (Rauthmann & Kolar, 2012). Psychopathy is typically considered the most malevolent (darkest) of the Tetrad and narcissism the lightest, possibly due to vulnerable narcissisms' ties to the Vulnerable Dark Triad. However, it is difficult to define a traits' darkness relative to other Tetrad members in absolute

terms, as it appears to be dependent on context (Aghababaei & Blachnio, 2015; Giammarco & Vernon, 2015; Paulhus, 2014; Rauthmann & Kolar, 2012).

Members of the Tetrad have been shown to be socially adaptive in some senses and facilitate positive outcomes at times, however the aversive nature of the traits can also lead to negative outcomes (Birkas, Gacs, & Csatho, 2016; Mededovic & Petrovic, 2015; Paulhus, 2014). One such negative outcome may be an adverse effect on mental health, such as an altered predisposition to or experience of a particular disorder(s). This theory is supported by recent research by demonstrating that the dark traits are associated with different physical and mental health outcomes (Jonason et al., 2015), and thus fall “along a continuum of wellbeing and adjustment” (Aghababaei & Błachnio, 2015, p. 367). In the current study, this notion of a continuum was adopted as a conceptual tool to examine the relative darkness of the Tetrad traits in the context of depressive symptoms.

The Dark Traits and Mental Health

As a discipline, psychology frequently works to connect personality and mental health (Kotov, Gamez, Schmidt, & Watson, 2010). As a result, there is a wealth of information available regarding factors associated with clinical personality, including comorbidity with other psychological disorders (such as depression and anxiety), risk and protective factors, overall functioning, and coping strategies (APA, 2013). However, while there is a growing literature connecting non-clinical personality traits with health (physical and mental) and wellbeing outcomes, much of the research has focused on exploring broader models of personality such as the Big Five, meaning limited information regarding the dark traits and mental health is available.

This is a valuable area that has been neglected, as understanding the connection between the dark traits and psychopathology has a multitude of implications for clinical practice. Further research in this area will allow us to develop a greater understanding of socially aversive behaviours and how individuals with these traits function in the world. It is thought that personality factors can influence the selection and use of coping strategies (Connor-Smith & Fachsbart, 2007; Jonason et al., 2015), and individuals high on Tetrad traits present with thought patterns, emotional responses, and behaviours that differ somewhat from typical experiences (Paulhus, 2014). When this is considered in the context of prominent cognitive-behavioural theories of mental illness, which centre on the impact of our thoughts, actions, and interactions on mental health (Beck, 2011), it follows that the experience of psychopathology may differ in those with the dark traits. In the current study, the decision was made to focus on depression and depressive symptoms, given the prevalence of these phenomenon (APA, 2013).

Dark traits and depression. The dark traits and depressive disorders have both been mapped onto the Big Five model of personality, thus this data can be used to predict how depression levels may vary amongst the dark traits (Joshani & Nosratabadi, 2009; Lamers, Westerhof, Kovács, & Bohlmeijer, 2012; Magee, Heaven, & Miller, 2013; Vasilka, Schermer, & Vernon, 2012). Depressive disorders and non-clinical low mood have strong links with high neuroticism and low conscientiousness on the Big Five, and weak to moderate links with low agreeableness and low extraversion (Egan et al., 2014; Kotov et al., 2010). As a group, the dark traits have consistently been associated with low levels of agreeableness and conscientiousness (Furnham et al., 2013; Paulhus, 2014).

Together, this suggests that the dark traits might also correlate with depressive symptoms.

A distinct pattern emerges when the relationships between the dark traits and the Big Five dimensions are examined individually. Vulnerable narcissism shows strong connections to the dimensions associated with higher depressive symptoms; primarily strong links with high neuroticism, and moderate links with low extraversion and agreeableness. Similarly, secondary psychopathy has a strong relationship with low conscientiousness and a moderate association with low agreeableness (Miller et al., 2010). This indicates that those high on vulnerable narcissism and secondary psychopathy may be more likely to experience symptoms of depression, relative to individuals high on other dark traits (i.e. vulnerable narcissism and secondary psychopathy may be relatively darker traits with respect to depression). Conversely, grandiose narcissism appears to be somewhat of a protective factor against depression, as these individuals typically obtained Big Five profiles linked to lower depression levels – low neuroticism and high extraversion (Egan et al., 2014; Miller et al., 2010). Machiavellianism and sadism share significantly smaller links with the Big Five dimensions associated with depressive symptoms than secondary psychopathy and vulnerable narcissism (van Geel, Goemans, Toprak, & Vedder 2016), however these traits do not appear to share the protective effects of grandiose narcissism. Lastly, primary psychopathy is not significantly related to Big Five factors associated with depression (Miller et al., 2010), suggesting it is neither a risk nor protective factor for this group.

Although the connections proposed above were made on a ‘one-step removed’ basis, the limited literature which has explored the Dark Tetrad and depression specifically is largely consistent with these predictions. Jonason and

colleagues (2015) broke new ground when they conducted a series of studies examining the relationship between the Dark Triad and various social, physical, and psychological health outcomes. The authors treated narcissism and psychopathy as unitary constructs, and did not consider subtypes (i.e. grandiose/vulnerable; primary/secondary) in their research. In the first of their studies, they explored a broad scope of health and wellbeing factors, including depression (measured using the Centre for Epidemiologic Studies Depression Scale [CES-D]), in a sample of American University students. Results indicated that narcissism ($\beta = -0.01$) was typically not associated with reports of depressive symptomatology, while psychopathy ($\beta = 0.16, p < 0.01$) and Machiavellianism ($\beta = 0.06$) were darker in this respect, i.e. linked to more severe depressive symptoms (Jonason et al., 2015). In their second study, undertaken with Australian secondary school students, Jonason et al. (2015) measured a number of domains relevant to depression across the Triad: hope, self-esteem, and emotional, social, and psychological wellbeing. The results obtained were quite consistent with the first study. Narcissism was shown to be associated with the most positive mental health outcomes, while Machiavellianism was suggestive of the poorest outcomes (Jonason et al., 2015). While the reported correlation coefficients and effect sizes were small, the researchers demonstrated that each of the dark traits appear to have unique relationships with health and wellbeing outcomes, including symptoms of depression. These relationships can be conceptualised using a continuum to portray each traits' darkness relative to other Tetrad members (Aghababaei & Błachnio, 2015).

The concept of a continuum of depressive symptoms within the Dark Tetrad is supported by a number of studies reporting a similar pattern to Jonason and colleagues (2015). Stead, Fekken, Kay, and McDermott (2012) also found that

narcissism ($r = 0.04$) was the trait least strongly associated with depression, while Machiavellianism showed a significant connection ($r = 0.45$; medium effect size). Similarly, Chabrol et al. (2015) found those higher in narcissism and psychopathy to have the lowest levels of depression and suicidal ideation. This study included sadism, which was clustered with Machiavellianism through factor analysis, suggesting sadism may also be associated with higher depression levels relative to other dark traits. Work by Southard et al. (2015) which examined mood in terms of positive and negative affect further supports this notion of similar experiences of depression between sadism and Machiavellianism, with the groups recording similar correlation coefficients ($r=0.68$ and 0.70 respectively). The study also showed that the Dark Tetrad are largely positively correlated with negative affect, with the exception of grandiose narcissism, which showed a weak negative relationship ($r= -0.19$; small effect size). Consistent with other studies (Chabrol et al., 2015; Jonason et al., 2015; Stead et al., 2012), vulnerable narcissism had the strongest association with negative affect ($r=0.88$; large effect size).

Findings by Southward et al. (2015) emphasise the importance of distinguishing between grandiose and vulnerable narcissism. The impact of vulnerable narcissism on mood has been well documented, with research indicating that this trait is more strongly related to depression, self-harm, and anhedonia than grandiose narcissism (Egan et al., 2014; Thomas et al., 2012; Tritt, Ryder, Ring, & Pincus, 2009). With respect to primary and secondary psychopathy, there is less research to draw on. Early studies suggested secondary psychopathy is linked to susceptibility for depression, however the trait has been more consistently linked to anxiety (Hughes et al., 2012; Levenson et al., 1995). The considerable comorbidity between anxiety and depressive disorders (APA, 2013) suggests levels of depression

may be higher in this group than primary psychopathy. It is also important to consider the Vulnerable Dark Triad (VDT) features of negative emotionality and emotional dysregulation (Miler et al., 2010). Given VDT traits vulnerable narcissism and borderline personality disorder have been strongly linked to depression (APA, 2013; Egan et al., 2014), theoretically, those high on secondary psychopathy may also share a predisposition for low mood.

Limitations of past research. While the studies discussed above have yielded valuable information, they are not without limitations. Most notably, conceptualisation and measurement of the dark traits was quite inconsistent. As a group, the studies largely neglected to involve the full taxonomy of dark traits. Several of the studies did not include sadism (Egan et al., 2014; Jonason et al., 2015; Stead et al., 2012), few distinguished between grandiose and vulnerable narcissism, and fewer still between primary and secondary psychopathy (Chabrol et al., 2015; Jonason et al., 2015; Stead et al., 2012). Although the concepts of a Dark Tetrad and subtypes of narcissism and psychopathy are novel constructs relative to the Dark Triad, excluding or failing to differentiate between variants of traits means the unique contribution of certain factors may be missed. This may result misinformation and misconceptions regarding the dark traits.

It is common practice in research to measure the dark traits using a single tool (Paulhus & Jones, 2014), such as the Dirty Dozen questionnaire utilised by Jonason et al. (2015). While this approach can reduce participant burden, measurement of the traits as a single unit is problematic. It is thought that individualised measurement of the traits is the key to differentiating their unique and shared properties, and facilitating more accurate results (Furnham et al., 2013). This is particularly important given the known intercorrelations (shared variance) between the traits.

Jonason et al. (2015) also utilised a face-valid, self-developed measure for assessing the Dark Triad in adolescents. While their attempts to avoid the assumption that traditional measures are suitable for adolescents was well intentioned, it is questionable whether the selected approach was the most appropriate. Unvalidated measures impact the reliability and validity of results, and the authors acknowledged this limitation of their research.

Interestingly, while several of the studies note the potential bias arising from utilising self-report measures (Jonason et al., 2015; Stead et al., 2012), few have considered social desirability effects. This is surprising given the dark traits are known to be characterised by manipulation. While the core features of the Tetrad indicate that socially desirable responses may be more prevalent in individuals with higher levels of the traits, Grieve and Mahar (2010) found that both primary and secondary psychopathy were significantly negatively correlated with socially desirable responding. Although effect sizes were relatively small, this suggests that persons higher on the dark traits may be less concerned with presenting themselves favourably than those lower on the traits. At this time, the connection between socially desirable responding and the dark traits largely remains unclear, as the pattern observed for psychopathy may not be consistent with other Tetrad members.

Lastly, studies have typically employed student samples, which are not considered representative of the broader population (Chabrol et al., 2015; Jonason et al., 2015; Stead et al., 2012). Given the practicality and accessibility of student samples, involving participants from the general community can be challenging, however future research should seek to do so in order to attain more generalisable results. In the current study, we attempted to address these limitations (see section The Current Study).

A Role for Rumination?

As the relationship between mental health and the dark traits is a relatively new area of research, factors moderating this relationship are yet to be explored. We propose that rumination may act as a moderator, given it is strongly associated with negative mental health outcomes, and is known to influence the self-perception of those with the dark traits (Alloy, Abramson, Walshaw, & Nerren, 2006; Brewin, 2006; Giammarco & Vernon, 2015; Whitmer & Gotlib, 2013).

Rumination and depression. Rumination is a habitual style of thinking that is perseverative, recursive, and persistent (Alloy et al., 2006; Brewin, 2006; Joorman & D'Avanzato, 2010). Individuals who ruminate struggle to disengage from negative material; repeatedly thinking about their personal concerns (e.g. symptoms of distress), and the potential causes, consequences, and meaning of these (Alado, Nolen-Hoeksema, & Schweizer, 2010; Brewin, 2006; Joorman & D'Avanzato, 2010; Watkins, 2008; Whitmer & Gotlib, 2013). Rumination has been linked to both unipolar and bipolar depression, with studies reporting large effect sizes ($r = 0.55$, 95% CI [0.51, 0.59]) (Alado et al., 2010). Engaging in rumination can lead to longer and more severe episodes of depression (Alloy et al., 2006; Joorman & D'Avanzato, 2010; Whitmer & Gotlib, 2013). This is thought to occur as rumination is a maladaptive emotion regulation strategy, and difficulties with emotion regulation are known to maintain depression (Alado et al., 2010). Negative mood can also increase rumination, suggesting a reciprocal relationship between the constructs (Whitmer & Gotlib, 2013).

The literature contains several systems for classifying subtypes of rumination, one of which is Treynor and colleague's (2003) distinction between brooding and reflection. Brooding refers to engaging in moody pondering; making comparisons

between current and more favourable circumstances (Treyner et al., 2003). It is typically a self-critical style of thinking (Daches, Mor, Winquist, & Gilboa-Schechtman, 2010). Conversely, reflection is defined as a contemplative style of thought, involving an intentional inwards focus geared towards addressing concerns (Daches et al., 2010; Treyner et al., 2003). Of the subtypes, brooding has been shown to be more strongly connected to negative outcomes, including depression (Daches et al., 2010; Treyner et al., 2003). While reflection appears to offer some mood-related benefits over time, brooding is considered maladaptive in both the short and long term (Daches et al., 2010).

Rumination and the Dark Tetrad. Personality traits have been shown to relate to coping styles and the use of specific emotion regulation strategies, such as rumination (Connor-Smith & Flachsbart, 2007). Thus, it follows that the Dark Tetrad may vary in the extent to which they engage in rumination. There is a broad literature exploring different aspects of coping across the dark traits, and while rumination has not been the direct focus of many studies, predictions can be made based on existing research.

Giammarco and Vernon (2015) demonstrated that those higher in psychopathy and Machiavellianism can be prone to vengeful rumination. The medium to large effect sizes observed in this research may be suggestive of a tendency towards repetitive thought more generally. This notion is supported by Zeigler-Hill and Vonk's (2015) study, which linked the Dark Tetrad to various facets of emotion dysregulation. Machiavellianism and psychopathy were both positively correlated with multiple aspects of dysregulation, indicating these groups may be more likely engage in rumination. The study also reported that sadism was not significantly associated with dysregulation, and that grandiose narcissism was

negatively associated with dysregulation (Zeigler-Hill & Vonk, 2015). Based on these findings, it appears that sadists and grandiose narcissists may be less likely to ruminate.

The suggestion that grandiose narcissists are unlikely to engage in rumination is supported by work by Birkas, Gacs, and Csatho (2016), who examined coping styles across the Triad. Narcissists were shown to be the most likely to engage in productive problem solving; a process significantly different to rumination. Further, focusing on positive aspects of the self has been linked to lower negative affect (Mor & Winquist, 2002), suggesting grandiose narcissists (who have a tendency to repress the negative aspects of themselves) may be less likely to ruminate (Pincus et al., 2009; Thomas et al., 2012). As one may expect, a different pattern has been observed in vulnerable narcissists. This group have been shown to struggle with self and affect regulation, indicating they may be more likely to utilise maladaptive strategies such as rumination (Thomas et al., 2012). Research has also indicated small to moderate links between narcissism and interoception, which may reflect vulnerable narcissists' tendency towards emotionality or the egocentricity of narcissists as a whole (Lyons & Hughes, 2015). Overall, the coping literature suggests that the dark traits correlate with differing coping styles and emotion regulation strategies, and are likely to vary in the extent to which they ruminate. It appears that sadism and grandiose narcissism are unlikely to be positively associated with rumination, while vulnerable narcissism is likely to show the strongest connection. No studies could be located specifically linking the dark traits with subtypes of rumination, however the tendencies of the Vulnerable Dark Triad (VDT) traits towards emotion dysregulation and negative emotionality suggest brooding is likely to be higher in vulnerable narcissism and secondary psychopathy relative to other Tetrad traits (Miler et al., 2010).

The Current Study

The literature suggests that levels of depression vary across the dark traits, and that personality factors can influence the selection and use of coping strategies, such as rumination (Connor-Smith & Fachsbart, 2007; Jonason et al., 2015).

Developing an accurate conceptualisation of the relationships between these factors is important in understanding and supporting individuals with the dark traits.

The current study was conducted to extend the small amount of research that has directly examined the relationship between the Dark Tetrad and mental health, and provide insight into the mood states and coping strategies of individuals with the dark traits. This research aimed to further explore the relationship between the Dark Tetrad and symptoms of depression, and determine whether this relationship is moderated by rumination. The study design was intended to address limitations of previous research. The current conceptualisation of the dark traits was utilised, given the growing empirical support for this taxonomy, and the Dark Tetrad traits were measured individually to allow differentiation within and between traits (per Furnham et al., 2013; Glenn & Sellbom, 2015; Southard et al., 2015). Analyses controlled for socially desirable responding, which was not routinely undertaken in previous research. An anonymous online survey was also utilised to in attempt to minimise participants intentionally altering their self-disclosure (Kays, Gathercole, & Buhrow, 2012). Finally, the study involved members of the community (which has previously been uncommon) in addition to student participants, to increase generalisability of results.

It was hypothesised that the Dark Tetrad will fall along a conceptual continuum of depressive symptoms, as illustrated in Figure 1. Higher levels of grandiose narcissism and primary psychopathy are expected to be associated with

less severe depressive symptoms, while vulnerable narcissism is projected to be the darkest trait, with these individuals reporting the greatest levels of depression. Traits closer to either end of the continuum are expected to more strongly predict levels of depression than traits which are more centered, i.e. grandiose and vulnerable narcissism are hypothesised to hold the greatest predictive ability, when assessed in a multivariate model.

Additionally, it is anticipated that rumination will moderate the relationship between the Dark Tetrad and depression, and that brooding rumination will better predict depressive symptoms than reflection rumination. However, as this is a new area of research, it is unclear exactly how these factors will interact. Thus the moderation analyses will be largely exploratory.

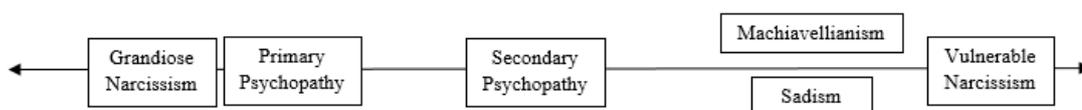


Figure 1. Expected Conceptual Continuum of Depressive Symptoms. Note: The left hand side of the spectrum reflects lower levels of depression, while the right represents higher levels.

Method

Participants

The sample consisted of 48 males, 264 females, and 4 individuals who identified as “other” gender ($N= 316$), between 18 and 68 years of age ($M= 27.73$, $SD= 11.73$). A majority of the sample (95.3%) reported that they reside in Australia. Participants were primarily non-Indigenous Australians (79.7%), with the remaining proportion identifying as Asian (8.9%), European (3.8%), Indigenous Australian

and/or Torres Strait Islander (2.8%), American (0.9%), African (0.6%), New Zealander (0.3%), and “other” ethnicities (2.8%). Of the sample, 53.8% were members of the community, and 46.2% were current university students. Participants were required to be at least 18 years of age.

Design and Analytical Approach

The study employed a cross-sectional correlational design. In regression analyses, the possible effects of gender, age, and socially desirable responding were controlled for on the basis on previous research. It has been consistently demonstrated that the dark traits are typically more common in males than females (Furnham et al., 2014). As gender differences were not a specific area of interest in this study, the decision was made to control for the potential influence of gender, as opposed to completing separate analyses for men and women. Research also suggests that the dark traits are present to a greater extent in adolescence and early adulthood (Bartlett & Bartlett, 2015). As a significant proportion (59.2%) of the sample was aged under 25 years, analyses were structured to avoid possible bias due to participant age. As previously noted, little is known about socially desirable responding amongst those with the dark traits, thus it was an important consideration in this study. Bivariate correlations were undertaken to explore the relationship between the dark traits and socially desirable responding, and socially desirable responding was also used as a control measure in regression analyses.

To assess the ability of the Dark Tetrad traits to predict levels of depression, a four step hierarchical multiple regression was completed, which controlled for gender, age, and socially desirable responding. Grandiose narcissism, vulnerable narcissism, primary psychopathy, secondary psychopathy, Machiavellianism and

sadism were used as predictor variables, with depression levels as the outcome variable.

To explore rumination as a potential moderator of the relationship between the dark traits and depression, a series of four hierarchical multiple regressions were completed. Median splits were used to divide the sample based on levels of brooding and reflecting rumination. The median split approach has theoretical support (Iacobucci, Posavac, Kardes, Schneider, & Popovich, 2015), and has been widely utilised to define levels of rumination (De Lissnyder, Koster, Derakshan, & Raedt, 2010; Joorman, 2006; Joorman & Tran, 2009). Each participant in the sample was classified as either low or high on both brooding and reflection. This resulted in four groups: low brooding, high brooding, low reflecting, and high reflecting (with each participant included in both a brooding and reflection group). A four step hierarchical multiple regression was then completed for each group, again controlling for gender, age, and socially desirable responding, and using the six Dark Tetrad traits as predictor variables and depression levels as the outcome variable.

In each of the regression analyses, gender was entered at the first step of the model, followed by age and socially desirable responding at the second and third steps respectively. Grandiose narcissism, vulnerable narcissism, primary psychopathy, secondary psychopathy, Machiavellianism and sadism were entered at the fourth step of the model.

A priori power analysis. Green's (1991) formula ($N = 104 + k$; where $k =$ number of predictor variables) was used to determine the requisite number of participants for the regression analyses. The current study involved eight predictor variables, indicating a minimum of 112 participants (i.e. $N = 104 + 8$) were required. G*Power calculations confirmed that a sample size of 160 would provide adequate

power (0.95; α error probability = 0.05) to detect a medium effect with 8 predictors in the model (Faul, Erdfelder, Lang, & Buchner, 2007). Therefore the required sample size for adequate power was exceeded, given that $N= 316$ in this study.

Materials

The selected questionnaires assess the Dark Tetrad, recent mood, rumination, and socially desirable responding. A short series of demographic questions were also included.

Demographic information. Participants provided information regarding their age, gender, ethnicity, marital status, country of residence, highest level of education, and type of employment (see Appendix A for full details).

Pathological Narcissism Inventory (PNI). The 52 item PNI (Appendix B) assesses maladaptive expressions of narcissism across two dimensions, grandiose and vulnerable narcissism (Pincus et al., 2009; Thomas et al., 2012). Given the growing evidence supporting the distinction between these dimensions, the PNI was selected in favour of other measures (Egan et al., 2014). Participants reported the extent to which statements such as “Everybody likes to hear my stories.” (grandiose subscale) and “When others don’t notice me, I start to feel worthless.” (vulnerable subscale) apply to them, using a 6 point Likert scale (0= *Not at all like me*, 5= *Very much like me*). The overall internal consistency of the questionnaire is high, $\alpha = 0.95$ (Pincus et al., 2009), and Cronbach’s α values for the grandiose (0.87) and vulnerable (0.96) dimensions are also strong (Schoenleber, Roche, Wetzel, Pincus, & Roberts, 2015). Research supports the convergent and discriminant validity of the PNI (Thomas et al., 2012).

Levenson Self-Report Psychopathy Scale (LSPS). Developed by Levenson and colleagues (1995), the 26 item LSPS (Appendix C) explores psychopathic traits,

and distinguishes between primary and secondary psychopathy. Participants rated their level of agreement with statements including “Looking out for myself is my top priority.” (primary subscale) and “Before I do anything, I carefully consider the possible consequences [reversed item].” (secondary subscale), using a 4 point Likert scale (1= *strongly disagree*, 4= *strongly agree*). Internal reliability has been reported as $\alpha = 0.82$ and $\alpha = 0.63$ for primary and secondary scales respectively. Discriminant validity has also been demonstrated for the scales (Hauck-Filho & Teixeira, 2014).

Mach IV. The most widely used measure of Machiavellianism, the 20 item Mach IV (Appendix D) explores the use of manipulative interpersonal tactics, such as flattery and deceit (Bedell et al., 2006; Christie & Geis, 1970; Paulhus & Jones, 2014). Participants were required to respond to statements such as, “P.T. Barnum was wrong when he said that there's a sucker born every minute.”, using a 5 point Likert scale (1= *strongly disagree*, 5= *strongly agree*). The Mach IV is highly reliable, $\alpha = 0.92$, with acceptable validity (Bedell et al., 2006).

Short Sadistic Impulse Scale (SSIS). A 10 item questionnaire, the SSIS (Appendix E) was derived from the Sadistic Attitudes and Behaviors Scale (SABS), and assesses whether individuals gain pleasure from the suffering of others (O’Meara et al., 2011). Participants rated their level of agreement with statements including, “I have humiliated others to keep them in line.” Although initially designed as a dichotomous response scale, the current study utilised a 6 point Likert scale (1= *strongly disagree*, 6= *strongly agree*), as research indicates that fewer response options can impair the psychometric properties of tools, including internal consistency and variance of scales (Lozano, Garcia-Cueto, & Muniz, 2008; Preston & Coleman, 2000). When used with a Likert scale, the SSIS has shown good internal consistency, $\alpha = 0.88$ (Buckels, Trapnell, & Paulhus, 2014).

Centre for Epidemiologic Studies Depression Scale (CES-D). The 20 item CES-D (Appendix F) assesses depressive symptomatology (Radloff, 1997). Using a 4 point Likert scale (0= *rarely or none of the time*, 3= *most or all of the time*), participants indicated how often over the past week statements such as “I had crying spells.” applied to them. The CES-D has demonstrated good reliability ($\alpha= 0.85$) and validity (Radloff, 1997), and was selected for this study as it allowed direct comparisons with previous research (Jonason et al., 2015).

Ruminative Responses Scale (RRS). The RRS (Appendix G) examines self-focused negative attention (rumination). The modified 10 item version developed by Treynor, Gonzalez, & Nolen-Hoeksema (2003) was selected as it removes items correlated with depression, decreasing the chance of bias (Aldao, Nolen-Hoeksema, & Schweizer, 2010). This version includes brooding and rumination subscales, and has an estimated $\alpha= 0.85$ (Treynor et al., 2003). Participants were asked to rate their patterns of thinking using a 4 point Likert scale (1- *almost never*, 4= *almost always*). Items include “Think “Why can’t I handle things better?” (brooding subscale) and “Analyse recent events to try and understand why you are depressed.” (reflecting subscale).

Marlowe-Crown Social Desirability Scale (MCSDS). A reliable ($\alpha = 0.73$) 13 item form of the MCSDS (Appendix H) has been developed as a brief assessment of whether respondents are answering truthfully or misrepresenting themselves (Zook & Sippes, 1985). Items such as “I sometimes feel resentful when I don’t get my own way.” were rated using a dichotomous response format (true/false). The MCSDS was included to facilitate exclusion of socially desirable respondents.

Procedure

This study was approved by the Chair of the Tasmanian Social Sciences Human Research Ethics Committee (Ethics Reference: H0015553); see Appendix I. Demographic questions and the self-report measures listed above were compiled and hosted on LimeSurvey (Schmitz, 2012). Additional data on mental health, social support, and subjective wellbeing were also collected for an unrelated study. To minimise order effects and missing data, two versions of the survey were developed with varied order of questionnaire presentation. Prior to the study being advertised, a small pilot study was conducted to ensure the surveys operated as intended.

Participants were volunteers recruited via an online portal hosted by the University of Tasmania, and on the social networking website Facebook, following creation of a purpose specific page. All advertisements (see Appendix J) provided a web link to one of the two surveys. The survey was completed at the participants' convenience, in a location of their choosing. A description of the study's purpose preceded the surveys, and participants were required to provide their consent by clicking 'I Agree', before proceeding to survey items (see Appendix K). Persons wishing not to continue at this stage were advised to close their browser window. All questions within the surveys were formatted as mandatory, in order to limit missing data. The surveys allowed participants to exit at any time, and also provided the option of clearing any entered data.

At the conclusion of the survey participants were provided with the researcher's contact details and information regarding support services (see Appendix L), to allow them to address any queries or concerns arising from the survey process. Participants were also offered the chance to enter the draw to win one of three \$50 Coles-Myer Vouchers. First year students at the University of

Tasmania were alternatively able to claim an hour of research credit. Participants interested in either option were directed to a separate survey (see Appendix M) to provide their contact information. This data was not linked to their previous responses, assuring anonymity. The surveys remained online for seven weeks, after which time the web links were no longer active. The Facebook page used to advertise the study was also removed at this time.

Results

Assumption Testing

Casewise diagnostics identified three outliers, who scored well above the predicted value on the outcome variable (depression levels), with standard residuals of 4.44, 6.36, and 3.84 respectively. The maximum Cook's Distance values for all regression models was less than one, suggesting the outliers did not have undue influence on results (Pallant, 2007). Given that a sample of sufficient size will inevitably cover a wide range of presentations and naturally include extreme cases present within the population (Furnham et al., 2013), it was thought that excluding individuals with high levels of depression (or any variable) may result in a non-representative sample. For these reasons the outliers were retained.

Preliminary analyses were conducted to ensure data did not violate the assumptions of multiple regression. Total narcissism and total psychopathy were not included in regression models, as these constructs comprise grandiose and vulnerable narcissism, and primary and secondary psychopathy respectively. Excluding these constructs ensures the assumption of singularity is met. With respect to multicollinearity, it was noted that grandiose narcissism and vulnerable narcissism correlate at $r = 0.72$, which is marginally above the typically recommended guideline of 0.7 (Pallant, 2007). However, there is considerable evidence for the distinction

between these constructs (Egan et al., 2014; Southard et al., 2015). Further, tolerance statistics were all above 0.10, and all variance inflation factors (VIFs) were below 10. This indicates that the multicollinearity assumption is not violated (Pallant, 2007), therefore both grandiose and vulnerable narcissism were retained in analyses.

Inspection of scatterplots and normal probability plots indicated that the assumptions of normality, linearity, and homoscedasticity were largely met. Some minor deviations in the distribution of residuals were observed, however these were not considered problematic, given the utilised analyses are based on the F distribution which is robust to breaches of normality (Keppel & Wickens, 2004).

Descriptive Statistics

Table 2 shows the descriptive statistics and bivariate correlations for all variables of research interest. Mean scores were consistent with those reported in previous research involving non-clinical samples for the Dark Tetrad (Gough, 2015; Jonason et al., 2015; Southard et al., 2015), depression levels (Carleton et al., 2013; Radloff et al., 1977), rumination (Erdur-Baker & Bugay, 2010; Joorman, 2006; Treynor et al., 2003), and socially desirable responding (Andrews & Meyer, 2003). With respect to rumination, the median split values utilised for brooding (9) and reflection (8) were also consistent with mean scores from earlier studies utilising the 10 item version of the Ruminative Responses Scale (Erdur-Baker & Bugay, 2010; Treynor et al., 2003), suggesting levels of rumination similar to those observed in comparable samples.

A series of independent t -tests was used to determine whether men and women differed significantly on any variables of interest (see Table 3). The Bonferroni correction was applied to control the heightened familywise error rate associated with running multiple t -tests (Pallant, 2007), resulting in an adjusted

critical value ($\alpha = 05/11$, $p = 0.005$). Men within the sample scored significantly higher on total psychopathy, primary psychopathy, Machiavellianism, and sadism than women. Effect sizes for these differences were large (Cohen, 1988). Women recorded higher scores on vulnerable narcissism and secondary psychopathy, both of which fall within the Vulnerable Dark Triad (VDT). While these differences were not significant, effect sizes were moderate (Cohen, 1988). These data confirm that the decision to include gender as a control variable was a prudent one. Overall rumination scores, brooding rumination, reflecting rumination and depression levels did not differ significantly between the genders.

Regression Analyses

Dark Tetrad and depression. Hierarchical multiple regression was used to assess the ability of the Dark Tetrad traits to predict levels of depression, after controlling for the influence of gender, age, and socially desirable responding. Results are shown in Table 4. Gender was entered at Step 1 of the model, explaining 0.9% of the variance in depression levels, $R^2 = 0.009$, $F(1, 314) = 2.76$, $p < 0.098$. Age was entered at Step 2, explaining an additional 2.6% of the variance (R^2 change = 0.026, F change (1, 313) = 8.54, $p < 0.004$). At Step 3, socially desirable responding was added to the model, and explained an additional 5.6% of the variance (R^2 change = 0.056, F change (1, 312) = 8.54, $p < 0.000$). After the entry of the Dark Tetrad traits at Step 4, the total variance explained by the model as a whole was 35.6%, $F(9, 306) = 18.81$, $p < 0.001$. The Dark Tetrad traits explained an additional 26.5% of the variance, after controlling for gender, age, and socially desirable responding; R^2 change = 0.265, F change (6, 306) = 20.98, $p < 0.001$. In the final model, three of the Dark Tetrad traits (predictor variables)

were statistically significant, with vulnerable narcissism recording a higher beta value than grandiose narcissism and secondary psychopathy.

Table 2
Bivariate Correlations and Descriptive Statistics for Variables of Interest

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Narcissism Total	-	0.91*	0.94*	0.43*	0.33*	0.41*	0.35*	0.30*	0.45*	0.53*	0.54*	0.44*	-0.45*
2. Grandiose Narcissism	0.91*	-	0.72*	0.44*	0.39*	0.34*	0.35*	0.31*	0.27*	0.37*	0.38*	0.31*	-0.40*
3. Vulnerable Narcissism	0.94*	0.72*	-	0.36*	0.23*	0.23*	0.23*	0.23*	0.53*	0.56*	0.60*	0.49*	-0.42*
4. Psychopathy Total	0.43*	0.44*	0.36*	-	0.91*	0.73*	0.67*	0.68*	0.24*	0.22*	0.23*	0.18*	-0.34*
5. Primary Psychopathy	0.33*	0.39*	0.23*	0.91*	-	0.37*	0.37*	0.37*	0.09	0.08	0.08	0.08*	-0.28*
6. Secondary Psychopathy	0.41*	0.34*	0.23*	0.73*	0.37*	-	0.43*	0.45*	0.40*	0.35*	0.37*	0.28*	-0.31*
7. Machiavellianism	0.35*	0.35*	0.23*	0.67*	0.37*	0.43*	-	0.54*	0.20*	0.16*	0.16*	0.15*	-0.34*
8. Sadism	0.30*	0.31*	0.23*	0.68*	0.37*	0.45*	0.54*	-	0.18*	0.19*	0.16*	0.19*	-0.32*
9. Depression	0.45*	0.27*	0.53*	0.24*	0.09	0.40*	0.20*	0.18*	-	0.71*	0.70*	0.19*	-0.25*
10. Rumination	0.53*	0.37*	0.56*	0.22*	0.08	0.35*	0.16*	0.19*	0.71*	-	0.93*	0.19*	-0.35*
11. Brooding Rumination	0.54*	0.38*	0.60*	0.23*	0.08	0.37*	0.16*	0.16*	0.70*	0.93*	-	0.19*	-0.33*
12. Reflection Rumination	0.44*	0.31*	0.49*	0.18*	0.08	0.28*	0.15*	0.19*	0.19*	0.19*	0.19**	-	-0.31*
13. Socially Desirable Responses	-0.45*	-0.40*	-0.42*	-0.34*	-0.28*	-0.31*	-0.34*	-0.32*	-0.25*	-0.35*	-0.33*	-0.31*	-
Mean & Standard Deviation	119.62 (38.62)	60.22 (19.26)	59.40 (22.78)	47.48 (9.28)	27.21 (6.87)	20.28 (4.18)	52.51 (8.11)	16.20 (6.94)	15.07 (11.16)	19.46 (6.46)	10.24 (3.49)	9.22 (3.47)	7.12 (2.67)

Note. 1= PNI total; 2= PNI grandiose subscale total; 3= PNI vulnerable subscale total; 4= LSPS total; 5= LSPS primary subscale total; 6= LSPS secondary subscale total; 7= Mach IV total; 8= SSIS total; 9= CES-D total; 10= RRS total; 11= RRS brooding subscale; 12= RRS reflection subscale; 13= MCSDS total. * $p < 0.01$ (two tailed).

Table 3

Results of t-tests Exploring Gender Differences

	<i>t</i>	<i>df</i>	<i>p</i>	Cohen's <i>d</i>	95% CI
1. Narcissism Total	0.61	310	0.542	0.10	[-8.30, 15.77]
2. Grandiose Narcissism	1.68	310	0.094	0.26	[-0.86, 11.01]
3. Vulnerable Narcissism	-0.36	310	0.708	-0.06	[-8.37, 5.69]
4. Psychopathy Total	3.41	310	0.001*	0.54	[2.07, 7.74]
5. Primary Psychopathy	4.94	310	<0.001*	0.78	[3.10, 7.20]
6. Secondary Psychopathy	-0.37	310	0.714	-0.06	[-1.53, 1.05]
7. Machiavellianism	3.72	310	<0.001*	0.59	[2.22, 7.15]
8. Sadism	4.22	310	<0.001*	0.66	[2.40, 6.59]
9. Depression	-0.41	310	0.683	-0.06	[-4.10, 2.69]
10. Rumination	-1.71	310	0.090	-0.27	[-3.71, 0.27]
11. Brooding Rumination	-1.70	310	0.090	-0.27	[-2.00, 0.15]
12: Reflecting Rumination	-1.46	310	0.146	-0.23	[-1.87, 0.28]
13. Socially Desirable	-0.80	310	0.423		[-1.16, 0.49]

Responses

Note. 1= PNI total; 2= PNI grandiose subscale total; 3= PNI vulnerable subscale total; 4= LSPS total; 5= LSPS primary subscale total; 6= LSPS secondary subscale total; 7= Mach IV total; 8= SSIS total; 9= CES-D total; 10= RRS total; 11= RRS brooding subscale; 12= RRS reflection subscale; 13= MCSDS total. *significant difference between genders.

Moderation analyses: brooding rumination. Hierarchical multiple regression was used to assess the ability of the Dark Tetrad traits to predict levels of depression in individuals low on brooding rumination, after controlling for the influence of gender, age, and socially desirable responding. Results are shown in Table 5. Gender was entered at Step 1 of the model, explaining 1.1% of the variance in depression levels (R squared = 0.011, $F(1, 148) = 1.68, p = 0.20$). Age was entered at Step 2, explaining an additional 3.4% of the variance (R squared change = 0.023, F change (1, 147) = 3.44, $p = 0.066$). At Step 3, socially desirable responding was added to the model, and explained an additional 10.6% of the variance (R squared change = 0.072, F change (1, 146) = 11.83, $p = 0.001$). After the entry of the Dark Tetrad traits at step 4, the total variance explained by the model as a whole was 28.4%, $F(9, 140) = 6.16, p < 0.001$. The Dark Tetrad traits explained an additional 17.8% of the variance, after controlling for gender, age, and socially desirable responding; R squared change = 0.178, F change (6, 140) = 5.79, $p < 0.001$. In the final model, vulnerable narcissism was the only statistically significant predictor variable.

Hierarchical multiple regression was used to assess the ability of the Dark Tetrad traits to predict levels of depression in individuals high on brooding rumination, after controlling for the influence of gender, age, and socially desirable responding. Results are shown in Table 6. Gender was entered at Step 1 of the model, explaining 1.5% of the variance in depression levels (R squared = 0.015, $F(1, 164) = 2.43, p = 0.121$). Age was entered at Step 2, explaining an additional 2.8% of the variance (R squared change = 0.014 F change (1, 163) = 2.28, $p = 0.133$). At Step 3, socially desirable responding was added to the model, and explained an additional 2.8% of the variance (R squared change = 0.000, F change (1, 162) = 0.004, $p =$

0.949). After the entry of the Dark Tetrad traits at Step 4, the total variance explained by the model as a whole was 19.2%, $F(9, 156) = 4.13, p < 0.001$. The Dark Tetrad traits explained an additional 16.4% of the variance, after controlling for gender, age, and socially desirable responding; R squared change = 0.164, F change (6, 156) = 5.29, $p < 0.001$. In the final model, three of the Dark Tetrad traits (predictor variables) were statistically significant, with vulnerable narcissism recording a higher beta value than grandiose narcissism, and secondary psychopathy.

Moderation analyses: reflecting rumination. Hierarchical multiple regression was used to assess the ability of the Dark Tetrad traits to predict levels of depression in individuals low on reflecting rumination, after controlling for the influence of gender, age, and socially desirable responding. Results are shown in Table 7. Gender was entered at Step 1 of the model, explaining 0% of the variance in depression levels (R squared = 0.000, $F(1, 156) = 0.04, p = 0.847$). Age was entered at Step 2, explaining an additional 1.7% of the variance (R squared change = 0.017, F change (1, 155) = 2.65, $p = 0.106$). At Step 3, socially desirable responding was added to the model, and explained an additional 6.7% of the variance (R squared change = 0.050, F change (1, 154) = 8.29, $p = 0.005$). After the entry of the Dark Tetrad traits at Step 4, the total variance explained by the model as a whole was 26.3%, $F(9, 148) = 5.87, p < 0.001$. The Dark Tetrad traits explained an additional 19.6% of the variance, after controlling for gender, age, and socially desirable responding; R squared change = 0.196, F change (6, 148) = 6.55, $p < 0.001$. In the final model, two of the Dark Tetrad traits (predictor variables) were statistically significant, with vulnerable narcissism recording a higher beta value than grandiose narcissism.

Hierarchical multiple regression was used to assess the ability of the Dark Tetrad traits to predict levels of depression in individuals high on reflecting rumination, after controlling for the influence of gender, age, and socially desirable responding. Results are shown in Table 8. Gender was entered at Step 1 of the model, explaining 1.5% of the variance in depression levels ($R^2 = 0.015$, $F(1, 156) = 2.40$, $p = 0.124$). Age was entered at Step 2, explaining an additional 3.4% of the variance ($R^2 \text{ change} = 0.019$, $F \text{ change}(1, 155) = 3.01$, $p = 0.085$). At Step 3, socially desirable responding was added to the model, and explained an additional 4% of the variance ($R^2 \text{ change} = 0.006$, $F \text{ change}(1, 154) = 1.03$, $p = 0.312$). After the entry of the Dark Tetrad traits at Step 4, the total variance explained by the model as a whole was 23.8%, $F(9, 148) = 5.13$, $p < 0.001$. The Dark Tetrad traits explained an additional 19.7% of the variance, after controlling for gender, age, and socially desirable responding; $R^2 \text{ change} = 0.197$, $F \text{ change}(6, 148) = 6.39$, $p < 0.001$. In the final model, three of the Dark Tetrad traits (predictor variables) were statistically significant, with vulnerable narcissism recording a higher beta value than secondary psychopathy and grandiose narcissism.

Table 4

Hierarchical Multiple Regression Showing Relationships between Predictor Variables and Depression Levels

Model		<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI
Step 1	Constant	10.00	3.12		3.20	0.002	[3.85, 16.14]
	Gender	2.73	1.64	0.09	1.66	0.098	[-0.50, 5.96]
Step 2	Constant	15.44	3.60		4.29	<0.001	[8.35, 22.53]
	Gender	2.12	1.64	0.73	1.30	0.196	[-1.10, 5.34]
	Age	-0.16	0.53	-0.16	-2.92	0.004	[-0.26, -0.05]
Step 3	Constant	20.91	3.72		5.63	<0.001	[13.60, 28.22]
	Gender	2.57	1.59	0.88	1.61	0.107	[-0.56, 5.71]
	Age	-0.13	0.05	-0.13	-2.42	0.016	[-0.23, -0.23]
	Socially Desirable Responding	-1.00	0.23	-0.24	-4.40	<0.001	[-1.45, -0.55]
Step 4	Constant	-4.53	6.54		-0.69	0.488	[-17.40, 8.33]
	Gender	0.60	1.46	0.20	0.41	0.681	[-2.27, 3.47]
	Age	-0.24	0.05	-0.03	-0.49	0.623	[-0.12, 0.07]

(continued)

Model	<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI
Socially Desirable Responding	-0.12	0.22	-0.03	-0.52	0.601	[-0.55, 0.32]
Grandiose Narcissism	-0.13	0.04	-0.23	-3.16	0.002**	[-0.21, -0.05]
Vulnerable Narcissism	0.29	0.04	0.58	8.22	<0.001***	[0.22, 0.35]
Primary Psychopathy	-0.17	0.12	-0.11	-1.48	0.139	[-0.40, 0.06]
Secondary Psychopathy	0.58	0.15	0.22	3.84	<0.001***	[0.28, 0.88]
Machiavellianism	0.05	0.09	0.03	0.52	0.607	[-0.13, 0.22]
Sadism	0.08	0.10	0.05	0.82	0.415	[-0.12, 0.29]

Note. Depression levels= CES=D total; Socially Desirable Responding= MCSDS total; Grandiose narcissism= PNI grandiose subscale total; Vulnerable narcissism= PNI vulnerable subscale total; Primary psychopathy= LSPS primary subscale total; Secondary psychopathy= LSPS secondary subscale total; Machiavellianism= Mach IV total; Sadism= SSIS total. * $p < 0.05$, ** $p < 0.005$, *** $p < 0.001$.

Table 5

Hierarchical Multiple Regression Showing Relationships between Predictor Variables and Depression Levels in Individuals Low in Brooding Rumination

Model		<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI
Step 1	Constant	10.40	2.02		5.15	<0.001	[6.41, 14.39]
	Gender	-1.40	1.08	-0.11	-1.30	0.197	[-3.54, 0.74]
Step 2	Constant	12.72	2.36		5.39	<0.001	[8.05, 17.38]
	Gender	-1.74	1.09	-0.13	-1.60	0.113	[-3.89, 0.41]
	Age	-0.06	0.03	-0.15	-1.86	0.066	[-0.12, 0.004]
Step 3	Constant	17.26	2.63		6.56	<0.001	[12.06, 22.47]
	Gender	-2.09	1.06	-0.16	-1.98	0.050	[-4.17, 0.000]
	Age	-0.04	0.03	-0.10	-1.29	0.198	[-0.10, 0.02]
	Socially Desirable Responding	-0.55	0.16	-0.26	-3.44	0.001	[-0.87, -0.23]
Step 4	Constant	5.16	4.56		1.13	0.260	[-3.86, 14.17]

(continued)

Model	<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI
Gender	-2.21	1.01	-0.17	-2.20	0.030	[-4.20, -0.22]
Age	-0.01	0.03	-0.01	-0.16	0.877	[-0.07, 0.06]
Socially Desirable Responding	-0.19	0.17	-0.10	-1.14	0.256	[-0.53, 0.14]
Grandiose Narcissism	-0.05	0.03	-0.19	-1.71	0.090	[-0.11, 0.01]
Vulnerable Narcissism	0.11	0.03	0.42	3.75	<0.001***	[0.05, 0.17]
Primary Psychopathy	0.002	0.09	0.003	0.03	0.979	[-0.18, 0.18]
Secondary Psychopathy	0.23	0.12	0.18	1.95	0.053	[-0.003, 0.47]
Machiavellianism	0.18	0.07	0.03	0.28	0.780	[-0.11, 0.15]
Sadism	0.05	0.08	0.06	0.61	0.540	[-0.11, 0.24]

Note. Depression levels= CES=D total; Low brooding rumination= RRS brooding subscale scores below median split (0-9); Socially Desirable Responding= MCSDS total; Grandiose narcissism= PNI grandiose subscale total; Vulnerable narcissism= PNI vulnerable subscale total; Primary psychopathy= LSPS primary subscale total; Secondary psychopathy= LSPS secondary subscale total; Machiavellianism= Mach IV total; Sadism= SSIS total. * $p < 0.05$, ** $p < 0.005$, *** $p < 0.001$.

Table 6

Hierarchical Multiple Regression Showing Relationships between Predictor Variables and Depression Levels in Individuals High in Brooding Rumination

Model		<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI
Step 1	Constant	14.93	4.37		3.12	0.001	[6.30, 23.55]
	Gender	3.53	2.27	0.12	1.56	0.121	[-0.94, 8.00]
Step 2	Constant	18.75	5.04		3.72	<0.001	[8.81, 28.70]
	Gender	3.33	2.26	0.11	1.47	0.14	[-1.14, 7.79]
	Age	-0.13	0.09	-0.12	-1.51	0.13	[-0.30, 0.04]
Step 3	Constant	18.83	5.18		3.64	<0.001	[8.60, 29.05]
	Gender	3.37	2.35	0.12	1.43	0.154	[-1.28, 8.01]
	Age	-0.13	0.09	-0.12	-1.51	0.134	[-0.30, 0.04]
	Socially Desirable Responding	-0.02	0.36	-0.01	-0.06	0.949	[-0.73, 0.68]
Step 4	Constant	0.43	10.86		0.04	0.968	[-21.02, 21.88]
	Gender	1.95	2.43	0.07	0.80	0.424	[-2.85, 6.73]

(continued)

Model	<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI
Age	-0.09	0.09	-0.08	-1.00	0.320	[-0.26, 0.09]
Socially Desirable Responding	0.15	0.35	0.03	0.42	0.675	[-0.55, 0.84]
Grandiose Narcissism	-0.19	0.06	-0.30	-2.97	0.003**	[-0.31, -0.06]
Vulnerable Narcissism	0.24	0.06	0.39	4.05	<0.001***	[0.12, 0.35]
Primary Psychopathy	-0.20	0.17	-0.13	-1.20	0.233	[-0.53, 0.13]
Secondary Psychopathy	0.67	0.23	0.25	2.96	0.004**	[0.22, 1.12]
Machiavellianism	0.09	0.13	0.06	0.64	0.522	[-0.18, 0.35]
Sadism	0.07	0.15	0.05	0.48	0.631	[-0.22, 0.36]

Note. Depression levels= CES=D total; High brooding rumination= RRS brooding subscale scores above median split (10-20); Socially Desirable Responding= MCSDS total; Grandiose narcissism= PNI grandiose subscale total; Vulnerable narcissism= PNI vulnerable subscale total; Primary psychopathy= LSPS primary subscale total; Secondary psychopathy= LSPS secondary subscale total; Machiavellianism= Mach IV total; Sadism= SSIS total. * $p < 0.05$, ** $p < 0.005$, *** $p < 0.001$.

Table 7

Hierarchical Multiple Regression Showing Relationships between Predictor Variables and Depression Levels in Individuals Low in Reflecting Rumination

Model		<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI
Step 1	Constant	9.45	2.95		3.20	0.002	[3.62, 15.30]
	Gender	-0.31	1.58	-0.02	-0.19	0.847	[-3.42, 2.81]
Step 2	Constant	12.07	3.35		3.61	<0.001	[5.46, 18.68]
	Gender	-0.57	1.58	-0.03	-0.36	0.718	[-3.69, 2.55]
	Age	-0.07	0.05	-0.13	-1.63	0.106	[-0.16, 0.02]
Step 3	Constant	16.35	3.59		4.55	<0.001	[9.25, 23.46]
	Gender	-0.57	1.54	-0.03	-0.37	0.712	[-3.62, 2.48]
	Age	-0.05	0.05	-0.09	-1.14	0.255	[-0.14, 0.04]
	Socially Desirable Responding	-0.63	0.22	-0.23	-2.88	0.005	[-1.06, -0.20]
Step 4	Constant	12.01	6.48		1.85	0.066	[-0.80, 24.80]

(continued)

Model	<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI
Gender	-1.88	1.50	-0.10	-1.25	0.212	[-4.83, 1.08]
Age	-0.04	0.05	-0.07	-0.92	0.357	[-0.13, 0.05]
Socially Desirable Responding	-0.38	0.23	-0.14	-1.67	0.097	[-0.83, 0.07]
Grandiose Narcissism	-0.16	0.04	-0.39	-3.67	<0.001***	[-0.24, -0.07]
Vulnerable Narcissism	0.17	0.04	0.48	4.47	<0.001***	[0.10, 0.25]
Primary Psychopathy	0.05	0.13	0.05	0.41	0.682	[-0.20, 0.30]
Secondary Psychopathy	0.34	0.18	0.19	1.91	0.059	[-0.01, 0.68]
Machiavellianism	-0.07	0.09	-0.08	-0.80	0.427	[-0.26, 0.11]
Sadism	0.03	0.12	0.03	0.27	0.791	[-0.20, 0.27]

Note. Depression levels= CES=D total; Low reflecting rumination= RRS reflection subscale scores below median split (0-8); Socially Desirable Responding= MCSDS total; Grandiose narcissism= PNI grandiose subscale total; Vulnerable narcissism= PNI vulnerable subscale total; Primary psychopathy= LSPS primary subscale total; Secondary psychopathy= LSPS secondary subscale total; Machiavellianism= Mach IV total; Sadism= SSIS total. * $p < 0.05$, ** $p < 0.005$, *** $p < 0.001$.

Table 8

Hierarchical Multiple Regression Showing Relationships between Predictor Variables and Depression Levels in Individuals High in Reflecting Rumination

Model		<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI
Step 1	Constant	14.75	4.28		3.45	0.001	[6.30, 23.21]
	Gender	3.44	2.22	0.12	1.55	0.124	[-0.95, 7.83]
Step 2	Constant	19.78	5.15		3.84	<0.001	[9.61, 29.94]
	Gender	2.88	2.23	0.10	1.29	0.199	[-1.53, 7.29]
	Age	-0.15	0.09	-0.14	-1.74	0.085	[-0.32, 0.02]
Step 3	Constant	21.34	5.37		3.97	<0.001	[10.73, 31.95]
	Gender	3.24	2.26	0.12	1.43	0.154	[-1.23, 7.70]
	Age	-0.15	0.09	-0.14	-1.72	0.087	[-0.32, 0.02]
	Socially Desirable Responding	-0.35	0.35	-0.08	-1.01	0.312	[-1.04, 0.33]
Model		<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	95% CI

(continued)

Step 4							
	Constant	-13.37	10.66		-1.25	0.212	[-34.43, 7.70]
	Gender	2.64	2.22	0.09	1.19	0.235	[-1.74, 7.02]
	Age	-0.02	0.09	-0.02	-0.20	0.845	[-0.19, 0.16]
	Socially Desirable Responding	0.20	0.35	0.05	0.56	0.573	[-0.49, 0.88]
	Grandiose Narcissism	-0.13	0.06	-0.21	-1.98	0.05*	[-0.25, 0.00]
	Vulnerable Narcissism	0.24	0.06	0.43	4.22	<0.001***	[0.13, 0.36]
	Primary Psychopathy	-0.05	0.18	-0.03	-0.30	0.763	[-0.40, 0.30]
	Secondary Psychopathy	0.77	0.22	0.29	3.55	0.001***	[0.34, 1.21]
	Machiavellianism	0.10	0.13	0.07	0.76	0.452	[-0.16, 0.36]
	Sadism	-0.02	0.15	-0.01	-0.13	0.896	[-0.31, 0.27]

Note. Depression levels= CES=D total; High reflecting rumination= RRS reflection subscale scores above median split (9-20); Socially Desirable Responding= MCSDS total; Grandiose narcissism= PNI grandiose subscale total; Vulnerable narcissism= PNI vulnerable subscale total; Primary psychopathy= LSPS primary subscale total; Secondary psychopathy= LSPS secondary subscale total; Machiavellianism= Mach IV total; Sadism= SSIS total. * $p < 0.05$, ** $p < 0.005$, *** $p < 0.001$.

Discussion

This study aimed to further the small amount of research that has examined the relationship between the Dark Tetrad and levels of depression, and determine whether this relationship is moderated by rumination. The design was intended to address limitations of previous research, in order to provide further insight into the mood states and emotion regulation strategies of individuals with the dark traits.

Bivariate correlations between variables (see Table 2) were consistent with the underlying theoretical assumptions of this research. The Dark Tetrad traits were all significantly positively correlated with one another ($p < 0.01$), with the strongest relationships observed between grandiose and vulnerable narcissism ($r = 0.72$), sadism and total psychopathy ($r = 0.68$), Machiavellianism and total psychopathy ($r = 0.67$), and sadism and Machiavellianism ($r = 0.54$). Each of the Dark Tetrad traits were also positively correlated with depression levels, total rumination, brooding rumination, and reflecting rumination, with the exception of primary psychopathy, which showed no significant relationship with these variables. Vulnerable narcissism was the dark trait most strongly correlated with depression ($r = 0.53$) and rumination ($r = 0.56$). Further, depression and rumination were strongly linked ($r = 0.71$), with brooding rumination showing a stronger connection to depression ($r = 0.70$) than reflecting rumination ($r = 0.19$).

This study also provided valuable data on the largely unexplored relationship between the Dark Tetrad and socially desirable responding. Each of the dark traits were significantly negatively correlated with socially desirable responding ($r = -0.28$ - -0.42), consistent with figures for primary ($r = -0.28$) and secondary psychopathy ($r = -0.31$) reported by Grieve and Mahar (2010). Results indicate that those higher on the Dark Tetrad traits are less likely to provide socially desirable responses than

individuals lower on the traits, suggesting they are less concerned with presenting themselves in a positive light. This is interesting given the manipulative and untruthful tendencies of those with the dark traits, particularly narcissists, who are known to repress the negative aspects of themselves in order to gain social favour (Pincus et al., 2009; Thomas et al., 2012). It appears that persons higher on the dark traits are not intentionally ‘faking good’ or ‘faking bad’; likely as they are unconcerned with the opinions of others (Paulhus, 2014; Paulhus & Jones, 2014). Low levels of socially desirable responding in those with the dark traits indicate that results from studies involving this group can be meaningfully interpreted without concern for bias from the use of self-report tools.

Gender differences were also examined, given previous research strongly indicates a male dominance in all Dark Tetrad traits (Furnham et al, 2014; Miller et al., 2010). In contrast to previous findings, differences were not observed between men and women on grandiose narcissism, vulnerable narcissism, or secondary psychopathy. While women scored higher on vulnerable narcissism and secondary psychopathy, the difference was not statistically significant. Nonetheless it is interesting to note that both of these traits fall within the Vulnerable Dark Triad (VDT), and when one considers that the VDT's third member, borderline personality disorder, is known to be significantly more common in women (APA, 2013), it follows that this may also be the case for vulnerable narcissism and secondary psychopathy. However, the literature surrounding this is unclear. Gough (2015) also reported higher rates of vulnerable narcissism in females, but did not identify a gender difference for secondary psychopathy. Further, other researchers did not report gender differences for vulnerable narcissism (Miller et al., 2010). Overall, our results largely align with the established view that the dark traits are seen at higher

levels in males (Furnham et al, 2014). The noted inconsistencies with this trend may be due to the limited literature exploring gender differences between the varying forms of narcissism and psychopathy, however they may also reflect the gender ratio within the VDT.

Rumination scores did not differ significantly between the genders, which is in contrast from the typical pattern of greater rumination in women (Mor & Winquist, 2002). Similarly, women generally report higher rates of depression (APA, 2013), including when the CES-D is utilised (Carleton et al., 2013), which was not observed in the sample. It is thought that this is the result of the small number of males in the sample.

Dark Tetrad and Depression

The Dark Tetrad traits explained 35.6% of variance in depression levels, when controlling for gender, age, and socially desirable responding. The control variables did not make unique contributions to the final model (Table 4), therefore results indicate that the dark traits can be used as reliable predictors of depression. As hypothesised, the dark traits varied along a conceptual continuum of depressive symptoms, and traits closest to either end of the continuum most strongly predicted levels of depression. Figure 2 compares the expected and obtained continuums. As anticipated, vulnerable narcissism ($\beta = 0.58$) and secondary psychopathy ($\beta = 0.22$) were significant predictors of higher depression levels (i.e. were darker relative to other Tetrad traits), while grandiose narcissism ($\beta = -0.23$) was significantly connected to lower depression scores. Primary psychopathy, sadism, and Machiavellianism were not significantly predictive of depression levels. The small relative contribution of Machiavellianism to the overall model was in line with previous research (Jonason et al., 2015). Further, Machiavellianism and sadism

showed similar degrees of association with depression, consistent with earlier studies (Chabrol et al., 2015; Southard et al. 2015). This indicates there may be elements of shared experience between these traits when it comes to depressive disorders.

It appears that the true nature of the connections between psychopathy, narcissism and depression have been obscured in many past studies, given they did not differentiate between grandiose and vulnerable narcissism, and primary and secondary psychopathy (Jonason et al., 2015; Stead et al., 2012). These studies reported that psychopathy was positively linked with depression, while purporting that narcissism was not significantly associated with depression (Jonason et al., 2015; Stead et al., 2012). When compared to the findings of the current study, it appears that secondary psychopathy can skew the relationship between overall psychopathy and depression, concealing the (weak) negative valence of the relationship between primary psychopathy and depressive symptoms. Similarly, the pull between grandiose (negatively connected) and vulnerable narcissism (positively connected) towards opposite ends of the depression continuum seems to have cancelled one another out in past research, making it appear that narcissism holds no significant connection to depression. Our study highlights that vulnerable and grandiose narcissism appear to be the strongest predictors of depression amongst the Tetrad traits, an insight that would have been lost had narcissism been treated as a single entity. This highlights the importance of including the variants of psychopathy and narcissism in analyses regarding the dark traits. Overall, these findings support research suggesting that grandiose narcissism may be somewhat of a protective factor against depression, while vulnerable narcissistic and secondary psychopathic tendencies may represent risk factors (Egan et al., 2014; Miller et al., 2010).

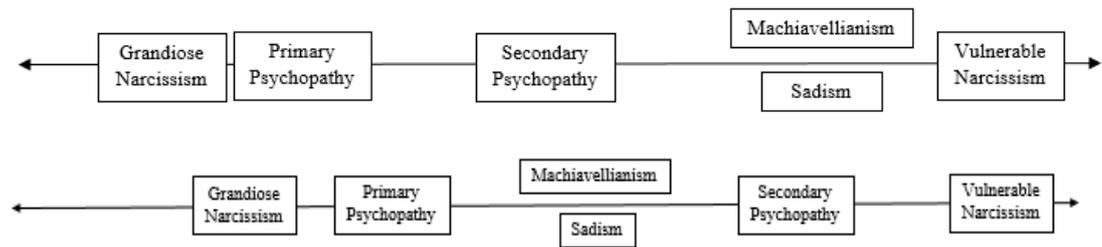


Figure 2. Expected and Obtained Conceptual Continuums of Depressive Symptoms.

Note: Top continuum represents the hypothesised continuum of depressive symptoms. Bottom continuum represents results of the regression analysis. The left hand side of the spectrums reflects lower levels of depression, while the right represents higher levels.

Rumination Analyses

Analyses were undertaken to determine whether rumination influences the relationship between the dark traits and depression, and explore how this relationship varies between brooding and reflecting rumination. As anticipated, rumination was found to moderate the relationship between the Dark Tetrad and depression, however this was only the case for brooding rumination. Results of the regression models for each of the four groups (low brooding, high brooding, low reflecting, high reflecting) are discussed below.

Brooding. Substantial differences were observed between the regression models for low and high brooding. Vulnerable narcissism was connected to higher depression scores in both groups, however in the high brooding model, grandiose narcissism and secondary psychopathy were also significant predictors of depression levels. Thus, the dark traits appear to better predict depression levels at higher levels of brooding. This is consistent with the literature linking higher brooding rumination

with more severe depression (Daches et al., 2010; Treynor et al., 2003). The reduced predictive ability of the dark traits in the low brooding model suggests that brooding rumination moderates the relationship between the Dark Tetrad and depression. Interestingly, the high brooding model (19.2%) explained substantially less variance in depression levels than the low brooding model (28.4%). This indicates that while the Dark Tetrad possess good predictive ability for depression levels at high levels of brooding, other factors also appear to impact this relationship. These factors may include additional cognitive vulnerabilities such as negative beliefs about the self, negative attribution biases, and increased memory for negative events (Daches et al., 2010). Interpersonal factors, such as isolation and relationship conflict, may also be implicated the relationship between the dark traits and depression. This notion of a variety of contributing factors is consistent with the current conceptualisation of depression as a complex disorder with a multitude of contributing factors and associated features (APA, 2013).

Reflection. There was little difference between the regression models for low and high reflection, thus it appears reflection is not a useful predictor of depression in the dark traits. In the low reflection group, the model explained 26.3% of variance in depression, while the model for the high group explained 23.8% of variance. This difference is not considered to be meaningful. Similarly, there was little difference between the low and high reflection models with respect to the dark traits which significantly predicted depression. In both groups vulnerable narcissism was connected to higher depression scores, while grandiose narcissism was negatively valanced. For the high reflection model, secondary psychopathy was also a significant predictor of higher depression levels. These findings are consistent with previous reports that reflection is less strongly connected to depression than brooding

(Daches et al., 2010; Treynor et al., 2003). The pattern of greater predictive ability of the dark traits observed for both high brooding and high reflection aligns with the belief that higher levels of rumination are generally associated with more severe depression, regardless of subtype (Daches et al., 2010; Treynor et al., 2003).

Rumination and the Dark Tetrad. Across the regression models, vulnerable narcissism and secondary psychopathy were consistently found to be significant predictors of higher depression. These findings indicate that vulnerable narcissists and persons with secondary psychopathic these traits may experience a susceptibility towards both brooding and reflecting rumination. Results for grandiose narcissism suggest it offers some protective benefits with respect to mood, as depression levels in this group do not appear to be impacted by rumination. This may be related to narcissists' capacity for effective problem solving or their inflated sense of self-esteem (Birkas et al., 2016). There was no evidence to suggest that primary psychopathy, Machiavellianism, or sadism are significant predictors of depressive symptoms. Their associations with depression remained consistent between the four regression analyses exploring rumination, therefore it appears that depressive symptoms for those with these traits is not significantly influenced by rumination.

Limitations and Considerations for Future Research

The cross-sectional design of this study limits the nature of conclusions that can be drawn from results. As the data is correlational, causation cannot be inferred (Blalock, 1960). Completing longitudinal research in the future would allow observation of depression levels in those with the dark traits over time, and offer vital information on the mechanisms by which personality characteristics contribute to the onset and course of depression (Klein, Kotov, & Bufferd, 2011). Following participants over 3-12 months would likely allow for the observation of

commencing, continuing, and concluding major depressive episodes (MDE), given the median length of a MDE is 20 weeks (Solomon et al., 2008). Such studies would also be beneficial as they could provide a clearer picture of the relationships between the Dark Tetrad, depression, and emotion regulation strategies such as rumination. For example, data could be gained regarding the emotion regulation strategies favoured by those with the dark traits, the extent to which those strategies are used, how long the strategies are used for and under what circumstances, and specific beneficial and/or detrimental effects of different strategies on depression.

Given this is a largely a novel area of research, especially the inclusion of rumination in relation the dark traits, replication of this study would also increase confidence in results (Bonett, 2012). Future researchers should aim to include an even ratio of males and females in studies, to gain a more accurate insight into potential gender differences. Further, replicating the study in a sample of individuals with clinical depression would lead to a deeper understanding of how experiences of clinical and non-clinical depression vary for individuals with the dark traits (Hayward, Killen, & Taylor, 2003). It is possible that a different pattern of results may be observed in clinical depression, which could be applied to developing more targeted treatment components for depression amongst those with the dark traits.

Lastly, the study involved the use of self-report questionnaires. Although analyses controlled for socially desirable responding to avoid bias, future research may also benefit from moving beyond self-report and employing additional measures to assess dark traits. Kotov et al. (2010) suggest a combination of self-ratings, informant ratings, and aggregate researcher/clinician ratings. However, this approach would require the development of structured interviews for identifying the Dark Tetrad, or the use of interviews designed to assess clinical personality traits, as no

interviews specifically for the dark traits currently exist. Although the use of multiple rating sources/systems is more time consuming and difficult to implement, it has the potential to be very informative and may be manageable within the context of a longitudinal design.

Implications

Research illustrates that the dark traits can affect mental health, physical health, quality of life, and life expectancy (Jonason et al., 2015). When these impacts are considered, suggestions that these traits should be targeted in therapy naturally follow. However, as personality is typically stable during adulthood (Ferguson, 2010), and given the dark traits are not considered clinically problematic, working to change these traits may be a poor use of time and resources. Thus, it could be argued that the best approach is to work with the Dark Tetrad, rather than against them. In order to do this, we need to greatly expand our understanding of the dark traits and their relationships with health and wellbeing (Charbol et al., 2015).

There is a growing body of literature, including this study, connecting non-clinical personality traits to low level mental health concerns and clinical diagnoses such as depression. In the current study, higher levels of vulnerable narcissism and secondary psychopathy were shown to be significant predictors of depression. Therefore, screening for these traits (where potentially apparent) could supplement assessment of risk for depression, and facilitate greater understanding of clients' presenting issues. However, being able to identify those who may be at risk is only part of the picture.

In order to facilitate better outcomes for those high on the Dark Tetrad, the structure and efficacy of treatments for depression must also be considered. Few studies have explored the impact of non-clinical personality traits in recovery from

depression (Mulder, 2002), and no studies could be identified that explored the treatment of depression in the Dark Tetrad traits. However, the clinical personality literature offers some insights. Research shows that those with clinical personality disorders take longer to recover from depression, and have a poorer overall response to standard treatment (Levenson, Wallace, Fournier, Rucci, & Frank, 2012; Mulder, 2002). This suggests that clinical personality traits/disorders personality can interfere with treatment for depression, and it follows that a similar phenomenon may occur amongst non-clinical traits, including the Dark Tetrad (Levenson et al., 2012). Thus, it is possible that adjunctive or modified treatment strategies, such as those used for individuals with clinical personality disorders, may be beneficial for those with high levels of the Dark Tetrad traits (Levenson et al., 2012). This could be explored by studies comparing treatment outcomes in depression for those at differing levels of the dark traits.

Determining whether changes to treatment for depression are justified for those with the dark traits is again, only a middle-step in understanding the complex relationships between these factors. Developing such treatments will involve considerable research in and of itself. As outlined above, the notion of working to changing the dark traits is flawed, therefore alternate treatments must look beyond personality. In their research, Birkas et al (2016) called for future studies to examine factors that may influence the relationship between the dark traits and depression (i.e. potential mediators and moderators of the relationship). Such factors may maintain depressive symptoms, and thus influence outcomes for these individuals. For example, the current study identified the moderating effects of brooding rumination in vulnerable narcissists, grandiose narcissists, and secondary psychopaths. This suggests that other emotion regulation and coping strategies may also play a role.

Multivariate structural models are likely to be useful in further identifying and understanding mediating and moderating factors in these relationships (Alado et al., 2010). As these factors are identified, our conceptualisation of depression in those with the dark traits can be refined. These factors can then serve as targets for intervention, indicating there is considerable utility in this approach.

To summarise, the current literature tells us this: personality can influence the etiology and presentation of depression, as well as response to treatment (Mulder, 2012). It is possible that this is the case for the Dark Tetrad traits, however the discussion above highlights that there is still considerable research required in order to meaningfully understand the connection between the dark traits and depression, and to be able to utilise this knowledge in treatment. Nevertheless, it is clear that understanding connections between the dark traits and mental health has the potential to support assessment, case formulation, prognostic predictions, goal setting, and treatment planning (Kotov et al., 2010; Stead et al., 2012). Kotov and colleagues (2010) strongly contend that theories of personality and psychopathology should be extended to consider dimensions of non-clinical personality, such as the Dark Tetrad, and as our knowledge grows with time, this may be possible

Further, this research also added to the limited literature surrounding the Vulnerable Dark Triad (VDT). This study joins a small number that have explored sex differences between vulnerable narcissism and secondary psychopathy, and supports the notion that while the VDT are connected to the Dark Tetrad, these traits operate differently to the core dark traits. The VDT presents an exciting and broad area for future research, with potential to greatly influence conceptualisations of personality and psychopathology.

Conclusion

This study aimed to explore the relationship between the Dark Tetrad and depression, and determine whether this relationship was moderated by rumination. Analyses controlled for gender, age, and socially desirable responding on the basis of previous research. The dark traits were shown to vary along a conceptual continuum of depressive symptoms, with vulnerable narcissism and secondary psychopathy significantly predicting higher depression levels, while grandiose narcissism was significantly connected to lower depression scores. Primary psychopathy, sadism, and Machiavellianism were not significantly predictive of depression. Rumination was found to moderate the relationship between the Dark Tetrad and depression, however this was only the case for the brooding subtype, not reflection. Further, it appears that other factors not explored in this research have considerable bearing on the connections between the dark traits, depression and brooding. While this research has provided novel insights into these complex interrelationships, there remains much to learn about these individuals.

Overall, findings suggest that grandiose narcissism may be somewhat of a protective factor against depression, while vulnerable narcissistic and secondary psychopathic tendencies may represent risk factors (Egan et al., 2014; Miller et al., 2010). Further, brooding rumination is more likely to be implicated in depression amongst the dark traits than reflection. Depression levels in vulnerable narcissists and secondary psychopaths appear to be particularly affected by brooding, comparative to other Tetrad members.

To conclude, this study demonstrated that dark personality traits likely influence the selection and use of coping strategies, such as rumination, and illustrated the impact this can have on depressive symptoms. Further exploration of

these connections would offer a greater understanding of socially aversive behaviours and how individuals with these traits function in the world. There is potential for research in this area to bring about novel approaches for the assessment and intervention of depression and other mental health concerns for those high on the Dark Tetrad traits. As knowledge regarding the dark traits increase, perspectives on personality broaden. It follows that with time, the dark traits may be meaningfully integrated with existing models of personality and psychopathology.

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Appendix A

Demographic Questions

Please select your age in years from the dropdown menu.

Options: 18-100

Please select your gender from the dropdown menu.

Male

Female

Other

Please select your ethnicity from the dropdown menu.

Non-Indigenous Australian

New Zealander

Indigenous Australian

North American

African

South/Latin American

Asian

Other

European

Please select your place of residence from the dropdown menu.

Australia

North America

Asia

South America

Africa

Other

Antarctica

Europe

Please select the highest level of education you have completed from the dropdown menu.

No formal schooling

Primary School (grade 6)

<i>Secondary School 1 (grade 10)</i>	<i>Graduate Certificate/Diploma</i>
<i>Secondary School 2 (grade 12)</i>	<i>Bachelor Degree with Honours</i>
<i>Certificate I-IV</i>	<i>Masters Degree</i>
<i>Diploma/Associate Degree</i>	<i>Doctoral Degree/PhD</i>
<i>Bachelor Degree</i>	

Please select your current marital status from the dropdown menu.

<i>Single</i>	<i>Separated</i>
<i>Defacto</i>	<i>Divorced</i>
<i>Married</i>	<i>Widow/Widower</i>
<i>Civil Union</i>	<i>Other</i>

Please select the job title that most closely reflects your current employment from the dropdown menu.

<i>Administrative</i>	<i>Science</i>
<i>Sales</i>	<i>Teaching</i>
<i>Business/Finance</i>	<i>Defence Force/Military</i>
<i>Legal</i>	<i>Technician/Trade</i>
<i>Information Technology</i>	<i>Production/Manufacturing</i>
<i>Media/Communication</i>	<i>Agriculture</i>
<i>Health Care/Medical</i>	<i>Arts/Design</i>
<i>Community/Social Service</i>	
<i>Student</i>	
<i>Unemployed</i>	
<i>Other</i>	

Appendix B

Pathological Narcissism Inventory (PNI)

Directions: Please indicate the extent to which each of the following apply to you.

Likert scale: 0 (*not at all like me*) - 5 (*very much like me*).

1. I often fantasize about being admired and respected.#
2. My self-esteem fluctuates a lot.
3. I sometimes feel ashamed about my expectations of others when they disappoint me.
4. I can usually talk my way out of anything.#
5. It's hard to feel good about myself when I'm alone.
6. I can make myself feel good by caring for others.#
7. I hate asking for help.
8. When people don't notice me, I start to feel bad about myself.
9. I often hide my needs for fear that others will see me as needy and dependent.
10. I can make anyone believe anything I want them to.#
11. I get mad when people don't notice all that I do for them.#
12. I get annoyed by people who are not interested in what I say or do.#
13. I wouldn't disclose all my intimate thoughts and feelings to someone I didn't admire.
14. I often fantasize about having a huge impact on the world around me.#
15. I find it easy to manipulate people.#
16. When others don't notice me, I start to feel worthless.
17. Sometimes I avoid people because I'm concerned that they'll disappoint me.
18. I typically get very angry when I'm unable to get what I want from others.#

19. I sometimes need important others in my life to reassure me of my self-worth.
20. When I do things for other people, I expect them to do things for me.#
21. When others don't meet my expectations, I often feel ashamed about what I wanted.
22. I feel important when others rely on me.#
23. I can read people like a book.#
24. When others disappoint me, I often get angry at myself.
25. Sacrificing for others makes me the better person.#
26. I often fantasize about accomplishing things that are probably beyond my means.#
27. Sometimes I avoid people because I'm afraid they won't do what I want them to.
28. It's hard to show others the weaknesses I feel inside.
29. I get angry when criticized.#
30. It's hard to feel good about myself unless I know other people admire me.
31. I often fantasize about being rewarded for my efforts.#
32. I am preoccupied with thoughts and concerns that most people are not interested in me.
33. I like to have friends who rely on me because it makes me feel important.#
34. Sometimes I avoid people because I'm concerned they won't acknowledge what I do for them.
35. Everybody likes to hear my stories.#
36. It's hard for me to feel good about myself unless I know other people like me.
37. It irritates me when people don't notice how good a person I am.#
38. I will never be satisfied until I get all that I deserve.#
39. I try to show what a good person I am through my sacrifices.#

40. I am disappointed when people don't notice me.
41. I often find myself envying others' accomplishments.
42. I often fantasize about performing heroic deeds.#
43. I help others in order to prove I'm a good person.#
44. It's important to show people I can do it on my own, even if I have some doubts inside.
45. I often fantasize about being recognized for my accomplishments.#
46. I can't stand relying on other people because it makes me feel weak.
47. When others don't respond to me the way that I would like them to, it is hard for me to still feel ok with myself.
48. I need others to acknowledge me.
49. I want to amount to something in the eyes of the world.#
50. When others get a glimpse of my needs, I feel anxious and ashamed.
51. Sometimes it's easier to be alone than to face not getting everything I want from other people.
52. I can get pretty angry when others disagree with me.#

Total Score: Calculated by summing all items.

Grandiose Subscale: Calculated by summing items marked with a #.

Vulnerable Subscale: Calculated by summing unmarked items.

Appendix C

Levenson Self-Report Psychopathy Scale (LSPS)

Directions: Please indicate the extent to which each of the following apply to you.

Likert scale: 1 (*strongly disagree*) - 4 (*strongly agree*).

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 tasks 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 off steam" by blowing my top.
26. Love is overrated.

*= item is reversed scored.

Total Score: Calculated by summing all items.

Primary Psychopathy Subscale: Calculated by summing items marked with a #.

Secondary Psychopathy Subscale: Calculated by summing unmarked items.

Appendix D

Mach IV

Directions: Please indicate the extent to which each of the following apply to you.

Likert scale: 1 (*strongly disagree*) - 5 (*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. Generally speaking, people won't work hard unless they're forced to do so.
9. All in all, it is better to be humble and honest than to be 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 giving reasons which carry more weight.*
11. Most people who get ahead in the world lead clean, moral lives.*
12. Anyone who completely trusts anyone else is asking for trouble.
13. The biggest difference between most criminals and other people is that the criminals are stupid enough to get caught.
14. Most people are brave.*
15. It is wise to flatter important people.
16. It is possible to be good in all respects.*

17. P.T. Barnum was wrong when he said that there's a sucker born every minute.*
18. It is hard to get ahead without cutting corners here and there.
19. People suffering from incurable diseases should have the choice of being put painlessly to death.
20. Most people forget more easily the death of their parents than the loss of their property.

*= item is reversed scored.

Total Score: Calculated by summing all items.

Appendix E

Short Sadistic Impulse Scale (SSIS)

Directions: Please indicate the extent to which each of the following apply to you.

Likert scale: 1 (*strongly disagree*) - 6 (*strongly agree*).

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

*= item is reversed scored.

Total Score: Calculated by summing all items.

Appendix F

Centre for Epidemiologic Studies Depression Scale (CES-D)

Directions: Please rate how often each of the following applied to you IN THE PAST WEEK.

Likert scale: 0 (*rarely or none of the time*) - 3 (*most or all of the time*).

1. I was bothered by things that usually don't bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family or friends.
4. I felt that I was just as good as other people.*
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.*
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy.*
13. I talked less than usual.
14. I felt lonely.
15. People were unfriendly.
16. I enjoyed life.*
17. I had crying spells.
18. I felt sad.
19. I felt that people dislike me.

20. I could not get “going.”

*= item is reversed scored.

Total Score: Calculated by summing all items.

Appendix G

Ruminative Responses Scale (RRS)

Directions: Please indicate how often you do each of the following.

Likert scale: 1 (*almost never*) - 4 (*almost always*).

1. Think “What am I doing to deserve this?”#
2. Analyse recent events to try and understand why you are depressed.
3. Think “Why do I always react this way?”#
4. Go away by yourself and think about why you feel this way.
5. Write down what you are thinking and analyse it.
6. Think about a recent situation, wishing it had gone better.#
7. Think “Why do I have problems other people don’t have?”#
8. Think “Why can’t I handle things better?”#
9. Analyse your personality and try to understand why you are depressed.
10. Go someplace alone to think about your feelings.

Total Score: Calculated by summing all items.

Brooding Subscale: Calculated by summing items marked with a #.

Reflection Subscale: Calculated by summing unmarked items.

Appendix H

Marlowe-Crown Social Desirability Scale (MCSDS)

Directions: Please indicate whether the following are true or false.

Dichotomous Response: 0= True, 1= False

1. It is sometimes hard for me to go on with my work if I am not encouraged.
2. I sometimes feel resentful when I don't get my own way.
3. On a few occasions, I have given up doing something because I thought too little of my ability.
4. There have been times when I felt like rebelling against people in authority even though I knew they were right.
5. No matter who I'm talking to, I'm always a good listener.*
6. There have been occasions when I took advantage of someone.
7. I'm always willing to admit it when I make a mistake.*
8. I sometimes try to get even, rather than forgive and forget.
9. I am always courteous, even to people who are disagreeable.*
10. I have never been irked when people expressed ideas very different from my own.*
11. There have been times when I was quite jealous of the good fortune of others.
12. I am sometimes irritated by people who ask favours of me.
13. I have never deliberately said something that hurt someone's feelings.*

*= item is reversed scored.

Total Score: Calculated by summing all items.

Appendix I

Ethics Committee Approval Letter

2. Complaints: If any complaints are received or ethical issues arise during the course of the project, investigators should advise the Executive Officer of the Ethics Committee on 03 6226 7479 or human.ethics@utas.edu.au.
3. Incidents or adverse effects: Investigators should notify the Ethics Committee immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
4. Amendments to Project: Modifications to the project must not proceed until approval is obtained from the Ethics Committee. Please submit an Amendment Form (available on our website) to notify the Ethics Committee of the proposed modifications.
5. Annual Report: Continued approval for this project is dependent on the submission of a Progress Report by the anniversary date of your approval. You will be sent a courtesy reminder closer to this date. **Failure to submit a Progress Report will mean that ethics approval for this project will lapse.**
6. Final Report: A Final Report and a copy of any published material arising from the project, either in full or abstract, must be provided at the end of the project.

Yours sincerely

Katherine Shaw
Executive Officer
Tasmania Social Sciences HREC

We are pleased to advise that acting on a mandate from the Tasmania Social Sciences HREC, the Chair of the committee considered and approved the above project on 18 February 2016.

This approval constitutes ethical clearance by the Tasmania Social Sciences Human Research Ethics Committee. The decision and authority to commence the associated research may be dependent on factors beyond the remit of the ethics review process. For example, your research may need ethics clearance from other organisations or review by your research governance coordinator or Head of Department. It is your responsibility to find out if the approval of other bodies or authorities is required. It is recommended that the proposed research should not commence until you have satisfied these requirements.

Please note that this approval is for four years and is conditional upon receipt of an annual Progress Report. Ethics approval for this project will lapse if a Progress Report is not submitted.

The following conditions apply to this approval. Failure to abide by these conditions may result in suspension or discontinuation of approval.

1. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval, to ensure the project is conducted as approved by the Ethics Committee, and to notify the Committee if any investigators are added to, or cease involvement with, the project.

Appendix J

Participant Advertisement



Personality & Mood

Over 18?

Interested in how personality and mood interact?

Want the chance to win 1 of 3 x \$50 Coles Myer vouchers or receive 60 minutes of psychology research credit?

This study aims to investigate the mood states of individuals with different personality types, and explore factors that may impact this relationship.

Please follow the link below, or email rptracy@utas.edu.au for more information and to complete the survey!

Chief Investigator- Rachel Grieve * Student Investigator- Rowena Tracy * HREC Reference Number: ENTER



Appendix K

Participant Information and Consent Form

1. Invitation

You are invited to participate in a study examining how personality impacts mood and mental health. This study is being conducted as part of a Masters Degree for Rowena Tracy under the supervision of Dr Rachel Grieve in the School of Medicine (Psychology) at the University of Tasmania.

2. What is the purpose of this study?

The purpose of this study is to investigate the mood states of individuals with different personality types, and explore factors that may impact this relationship.

3. Why have I been invited to participate?

You are eligible to participate in this study because you are over 18 years old. We are interested in surveying as many adults as possible, as mood and personality are highly variable. Participation in this study is entirely voluntary. There will be no consequences for individuals who do not wish to participate in this study.

4. What will I be asked to do?

If you decide to participate in the study you will be asked to complete a series of questionnaires. You will be asked questions about your personality (e.g. *I hate asking for help; I quickly lose interest in tasks I start*) and your recent mood (e.g. *I talked less than usual; I found it difficult to relax*). All questions are in a multiple option format (e.g. options between *strongly disagree* and *strongly agree*). You will also be asked to provide basic demographic information including your age and gender.

Questionnaires will be available to participants via an internet link. The time taken to complete this questionnaire may vary between participants, however the maximum time for completion (responding to all survey questions) is estimated to be approximately 60 minutes. All responses that you provide will be completely anonymous, and no information that could identify you (such as your name) will be collected.

5. Are there any possible benefits from participation in this study?

It is not anticipated that taking part in this study will result in any direct benefits to participants. However, participants will have the chance to win one of 3 x \$50 Coles Myer gift vouchers (please note, your contact details for your prize entry are not linked with your questionnaire answers in any way). First year students studying Psychology at the University of Tasmania will also have the alternate option of receiving 60 minutes research participation credit via SONA. A credit of 60 minutes will be awarded to all who complete the survey, regardless of the individual survey completion time.

6. Are there any possible risks from participation in this study?

There are no specific risks anticipated with participation in this study, however if participants would like to access counselling services they can do so by following this link: <http://www.utas.edu.au/students/counselling/personal-counselling>

7. What if I change my mind during or after the study?

It is important that you understand that your participation in this study is completely voluntary. You may choose to discontinue participation at any point throughout the

study without providing an explanation. All information you have provided to that point will be treated in a confidential manner.

8. What will happen to the information when this study is over?

All data will be collected using a secure online service. Once the data is transferred for analysis, it will be stored on a password-protected server in the School of Psychology. Research data will be kept for at least 5 years from the date of first publication. Following this, data will be deleted.

9. How will the results of the study be published?

As this research is part of a Masters Degree, the relevant findings will be reported in a thesis. A summary of the findings of the study will be posted on the University of Tasmania Division of Psychology web page. No participants will be identified in the publication of the research findings.

10. What if I have questions about this study?

If you would like to discuss any aspect of this study please feel free to contact the research team:

Rowena Tracy – rptracy@utas.edu.au

Dr Rachel Grieve – rachel.grieve@utas.edu.au or (03) 6226 2244

This study has been approved by the Tasmanian Social Sciences Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study, please contact the Executive Officer of the HREC (Tasmania) Network on (03) 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. Please quote

ethics reference number H0015553.

At the end of the survey you will be asked to follow a separate link to enter the draw for one of 3 x \$50 Coles Myer gift vouchers or claim research credit via SONA.

There will be no way to connect your entry/research participation details to your survey responses, thus ensuring your anonymity.

If you have read and understood all of the above information and you consent to take part in this study please click 'I Agree'. If you do not consent to taking part in this study please close this window and exit the survey.

Do you agree to the above conditions? If yes, select 'I Agree' to proceed to the

Do you agree to the above conditions? If yes, select 'I Agree' to proceed to the survey. If not, please close your browser window.	<p style="text-align: right;">I Agree</p> <input type="radio"/>
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survey. If not, please close your browser window.

Appendix L
Information Regarding Support Services

Thank you for completing our survey!

If you would like to discuss any aspect of this survey, please feel free to contact the research team: Rowena Tracy (rptracy@utas.edu.au) or Dr Rachel Grieve (rachel.grieve@utas.edu.au or 6226 2244).

To enter the draw to win 1 of 3 \$50 Coles-Myer vouchers **OR** claim credit for research participation, please click the following

link: <http://surveys.utas.edu.au/index.php/156258?newtest=Y>

If you are interested in accessing resources or support services, you can do so via the following links:

<http://www.beyondblue.org.au/>

<http://www.lifeline.org.au/>

<http://www.utas.edu.au/students/counselling/personal-counselling>

Appendix M

Credit Claim/Prize Draw Survey

Please enter your first name in the box below:

Please enter last name in the box below:

Please enter your email address in the box below:

First year psychology students at the University of Tasmania should enter their student email e.g. XXXX@utas.edu.au

Please select your preferred option:

I am a first year psychology student at the University of Tasmania, and I would like to claim research credit for this survey.	I would like to enter the draw to win 1 of 3 \$50 Coles Myer vouchers.
<input type="radio"/>	<input type="radio"/>

If you are a first year psychology student at the University of Tasmania, and wish to claim research credit, please enter your student number in the box below: