

NO SHADES OF GREY: DOES DICHOTOMOUS THINKING MEDIATE THE
ASSOCIATIONS THAT NARCISSISTIC PERSONALITY TRAITS HAVE WITH
ANGER

by

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To my sister, Lisa

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ABSTRACT

NO SHADES OF GREY: DOES DICHOTOMOUS THINKING MEDIATE THE ASSOCIATIONS THAT NARCISSISTIC PERSONALITY TRAITS HAVE WITH ANGER

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Adviser: Virgil Zeigler-Hill, Ph.D.

Narcissism concerns grandiosity, vanity, self-absorption, and entitlement. Individuals with high levels of narcissism demonstrate a strong desire to maintain or boost their status and ego. This desire is so fundamental that individuals with high levels of narcissism may experience anger whenever they encounter provocations that may threaten their feelings of self-worth. However, little is known about the cognitive processes that characterize individuals with high levels of narcissism and how these cognitive processes may impact their responses to provocations. This is important because shedding light on these cognitive processes could help explain why individuals with high levels of narcissism are predisposed to become angry following perceived provocations. One cognitive process that may be particularly important is *dichotomous thinking*. That is, individuals with high levels of narcissism may see provocations in terms of “black” and “white” with no shades of grey. As a result, the overarching goal of the present research was to explore the connections between narcissism and dichotomous thinking (Study 1) and whether dichotomous thinking mediates the associations that

narcissistic personality traits have with anger after experiencing a provocation (Studies 2 and 3). The results of Study 1 revealed that extraverted narcissism and antagonistic narcissism were associated with dichotomous thinking. Neurotic narcissism was not associated with dichotomous thinking at the zero-order correlation level. However, after controlling for the other types of narcissism, neurotic narcissism was associated with dichotomous thinking. Further, the results of Study 2 revealed that dichotomous thinking mediated the association that each type of narcissism (i.e., extraverted narcissism, antagonistic narcissism, neurotic narcissism) had with anger through hostile attributions. These findings did not replicate in Study 3. This may be explained, at least in part, by the recall writing task failing to activate dichotomous thinking in Study 3. Discussion focuses on the implications that dichotomous thinking may have for the lives of narcissistic individuals.

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CHAPTER ONE

INTRODUCTION

Narcissism is characterized by an intense focus on the self, which can result in extreme anger and aggressive behavior when the individual's self-concept is threatened (e.g., Krizan & Johar, 2015; Lambe et al., 2018; Li et al., 2016; Twenge & Campbell, 2003; Westen, 1990). Extensive research has demonstrated that individuals with high levels of narcissism tend to react with anger and aggression when their ego is challenged (e.g., Bushman & Baumeister, 1998; Kjaevik & Bushman, 2021; Rhodewalt & Morf, 1998; Stucke & Sporer, 2002). For instance, studies have shown that narcissists are more likely to abuse romantic partners after experiencing jealousy (Ponti et al., 2020), respond aggressively when they perceive unfair treatment in leadership roles (Lui et al., 2017), and lash out when sexually rejected (Bushman et al., 2003). However, the mechanisms driving these responses remain unclear.

One possible explanation for the link between narcissism and anger is the cognitive distortion of *dichotomous thinking*, where individuals interpret provocations in rigid, “black and white” terms, with little room for nuance. Understanding how narcissism is related to anger following provocation is crucial, as rejection and failure are common aspects of life. These experiences are particularly difficult for individuals with elevated levels of narcissistic traits, as they tend to react with anger and aggression, which can have harmful consequences for both individuals and society.

The aim of the current research was to explore how dichotomous thinking may contribute to the relationship between narcissistic personality traits and anger. Study 1

examined the association between narcissism and dichotomous thinking. Studies 2 and 3 extended this work by investigating whether dichotomous thinking mediated the links between narcissistic personality traits and anger in response to provocation.

Narcissism has a long history in psychology and in recent years it has received a considerable amount of attention both in the context of academia and the public. In the past, narcissism was primarily studied in social-personality psychology and clinical psychology, but other areas of psychology (e.g., political science, industrial psychology) are beginning to recognize its importance (see Levy et al., 2011 for a review). Narcissism has become a widely recognized term in normal conversations. It is often used to describe former romantic partners or disliked co-workers and has become something of a buzzword. This increased interest in narcissism may be attributed to significant cultural changes such as the recent political climate in America (e.g., Hart & Stekler, 2022), the increase in materialism (e.g., Twenge & Campbell, 2009), and the emergence of social media (see Campbell & Twenge, 2015, for a review).

The interest in narcissism is not unique to the people of the 21st century and, in fact, the construct was first proposed in the clinical realm during the 19th century. As a construct, narcissism has gone through many iterations in the literature, but it was originally proposed as an obsession with one's own sexuality (Ellis, 1898). This proposal was mainly influenced by the classical account of Narcissus written by the Roman poet Ovid in 8 C.E. The story is about a young and handsome man who consistently rejected the attention of others. Eventually, a Goddess punished him for the way he treated others. The punishment for Narcissus was a lifetime of unrequited love by his own reflection. Under this spell, Narcissus became obsessed with his own image, and he lived a life filled

with despair because the reflection never returned his love. Narcissus gazed at his own reflection until he eventually died.

The tragic tale of Narcissus greatly influenced the sexologist-physician, Havelock Ellis, during the 19th century. Ellis was the first to apply the story of Narcissus to explain autoerotism (i.e., sexual stimulation of one's own body) which was often considered to be an abnormal behavior at the time (see Levy et al., 2011, for a review). Over time, psychoanalytic researchers argued that there was more to narcissism than human sexuality and eroticism. Specifically, views of narcissism began to emerge arguing that it has more to do with egoism and can even be considered a normal part of development (Sadger, 1908, 1910). That is, narcissism represents feelings of inflated pride and self-love that can change across various stages of development. This change in conceptualization led to the first psychoanalytic publication on narcissism by Otto Rank in 1911, which, in turn, shaped Sigmund Freud's widely known 1914 paper, *Narcissism* (see Levy et al., 2011, for a review). Both papers discuss the complexities and potential functions of narcissism. From these publications, the idea that narcissism is dynamic (i.e., ranges from normal to pathological) and operates as a defense mechanism (i.e., narcissism is used as a means to protect the self from feeling insignificant) was born (e.g., Levy et al., 2011; Yakeley, 2018).

Numerous theorists started focusing on narcissism at the pathological level. Precisely, the idea that narcissism could be a personality disorder started to come to fruition. Theorists such as Walder (1925) noted that individuals with pathological narcissism lacked empathy, Freud (1931) and Wilhelm Reich (1933/1949) proposed a link between narcissism and aggression, and Karen Horney (1939) introduced different

manifestations of narcissism (e.g., aggressive-expansive, perfectionist, arrogant-vindictive). In addition, theorists started conceptually separating narcissism from self-esteem by suggesting that individuals with high levels of narcissism have inflated self-views (Horney, 1939) and even have dramatic shifts in their self-esteem (Reich, 1960). The knowledge of narcissism at the pathological level grew dramatically in the clinical setting and in 1968 the term *narcissistic personality disorder* was introduced in the literature by Heinz Kohut (e.g., Levy et al., 2011; Yakeley, 2018). Kohut (1971) and Otto Kernberg (1975) argued that pathological narcissism manifests in childhood as a means to compensate for cold or indifferent parenting. According to psychoanalytic theory, children who are narcissistic are consistently trying to obtain approval because they never received it from their parents. In contrast, other theorists argued that narcissism manifests because parents overvalue and overpraise their children (e.g., Brummelman et al., 2015; Freud 1914/1957). Although there are differences in the conceptualizations of narcissism and its etiology, there was a consensus in the literature that narcissism was important and could potentially impact an individual's functioning. Over time, pathological narcissism continued to gain considerable momentum as a well-defined personality disorder, which, in turn, led to its introduction in the *Diagnostic and Statistical Manual of Mental Disorders-III (DSM-III, 1980; see Levey et al., 2011 for a review)*.

Narcissism is not only studied in clinical psychology at the pathological level, but it is also studied in social-personality psychology as a normative personality trait. It is important to note that from this point on, I will use the term “narcissism” to refer to the personality *trait* and not the personality *disorder*. The field of social-personality psychology generally characterizes narcissism – at the trait level – by a set of personality

traits and processes involving self-views that are grandiose, conceited, dominant, manipulative, self-absorbed, and entitled (e.g., Emmons, 1984; Raskin & Terry, 1988; see Morf & Rhodewalt, 2001, for a review). Narcissism has often been thought of as a unitary construct; however, research has shown that it is better conceptualized as having two broad dimensions: *grandiose* narcissism and *vulnerable* narcissism (Dickinson & Pincus, 2003; Fossati et al., 2005; Miller & Campbell, 2008; Russ et al., 2008; Wink, 1991). Grandiose narcissism is mainly characterized by traits related to self-assurance and dominance (e.g., Miller et al., 2011), whereas vulnerable narcissism entails defensiveness and insecurity (e.g., Brown et al., 2016). Individuals with high levels of grandiose narcissism are extraverted and bold (e.g., Back et al., 2010), whereas individuals with high levels of vulnerable narcissism are introverted and even avoidant (e.g., Miller et al., 2011). As a result, it is not surprising that grandiose narcissism and vulnerable narcissism are typically uncorrelated or have, at best, small positive correlations (e.g., Krizan & Herlache, 2018; Miller & Campbell, 2008). The acknowledgment of these two dimensions of narcissism led researchers to shift away from using instruments that focused almost exclusively on grandiose narcissism – such as the Narcissistic Personality Inventory (Raskin & Hall, 1979) – to those that capture the multifaceted nature of this construct. For example, the Pathological Narcissism Inventory (Pincus et al., 2009) has three subscales that capture aspects of grandiose narcissism and four subscales that measure aspects of vulnerable narcissism. In addition, an instrument called the Narcissistic Admiration and Rivalry Questionnaire (Back et al., 2013) has items that capture narcissistic admiration (which is conceptually similar to grandiose

narcissism) and narcissistic rivalry (which is conceptually similar to a blend of grandiose narcissism and vulnerable narcissism).

Despite grandiose narcissism and vulnerable narcissism having little – if any – correlation with each other, they do seem to share a common core element of antagonism (e.g., Miller & Campbell, 2008; Miller et al., 2011). Consequently, some researchers have argued for a more inclusive approach when it comes to measuring narcissism. In other words, instead of examining the higher-order dimensions of narcissism (i.e., grandiose narcissism and vulnerable narcissism) researchers may gain a better understanding of the subtle distinctions by examining the lower-order dimensions of narcissism. The empirical literature shows that narcissism has three lower-order dimensions that can be conceptualized at a general trait level (e.g., Sherman et al., 2015): *extraverted narcissism* (acclaim seeking, authoritativeness, grandiose fantasies, exhibitionism), *antagonistic narcissism* (manipulativeness, exploitativeness, entitlement, lack of empathy, arrogance, reactive anger, distrust, thrill seeking), and *neurotic narcissism* (shame, indifference, need for admiration). This has led to the proposal of a trifurcated model of narcissism (see Figure 1) that suggests narcissism can be examined as a single factor (i.e., narcissism), two factors (i.e., grandiose narcissism and vulnerable narcissism), or three factors (i.e., extraverted narcissism, antagonistic narcissism, and neurotic narcissism; Weiss et al., 2013). Accordingly, a comprehensive measure of narcissism – which is referred to as the Five-Factor Narcissism Inventory (FFNI; Glover et al., 2012) – was created to capture the lower-order dimensions of narcissism.

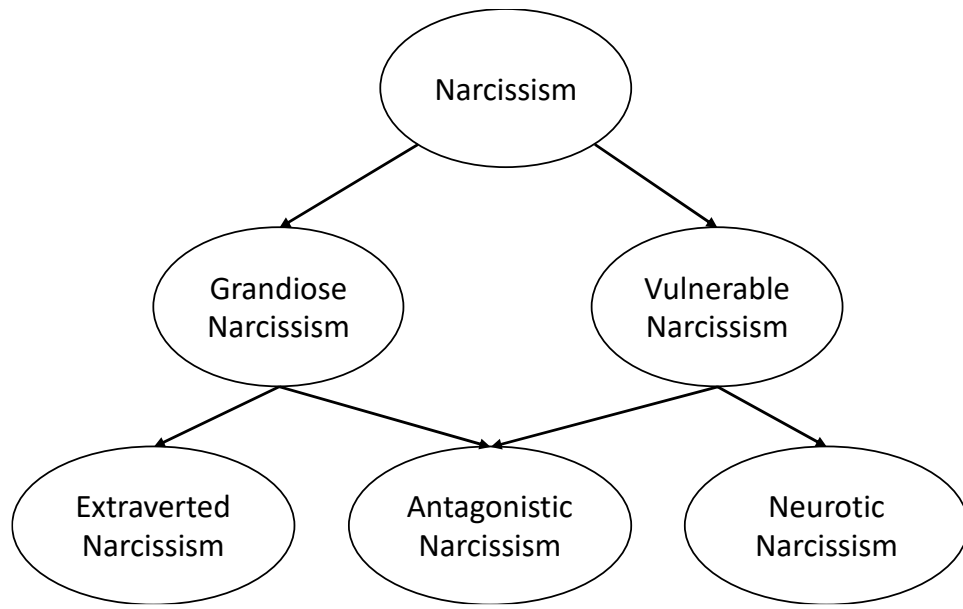


Figure 1. *The Trifurcated Model of Narcissism*

Focusing on the lower-order dimensions of narcissism is important because it offers a more comprehensive approach to understanding the connections that narcissism has with various outcomes. In addition, personality traits are related to how individuals process information about their social environments, which, in turn, may impact the values, motives, goals, and reactions that individuals acquire (e.g., McAdams, 1995). Individuals with high levels of narcissism typically process their social environments in unique – and often negative – ways. This is mainly because individuals with high levels of narcissism have an intense and pervasive desire to protect and maintain their status and ego (e.g., Grapsas et al., 2020; Stucke, & Sporer, 2002; Zeigler-Hill et al., 2018, 2019). Narcissistic individuals seem to be highly vigilant for perceived threats, which can easily lead to social conflict when they encounter such situations. This is mainly due to individuals with high levels of narcissism having a strong desire to maintain or protect a certain self-image and when that is potentially threatened, they respond with

defensiveness and anger (e.g., Baumeister et al., 2000; Bushman & Baumeister, 1998; Campbell & Crist, 2020; Jones & Paulhus, 2010; Krizan & Johar, 2015). This is especially true for individuals with high levels of antagonistic narcissism (e.g., Hyatt et al., 2018). This finding is not surprising because antagonistic narcissism is characterized by social conflict based on hostile and aggressive behaviors (Back et al., 2013). In line with this thinking, I used the lower-order dimensions of narcissism for the present studies (i.e., extraverted narcissism, antagonistic narcissism, and neurotic narcissism) because this offers a more focused approach to understanding the links that narcissistic personality traits have with anger.

Anger is a complex emotion that can have many triggers (e.g., insults, insufficient praise; Ramirez & Andreu, 2006; Sell, 2011) and it is characterized as a negative affective state ranging from irritation to fury (e.g., Spielberger et al., 1983). Anger is considered to be the driving force behind aggression (Averill, 1983) which is defined as any physical or verbal action that is performed to intentionally harm another living being (see Anderson & Bushman, 2002, for a review). Across both humans and nonhuman species, we typically see anger manifest when any sort of conflict of interest occurs (e.g., status-related threats; Sell, 2011; Sell et al., 2009, 2014; Tooby et al., 2008).

During conflicts of interest, a cost-benefit analysis takes place such that one individual calculates how costly it would be to impose an action on another individual (Sell, 2017). If the potential costs are low and the potential benefits are high, the action may be initiated. For example, David may decide to initiate a verbal confrontation with Andrew because Andrew stole David's laptop. Getting into a verbal argument with Andrew may be worth it for David because he may be able to get his laptop – an

expensive item – back from Andrew. In contrast, if the costs are high and benefits are low the action may not be pursued. For example, David may not initiate a verbal confrontation with Andrew even though he stole David's lunch from the refrigerator. David decides that it is not worth arguing with Andrew over an inexpensive lunch because the argument may be emotionally taxing. In addition, during these conflicts of interest a *welfare trade-off* is calculated. A welfare trade-off is the value that one person places on the welfare of another (Sell et al., 2009; Tooby et al., 2008). For example, people tend to place high welfare on family members and friends, whereas they tend to place low welfare on strangers. As a result, if the value of the individual is high (e.g., a family member), the person may refrain from exhibiting anger. In contrast, if the value of the individual is low (e.g., a stranger), anger may be initiated.

There is an additional benefit to anger aside from potentially retrieving one's stolen items from another individual. Namely, it is theorized that anger's function is to signal that an individual's own welfare is not being treated in an acceptable manner (Sell, 2011). This theory is known as the *recalibration theory of anger* and it argues that individuals exhibit anger as a means to recalibrate the behavior of those around them in order to receive better treatment – and more priority given to their welfare – in the future (Averill, 1983; Sell, 2011). In the above example, David getting into a fight with Andrew over a stolen laptop provides a signal to Andrew and others that David was not treated in a respectful manner. In theory, exhibiting anger will alert others that they need to change their behavior and this will hopefully deter others from treating David poorly in the future. According to this theory, it is possible that individuals with high levels of narcissism exhibit anger frequently because they often feel that others are not giving

enough priority to their welfare. That may be especially true following provocations because the idea of losing status or experiencing an ego threat is especially costly for an individual with high levels of narcissism. Consequently, exhibiting anger may not be viewed as costly to individuals with high levels of narcissism. Instead, anger is likely viewed as beneficial to individuals with high levels of narcissism because it may be used as a means to improve how others treat them which will be beneficial in terms of maintaining or boosting their status and grandiose self-views.

Anger has been a central point to many frameworks of narcissism. In the psychoanalytic literature, Freud introduced the link between narcissism and anger in his 1931 paper, *Libidinal Types*. In addition, other psychoanalysts (e.g., Reich, 1960; Saul, 1947) consistently noted that narcissism seemed to fuel anger, which, in turn, led to Kohut (1972) coining the term, *narcissistic rage*. Narcissistic rage was used to describe anger that was typically disproportionate to the situation which usually involved a relatively minor offense (Kernberg, 1975). Namely, when an individual with a high level of narcissism feels that their sense of self is threatened, they are likely to exhibit anger even if the threat is deemed insignificant. It is well established in the literature that when individuals with high levels of narcissism experience contexts that do not match their self-views (e.g., rejection, ego threat, status threat), they typically respond to these threats with the externalizing emotion of anger that sometimes may even lead to aggressive behavior (e.g., Bushman & Baumeister, 1998; Krizan & Johar, 2015; Rhodewalt & Morf, 1998; Stucke & Sporer, 2002; Twenge & Campbell, 2003; Witte et al., 2002). For example, past research has found that after experiencing a social rejection, individuals with high levels of narcissism were more likely to exhibit anger (Twenge & Campbell,

2003). This anger can also manifest as aggressive behavior such as lashing out at their interaction partners (Bushman et al., 2003) or innocent bystanders (Twenge & Campbell, 2003). More specifically, past research has found that when individuals with high levels of narcissism experience a rejection, they are more likely to blast those who have rejected them – and innocent bystanders – with longer and louder bursts of white noise (Twenge & Campbell, 2003), give those who reject them more negative evaluations (Stucke & Sporer, 2002), and administer more electric shocks to their opponents in ego-related threat conditions (Reidy et al., 2010). It is possible that individuals with high levels of narcissism exhibit anger whenever they experience a provocation because they want the offender to recalibrate their behavior and treat them with more respect in the future. Doing so may help the individual with high levels of narcissism maintain their grandiose self-image and gain status. However, the provocation may not always be significant and therefore anger is not always warranted. Here, I argue that cognitive distortions – such as dichotomous thinking – may help explain *why* individuals with high levels of narcissism consistently exhibit anger after experiencing provocations in comparison to individuals with low levels of narcissism.

The term *cognitive distortion* (Beck, 1967, 1970) originated in the cognitive therapy literature on depression (Maruna & Mann, 2006), but it is now used to help explain aspects of various forms of psychopathology (e.g., Aral et al., 2023; Beck, 1976; Beck et al., 1979, Puri et al., 2021). Cognitive distortions refer to errors in thinking. More specifically, they represent unique automatic thought content that is distorted, unrealistic, or a misinterpretation of an event (Beck, 1963). These automatic thoughts are usually biased and in line with an individual's views about themselves, others, and the world

(Rnic et al., 2016). Once an individual experiences an automatic thought related to a situation, the thought helps guide their emotional and behavioral responses. This is potentially problematic because this process is akin to a rule that may inappropriately occur across a range of situations (i.e., negative, neutral, or positive situations). More specifically, an individual may inappropriately experience negative emotions and behaviors in response to a neutral event or even a positive event. For example, Sarah may become angry at her boss because they ask when a work-related task would be completed. Sarah may automatically assume that her boss is asking this question because they think she is taking too long to complete the task. However, her boss may merely be asking out of curiosity. On the other hand, an individual may inappropriately experience positive emotions and behaviors in response to a neutral or negative event. For example, Nathan may become incredibly happy because someone helped pick up his textbooks after they fell on the floor. He may automatically assume that this person is physically attracted to him, but they may merely be engaging in an act of kindness. Over time, these cognitive distortions can lead to significant issues, including maladaptive responses to situations, rigid and narrow perspectives, and a reluctance to absorb new information from the environment.

Cognitive distortions refer to thoughts that are distorted, unrealistic, or misinterpret events. Common cognitive errors include mindreading (i.e., assuming you know what others are thinking), catastrophizing (i.e., assuming the worst will happen), emotional reasoning (i.e., using emotions to guide reasoning instead of objective information), labeling (i.e., assigning yourself to a category after a situation), biases (i.e., positive biases, negative biases, self-serving biases), better than average effect (i.e.,

thinking oneself is better than others), overgeneralization (i.e., thinking one event will determine others), overestimating (i.e., overstating one's abilities), underestimating (i.e., understating one's abilities), personalization (i.e., believing one is the cause of an event without evidence), should statements (i.e., thoughts that define obligation), and dichotomous thinking (i.e., thinking in absolute terms; Beck et al., 1979; Burns, 1980; see Gilbert, 1998 for a review; Miller et al., 2010). These are just some of the many cognitive distortions that exist and many of these are associated with cluster B personality disorders (i.e., disorders characterized by dramatic, emotional, or erratic behavior; e.g., narcissistic personality disorder) and cluster C personality disorders (i.e., disorders characterized by anxious or fearful behavior; e.g., obsessive compulsive personality disorder; Beck et al., 1990).

Preliminary research suggests that cognitive distortions may help explain some of the issues that arise for individuals with high levels of narcissism. For example, past research has found that individuals with high levels of narcissism fail to learn from critical feedback (Campbell et al., 2004), which may be a consequence of cognitive distortions. It is possible that a failure to absorb critical feedback may be a distortion that allows individuals to maintain their grandiose self-views. That is, absorbing critical feedback would require one to possibly admit one's flaws or change one's self-views. However, admitting one's flaws or changing one's self-views is incompatible with the characteristics of narcissism, which, in turn, may impact interpersonal functioning. In addition, past research has found that narcissism is associated with cognitive distortions such as engaging in positive biases (e.g., individuals with high levels of narcissism are overly confident; Macenczak et al., 2016), overestimating (e.g., individuals with high

levels of narcissism overestimate their knowledge; Campbell et al., 2004), self-serving biases (e.g., individuals with high levels of narcissism will steal credit from others; Campbell et al., 2000; Rhodewalt & Morf, 1998), and the better-than-average effect (e.g., individuals with high levels of narcissism think they are more intelligent than others; Campbell et al., 2002; Paulhus & John, 1998). These findings suggest that individuals with high levels of narcissism may be unable to see the complexities involved in certain contexts and situations because of such cognitive distortions, which, in turn, may make them view negative experiences (e.g., rejection, failure) as being zero-sum in nature. More specifically, I argue that individuals with high levels of narcissism may be unable to see the nuance to situations because of the cognitive distortion of dichotomous thinking. It is possible that individuals with high levels of narcissism experience heightened levels of anger after experiencing a provocation because they only see the situation in terms of “black” or “white” and not shades of grey.

The inability of individuals with narcissistic personality traits to see subtle distinctions to situations is supported by research that has found a positive link between narcissism and dichotomous thinking (e.g., Jonason et al., 2018; Oshio, 2009a, 2012b). *Dichotomous thinking* is a cognitive distortion that refers to the inclination to think of things in binary terms such as “good-or-bad,” “black-or-white,” or “all-or-nothing” (Oshio, 2012b). Particularly, dichotomous thinking is the tendency to view situations or ideas in a very rigid manner. That is, individuals view situations in terms of mutually exclusive categories (e.g., something is either *all good* or *all bad*; Antunes-Alves et al., 2014; Veen & Artanz, 2000). Dichotomous thinking can be beneficial for making quick decisions in everyday life. For example, making a quick decision about what you want to

eat for dinner can be useful. However, making quick decisions in other contexts may not always be useful or accurate. For instance, deciding that a person is out to get you because they spilled coffee on your new shirt may not be an accurate conclusion. More specifically, there might be other reasons as to *why* that situation occurred. Namely, it is possible that there was no malicious intent behind spilling the coffee and the person merely stumbled, which, in turn, caused the coffee to spill. In its extreme form, dichotomous thinking has been found to be related to many negative psychological outcomes such as personality disorders (e.g., Napolitano et al., 2007), eating disorders (e.g., Byrne et al., 2008), suicidality (Neuringer, 1961), depression (e.g., Dove et al., 2009), perfectionism (e.g., Egan et al., 2007), and antisocial tendencies (e.g., Meida & Oshio, 2021).

Dichotomous thinking affects individuals both intrapersonally and interpersonally by limiting their ability to consider alternative perspectives and solve problems effectively (Antunes-Alves et al., 2014). At the intrapersonal level, it has been linked to extreme weight loss and dieting behaviors in individuals with eating disorders (e.g., Fairburn et al., 2003; Garner & Bemis, 1982; Lethbridge et al., 2011). In such cases, dichotomous thinking fosters an all-or-nothing mindset about dieting, leading to feelings of shame and guilt when the diet is not strictly followed.

On the interpersonal level, preliminary research suggests a connection between dichotomous thinking and aggression, with the theory being that this type of thinking influences emotional reasoning, potentially triggering anger (Gross, 2002; Oshio et al., 2016). Dichotomous thinking is also a characteristic of borderline personality disorder (e.g., Veen & Arntz, 2000), where individuals tend to view situations in extreme, black-

and-white terms. Those with borderline personality disorder often report lower marital satisfaction and communication issues in their relationships (e.g., Bouchard et al., 2009).

Similar patterns have been observed in individuals with high levels of narcissism. For example, past research has found that individuals who have high levels of narcissism typically report low relationship satisfaction (e.g., Casale et al., 2020). Although not directly established, dichotomous thinking may contribute to these interpersonal issues, as seeing a partner as “all bad” leaves no room for understanding or change, potentially fueling anger and dissatisfaction in relationships. Additionally, individuals prone to dichotomous thinking are more likely to have an entity mindset, believing that others are incapable of change (Oshio, 2009a, 2012b). This rigid view may negatively affect the quality and durability of their relationships.

It is important to recognize that dichotomous thinking shares similarities with another cognitive distortion known as *splitting*. Both involve categorizing experiences or people into binary opposites, but there are key differences. Splitting is a defense mechanism that leads individuals to see themselves or others as either “all good” or “all bad,” often resulting in extreme shifts in their responses to everyday events, particularly in interpersonal contexts (e.g., Akhtar & Byrne, 1983; Kernberg, 1975; Kohut, 1971; Mahler, 1974). For example, someone engaging in splitting might idealize a person one day and then belittle them the next, resulting in unstable evaluations (e.g., Story, 2023).

In contrast, dichotomous thinking is not limited to the perception of people and instead affects a broader range of contexts, including ideas, beliefs, situations, and judgments (Oshio, 2009b). For instance, after giving a presentation, an individual might

perceive the entire event as a failure due a minor issue, despite performing well in other areas. They classify the presentation as “all bad,” even though it was not.

While splitting is most commonly associated with borderline personality disorder (e.g., Cho-Kain et al., 2017), it is also linked with narcissism (Kernberg, 1975; Kohut, 1972), self-esteem instability (Myers & Zeigler-Hill, 2008), and even psychosis (Gagnon et al., 2022). Similarly, dichotomous thinking is related to various outcomes, such as personality traits like narcissism (Oshio 2009b), mental health issues such as depression (Kawabata et al., 2021), and personality disorders in both Cluster B and Cluster C categories (Oshio, 2012). However, because dichotomous thinking applies to a broader range of contexts, it allows for a deeper understanding of how individuals respond to various provocations.

Narcissism, dichotomous thinking, and anger appear to share a connected framework within a nomological network. As discussed earlier, narcissism has been linked to both dichotomous thinking (Jonason et al., 2018; Oshio, 2009a, 2012b) and anger (e.g., Križan & Johar, 2015). Furthermore, preliminary findings suggest a relationship between dichotomous thinking and anger (e.g., Aliyev et al., 2023; Eckhardt, & Kassinove, 1998; Oshio et al., 2016). According to recalibration theory, anger serves as a tool to correct others’ behavior (e.g., Sell, 2011), which may explain why individuals with high levels of narcissism often display anger when provoked – they want to assert their status or protect their grandiose self-views. In this context, anger becomes a way to ensure better treatment from others in the future.

Moreover, dichotomous thinking may also play a role in how individuals with high levels of narcissism process provocations, acting as a cognitive bias that helps them

achieve goals such as maintaining their inflated self-views (Jonason et al., 2018).

Although research has yet to fully explore this, dichotomous thinking could be a key factor in the link between narcissism and anger.

The purpose of the present studies was to investigate whether dichotomous thinking mediates the relationships that the lower-order dimensions of narcissism have with anger following provocations. Specifically, Study 1 explored the relationship between the lower-order dimensions of narcissism and dichotomous thinking, whereas Studies 2 and 3 assessed whether dichotomous thinking mediated the associations between narcissistic personality traits and anger after a provocation. In addition, I explored whether *hostile attributions* (i.e., the intention behind the action was antagonistic), *instrumental non-hostile attributions* (i.e., the intention behind the action was for a non-antagonistic personal gain), and *benign attributions* (i.e., the intention behind the action was benign) further mediated the association between narcissism and anger through dichotomous thinking.

Overview and Predictions

The purpose of the present research was to gain a better understanding of the associations that narcissistic personality traits have with anger by examining whether dichotomous thinking mediates these associations. Past research has examined the connections that narcissism has with dichotomous thinking using unitary measures of narcissism (e.g., Jonason et al., 2018; Oshio, 2009b; Oshio, 2012a). Given that narcissism is a multidimensional construct (e.g., Ackerman et al., 2011; Brown et al., 2009; Miller et al., 2016; Tamborski et al., 2012), it is important to examine the associations that different aspects of narcissism have with dichotomous thinking. Consequently, the

present studies used the trifurcated perspective of narcissism as an organizing framework to gain a more exhaustive understanding of the associations that narcissistic personality traits (i.e., extraverted narcissism, antagonistic narcissism, and neurotic narcissism) have with dichotomous thinking. The trifurcated perspective examines narcissism at the trait level (i.e., narcissism at the subclinical level). This perspective may have important implications for our understanding of the associations that narcissism has with cognitive distortions because extraverted narcissism, antagonistic narcissism, and neurotic narcissism may have quite different associations with cognitive distortions. Based on this view, I have developed the following hypotheses:

Hypothesis 1a: I predicted that antagonistic narcissism would have a positive association with dichotomous thinking. This hypothesis is supported by past research that has found the basic personality trait of *antagonism* (i.e., low levels of agreeableness, low levels of honesty-humility) to be positively associated with dichotomous thinking (Mieda & Oshio, 2021). In addition, past research has found a positive link between rigidity and antagonism (Wright & Simms, 2014). This suggests that individuals with high levels of antagonistic narcissism may be very rigid or see things in “black-and-white” in terms of their thinking. This is also in line with past research that has found a link between narcissism and splitting (Kernberg, 1975; Kohut, 1972). Further, past research argues that individuals with high levels of narcissism may have experienced harsh or unpredictable childhoods (e.g., Zeigler-Hill et al., 2024) and engaging in a cognitive process that is quick or automatic may have been incredibly beneficial for achieving goals in those environments (Jonason et al., 2016, 2018). Adverse childhood experiences have been shown to have especially strong associations with the antagonistic aspect of narcissism

(e.g., Clemens et al., 2022; Zeigler-Hill et al., 2024). In sum, it seems likely there would be a positive association between antagonistic narcissism and dichotomous thinking.

Hypothesis 1b: I predicted that dichotomous thinking would mediate the connections that antagonistic narcissism has with anger. More specifically, I predicted that antagonistic narcissism would be positively associated with dichotomous thinking, which, in turn, would be positively associated with anger. This hypothesis is supported by past research showing a positive relationship between narcissistic rivalry (which is conceptually similar to antagonistic narcissism) and anger (e.g., Back et al., 2013; Sauls & Zeigler-Hill, 2020). In addition, past research has found a positive link between dichotomous thinking and anger (Oshio et al., 2016). Based on these findings there appears to be a set of connections between antagonistic narcissism, dichotomous thinking, and anger. In addition, I expected hostile attributions to further mediate the associations that antagonistic narcissism has with anger through dichotomous thinking. I anticipated that antagonistic narcissism would be positively associated with dichotomous thinking, which would be positively associated with hostile attributions. In turn, hostile attributions would be positively associated with anger. The rationale for this hypothesis is that individuals with high levels of antagonistic narcissism will be more likely to experience hostile attributions if they engage in dichotomous thinking, which, in turn, will lead to anger. I believe that individuals with high levels of antagonistic narcissism will be more likely to view provocations as hostile than individuals with low levels of antagonistic narcissism. I did not have clear predictions regarding whether instrumental non-hostile attributions or benign attributions would also further mediate the association

that antagonistic narcissism has with anger through dichotomous thinking, but I examined these indirect associations for exploratory purposes.

Hypothesis 2a: I expected extraverted narcissism to be positively associated with dichotomous thinking. This is supported by past research that has found narcissism to have a positive link to dichotomous thinking (Jonason et al., 2018; Oshio, 2009b). More specifically, these two studies have found a positive link between narcissism and dichotomous thinking by using the Narcissistic Personality Inventory (Raskin & Hall, 1979) and The Dark Triad (Jones & Paulhus, 2014) to capture narcissism. These measures capture grandiose narcissism which is conceptually similar to extraverted narcissism.

Hypothesis 2b: I also examined whether dichotomous thinking would mediate the connections that extraverted narcissism had with anger. The relationship that extraverted narcissism has with anger is complex such that some studies have found a positive relationship between grandiose narcissism (conceptually similar to extraverted narcissism) and anger (e.g., Raskin et al., 1991; Rhodewalt & Morf, 1995). In contrast, other studies have found a negative relationship between grandiose narcissism (conceptually similar to extraverted narcissism) and anger (e.g., Atlas & Them, 2008; Besser & Priel, 2010). As a result, I did not have clear predictions regarding whether extraverted narcissism would have an indirect association with anger through dichotomous thinking, but I examined this indirect association for exploratory purposes.

Hypothesis 3a: I was ambivalent regarding the association that neurotic narcissism would have with dichotomous thinking. Past research has yet to examine the association that neurotic narcissism has with dichotomous thinking. Neuroticism as

captured by the Big Five is argued to be the core of psychopathology and many pathological constructs (e.g., perfectionism; Egan et al., 2007) have been found to be associated with dichotomous thinking. On the other hand, past research has surprisingly found no connection between neuroticism and dichotomous thinking (Mieda & Oshio, 2021). Nevertheless, it is important to examine this association in order to gain a better understanding of the relationship that neurotic narcissism has with dichotomous thinking.

Hypothesis 3b: I was unsure whether dichotomous thinking would mediate the connection between neurotic narcissism and anger. However, previous research by Maciantowicz and Zajenkowski (2020) identified a link between vulnerable narcissism – a construct similar to neurotic narcissism – and anger. Therefore, I explored the potential role of dichotomous thinking in this relationship. Additionally, I did not have specific predictions regarding whether neurotic narcissism would have an indirect association with anger through dichotomous thinking via hostile attributions. Notably, Hansen-Brown and Freis (2021) found a connection between vulnerable narcissism and hostile attributions, prompting further investigation into the role of dichotomous thinking in this context as well

CHAPTER TWO

STUDY 1: THE ASSOCIATIONS THAT NARCISSISTIC PERSONALITY TRAITS HAVE WITH DICHOTOMOUS THINKING

The purpose of Study 1 was to examine whether the different aspects of narcissism (i.e., extraverted narcissism, antagonistic narcissism, and neurotic narcissism) would be associated with dichotomous thinking. As previously stated, I predicted that antagonistic narcissism and extraverted narcissism would be positively associated with dichotomous thinking, whereas I examined the connection that neurotic narcissism had with dichotomous thinking for exploratory purposes.

Method

Participants and Procedure

Participants were 701 undergraduates who attended a university in the Midwestern region of the United States. A power analysis for the average effect size in social-personality psychology in conjunction with the guidelines for reducing estimation error in social-personality psychology (Richard et al., 2003; Schönbrodt & Perugini, 2013) led me to conclude that the sample size for this study should be at least 250. However, I deliberately oversampled in an effort to increase the statistical power of the study. Participants were enrolled in psychology courses and were allowed to take part in this study to partially fulfill a research participation requirement. Participants were asked to provide informed consent and were reminded that they could discontinue their involvement in the study at any time. Participants provided basic demographic information (e.g., age, racial/ethnic background) and completed measures of narcissism

and dichotomous thinking – as well as other measures that are not relevant to the present study (e.g., depression) – via a secure website (i.e., Qualtrics). Data were excluded for a total of 63 participants due to careless or inattentive responding: 21 participants were excluded for missing data, 8 participants were excluded for being univariate outliers, 2 participants were excluded for being multivariate outliers as assessed by Mahalanobis distance (De Maesschalck et al., 2000; see Curran, 2016, for a review of methods for detecting careless or inattentive responding), 2 participants were excluded for failing attention checks (e.g., “Answer this item with ‘Strongly Disagree’”), 30 participants were excluded due to invariant response patterns as assessed by long-string analysis (Huang et al., 2012; Meade & Craig, 2012). I also examined inter-item standard deviation (Marjanovic et al., 2015) but no participants were excluded for these reasons. The final sample consisted of 638 participants (97 men, 539 women, 2 transgender). The mean age of the final participants was 19.93 years ($SD = 3.18$) and their racial/ethnic composition was 73% White, 11% Black, 6% Asian, 3% Hispanic, and 7% other.

Measures

Narcissism. Narcissism was assessed using the Five-Factor Narcissism Inventory Short-Form (FFNI; Sherman et al., 2015). This inventory contains 60 items that capture *extraverted narcissism* (16 items; e.g., “I love to entertain people” [$\alpha = .84$]), *antagonistic narcissism* (32 items; e.g., “I am pretty good at manipulating people” [$\alpha = .91$]), and *neurotic narcissism* (12 items; e.g., “When I realize I have failed at something, I feel humiliated” [$\alpha = .88$]). Participants were asked to rate their level of agreement with each statement using a scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

Dichotomous Thinking. Dichotomous thinking was captured using the Dichotomous Thinking Inventory (Oshio, 2009b). The Dichotomous Thinking Inventory includes 15 items (e.g., “I want to clarify whether things are ‘good’ or ‘bad’” [$\alpha = .78$]). Participants were asked to rate their level of agreement with each statement using a scale that ranged from 1 (*strongly disagree*) to 6 (*strongly agree*).

Results

Zero-order correlation coefficients are presented in Table 1. Extraverted narcissism and antagonistic narcissism had small positive correlations with dichotomous thinking, whereas neurotic narcissism was not correlated with dichotomous thinking. I also conducted a multiple regression analysis in order to examine the unique associations that each narcissistic personality trait (i.e., extraverted narcissism, antagonistic narcissism, neurotic narcissism) had with dichotomous thinking. The multiple regression coefficients are also presented in Table 1. The Variance Inflation Factor (VIF) values for this analysis were less than 1.30 which suggests that multicollinearity was not an issue (Darlington & Hayes, 2017). The results were largely the same such that extraverted narcissism and antagonistic narcissism had unique positive associations with dichotomous thinking that were small in magnitude. In addition, neurotic narcissism had a unique positive association with dichotomous thinking, but it was too weak to even meet the threshold for being considered a “small” effect using the guidelines provided by Cohen (1988). Preliminary analyses included sex as a potential moderator because previous studies have found sex differences for narcissism (see Grijalva et al., 2015, for a review). However, sex did not emerge as a significant moderator in those analyses nor

were the reported results significantly changed by the inclusion of sex in the analysis. Consequently, I did not include sex in the final analyses in the interest of parsimony.

Table 1
Study 1: Correlation Coefficients and Multiple Regression Coefficients

	<i>Dichotomous Thinking</i>	
	<i>r</i>	<i>β</i>
Extraverted Narcissism	.31***	.21***
Antagonistic Narcissism	.35***	.27***
Neurotic	.04	.07**
Narcissism		
<i>R</i> ²	—	.17***

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

Discussion

The results of Study 1 were generally consistent with Hypothesis 1a, showing a positive association between antagonistic narcissism and dichotomous thinking. This suggests that individuals with elevated levels of antagonistic narcissism are more inclined to perceive the world in black-and-white terms, which may help explain the consistent links between this trait and negative outcomes. Antagonistic narcissism has been found to be associated with aversive outcomes such as aggression (e.g., Vize et al., 2019), difficulties in long-term romantic relationships (e.g., Brunell & Campbell, 2011), malicious envy (Lange et al., 2016), and the use of dominance-based strategies to pursue status (Zeigler-Hill et al., 2018). The rigid, all-or-nothing perspective fostered by dichotomous thinking likely influences how these individuals interpret and respond to

situations. For example, a person with high levels of antagonistic narcissism may struggle with flexibility in their thinking, contributing to ongoing conflict in their romantic relationships. They may consistently believe their partner is wrong or refuse to see other perspectives, creating a pattern of disagreement. This failure to compromise could intensify conflict over time and negatively impact their partner's satisfaction, contributing to the long-term relationship issues commonly associated with antagonistic narcissism.

Hypothesis 2a was also supported such that extraverted narcissism had a positive association with dichotomous thinking. This finding is intriguing because extraverted narcissism is sometimes linked to relatively positive outcomes, such as higher levels of social trust (Dehaghi & Zeigler-hill, 2021), greater job commitment (Lehtman & Zeigler-Hill, 2020), and increased satisfaction in romantic relationships (Sauls & Zeigler-Hill, 2020). Since extraverted narcissism is generally seen as a more beneficial form of narcissism, dichotomous thinking may play a role in helping these individuals maintain their grandiose views. Specifically, individuals with high levels of extraverted narcissism might be more inclined to adopt positive views and resist negative interpretations due to their reliance on dichotomous thinking. In other words, dichotomous thinking may not always result in negative outcomes and could, in fact, help individuals with extraverted narcissism reinforce their optimistic and self-enhancing perspectives on the world.

I did not have a clear prediction regarding the association between neurotic narcissism and dichotomous thinking (Hypothesis 3a). The results showed that neurotic narcissism also had a unique positive association with dichotomous thinking, though this association was weaker than the associations found for extraverted narcissism and

antagonistic narcissism. However, it is important to highlight that this association did not emerge in the zero-order correlation analysis. This means that, once the shared variance with extraverted narcissism and antagonistic narcissism was controlled for, the residual form of neurotic narcissism was positively associated with dichotomous thinking. One possible explanation for this pattern is that specific elements of neurotic narcissism, rather than the common core it shares with the other dimensions of narcissism, drive its connection with dichotomous thinking. While this effect seems to be driven by the neurotic aspects of neurotic narcissism, it is important to clarify that neurotic narcissism and neuroticism are distinct constructs. For example, neurotic narcissism combines emotional instability and hostility, whereas neuroticism alone lacks the hostile component (Miller et al., 2017).

Neurotic narcissism is often linked to negative outcomes such as anxious attachment (Otway & Vignoles, 2006), contingencies of self-worth (Zeigler-Hill et al., 2008; Zeigler-Hill & Vrabel, 2023), and a high need for approval from others (Montebarocci et al., 2004). Thus, it is unsurprising that neurotic narcissism is associated with dichotomous thinking. Individuals with high levels of neurotic narcissism experience significant psychological distress and relationship difficulties (see Miller et al., 2021 for a review), and a black-and-white worldview may help explain these negative outcomes. However, given that the zero-order correlation between neurotic narcissism and dichotomous thinking did not emerge, further research is needed to support this finding.

In summary, these patterns indicate that these narcissistic traits are characterized by similar cognitive distortions. More specifically, extraverted narcissism, antagonistic

narcissism, and neurotic narcissism are all positively associated with dichotomous thinking. This type of thinking could influence how individuals with high levels of narcissism perceive their world, potentially explaining the frequent anger they experience in various social situations and interactions.

CHAPTER 3

STUDY 2: DICHOTOMOUS THINKING AS A MEDIATOR OF THE ASSOCIATIONS THAT NARCISSISTIC PERSONALITY TRAITS HAVE WITH ANGER IN RESPONSE TO HYPOTHETICAL VIGNETTES

The purpose of Study 2 was to investigate whether dichotomous thinking mediated the association between narcissism and anger. Previous research indicates that individuals with high levels of narcissism are more prone to anger or aggression in response to ego threats, such as rejection (Twenge & Campbell, 2003). However, recent studies show that these individuals can also exhibit anger in situations that are not explicitly threatening to their ego (e.g., Lee-Rowland et al., 2017; Reidy et al., 2010). This suggests that individuals with high levels of narcissism may react with anger even when it seems unwarranted. I propose that this tendency may stem from dichotomous thinking.

To test this possibility, participants were presented with hypothetical social scenarios that were aversive yet ambiguous. For example, one scenario involved someone cutting in line at a busy coffee shop. After reading the scenario, participants answered a series of questions to gauge their response to this ambiguous situation. I predicted that individuals with high levels of narcissism would feel anger in these ambiguous situations, driven by their tendency to engage in dichotomous thinking.

In addition, I explored whether different types of attributions – *hostile attributions* (i.e., seeing the intention behind the action as antagonistic), *instrumental non-hostile attributions* (i.e., viewing the intention behind the action as self-serving but not harmful),

and *benign attributions* (i.e., interpreting the intention behind the action as harmless) – could further mediate the association that narcissism had with anger through dichotomous thinking. Specifically, I predicted that antagonistic narcissism would be positively associated with dichotomous thinking, which would, in turn, relate to increased anger. I anticipated that hostile attributions would further mediate this connection, leading to a positive indirect association between antagonistic narcissism and anger through dichotomous thinking and hostile attributions. While I did not have specific predictions regarding the roles of instrumental non-hostile attributions or benign attributions, I also examined their roles in this mediation process for exploratory purposes.

Method

Participants and Procedure

Participants were 302 community adults recruited from the United States via Prolific. Participants were asked to provide informed consent and were reminded that they could discontinue their involvement in the study at any time. Participants provided basic demographic information (e.g., age, racial/ethnic background) and completed measures of narcissism and dichotomous thinking – as well as other measures that are not relevant to the present study – via a secure website (i.e., Qualtrics). A power analysis for the average effect size in social-personality psychology in conjunction with the guidelines for reducing estimation error in social-personality psychology (Richard et al., 2003; Schönbrodt & Perugini, 2013) led me to conclude that the sample size for this study should be at least 250. However, I deliberately oversampled in an effort to increase the statistical power of the study. Data were excluded for a total of 26 participants due to careless or inattentive responding: 4 participants were excluded for missing data, 2

participants were excluded for short completion time, 16 participants were excluded for being multivariate outliers as assessed by Mahalanobis distance, and 4 participants were excluded for invariant response patterns as assessed by long-string analysis (De Maesschalck et al., 2000; see Curran, 2016, for a review of methods for detecting careless or inattentive responding). I also examined whether participants successfully completed directed response items that were included in the instruments to identify inattentive responding (e.g., “Answer this item with ‘Strongly Disagree’”) and demonstrated inconsistent responding as assessed by inter-item standard deviation (Marjanovic et al., 2015), but no participants were excluded for these reasons. The final sample consisted of 276 participants (109 men, 162 women, 1 non-binary, 4 unreported). The mean age of the final participants was 40.15 years ($SD = 12.3$) and their racial/ethnic composition was 71% White, 13% Black, 5% Asian, and 11% other.

Measures

Narcissism. As in Study 1, extraverted narcissism ($\alpha = .90$), antagonistic narcissism ($\alpha = .94$), and neurotic narcissism ($\alpha = .89$) were measured using the FFNI.

Dichotomous Thinking. As in Study 1, dichotomous thinking was measured using the Dichotomous Thinking Inventory ($\alpha = .93$).

Ambiguous Situations and Anger. Ambiguous situations were presented using the Social Information Processing–Attribution Bias Questionnaire (SIP-ABQ; Coccato et al., 2009). The SIP-ABQ includes 8 hypothetical social situations that are aversive yet ambiguous (e.g., “Imagine that you and a group of your co-workers went on a business trip. While at the hotel, waiting to meet a customer, you stop to buy a cup of coffee. Suddenly, one of your co-workers bumps your arm and spills your coffee over your shirt.

The coffee is hot and your shirt is wet”). The measure provides scores for *hostile attributions* (16 items; e.g., “This person wanted to make me wait longer to get my coffee” [$\alpha = .89$]) *instrumental non-hostile attributions* (8 items; e.g., “This person was in a hurry to get in to work” [$\alpha = .71$]), and *benign attributions* (8 items; e.g., “This person did this by accident” [$\alpha = .67$]). Participants were asked to read each vignette and rate their level of agreement with each statement using a scale that ranges from 0 (*not at all likely*) to 6 (*very likely*). In addition, the measure provides a score for anger (1 item; e.g., “How likely is it that you would be angry if this happened to you?” [$\alpha = .80$]). Participants were asked how angry they would be if this situation happened to them using a scale that ranges from 0 (*not at all likely*) to 6 (*very likely*).

Results

Descriptive statistics and zero-order correlations are presented in Table 2. Extraverted narcissism had small-to-large positive correlations with antagonistic narcissism, dichotomous thinking, and hostile attributions, whereas it had a small negative correlation with instrumental non-hostile attributions. Extraverted narcissism was not correlated with neurotic narcissism, benign attributions, or anger. Antagonistic narcissism had small-to-large positive correlations with neurotic narcissism, dichotomous thinking, hostile attributions, and anger, whereas it had small-to-medium negative correlations with instrumental non-hostile attributions and benign attributions. Neurotic narcissism had small-to-medium positive correlations with dichotomous thinking, hostile attributions, and anger, whereas it was not correlated with instrumental non-hostile attributions or benign attributions. Dichotomous thinking had small-to-medium positive correlations with hostile attributions and benign attributions, whereas it had a small

negative correlation with instrumental non-hostile attributions. Dichotomous thinking was not correlated with anger.

I conducted a series of sequential parallel multiple mediation analyses to examine whether narcissistic personality traits had indirect associations with anger through dichotomous thinking (the primary mediator) as well as hostile attributions, instrumental non-hostile attributions, and benign attributions (the secondary mediators) using a custom model of the PROCESS macro developed by Hayes (2018) for SPSS. The PROCESS macro generated a 95% bias-corrected confidence interval using a bootstrap resampling process that was repeated 10,000 times. The VIF values for this analysis were less than 1.50 which suggests that multicollinearity was not an issue. It is important to note that narcissistic personality traits were included in separate models in order to decrease interpretation challenges (Lyman et al., 2006).

Table 2
Study 2: Intercorrelations and descriptive statistics

	1	2	3	4	5	6	7	8
1. Extraverted Narcissism	-							
2. Antagonistic Narcissism	.55***	-						
3. Neurotic Narcissism	-.01	.20***	-					
4. Dichotomous Thinking	.33***	.38***	.20***	-				
5. Hostile Attributions	.24***	.50***	.21***	.33***	-			
6. Instrumental non-hostile Attributions	-.20***	-.31***	.10	-.12*	.12*	-		
7. Benign Attributions	-.08	-.14*	.11	.13*	-.38***	.01	-	
8. Anger	.12	.26***	.31***	.11	.56***	.24***	-.36***	-
<i>Mean</i>	2.70	2.10	2.85	3.51	2.13	3.21	2.48	2.73
<i>Standard Deviation</i>	0.78	0.64	0.84	0.99	0.49	0.43	0.48	0.52

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

Extraverted Narcissism

The results of the sequential parallel multiple mediation analysis for extraverted narcissism are presented in Figure 2. The results revealed that extraverted narcissism had positive associations with dichotomous thinking ($a_1 = 0.33, t = 5.75, p < .001, CI_{95\%} [0.22, 0.44]$) and hostile attributions ($a_2 = 0.15, t = 2.49, p = .013, CI_{95\%} [0.01, 0.27]$). Extraverted narcissism had a negative association with instrumental non-hostile attributions ($a_3 = -0.18, t = -2.80, p = .005, CI_{95\%} [-0.29, -0.05]$). Extraverted narcissism did not have associations with benign attributions ($a_4 = -0.04, t = -0.70, p = .488, CI_{95\%} [-0.17, 0.81]$) or anger ($c = 0.10, t = 1.79, p = .076, CI_{95\%} [-0.01, 0.23]$). In turn, dichotomous thinking had a positive association with hostile attributions ($d_1 = 0.28, t = 4.75, p < .001, CI_{95\%} [0.17, 0.40]$). Dichotomous thinking did not have an association with instrumental non-hostile attributions ($d_2 = -0.06, t = -0.96, p = .336, CI_{95\%} [-0.18, 0.60]$), benign attributions ($d_3 = -0.11, t = -1.75, p = .081, CI_{95\%} [-0.24, 0.14]$) or anger ($b_1 = -0.06, t = -1.07, p = .290, CI_{95\%} [-0.16, 0.46]$). Hostile attributions ($b_2 = 0.52, t = 9.61, p < .001, CI_{95\%} [0.41, 0.62]$) and instrumental non-hostile attributions ($b_3 = 0.30, t = 6.36, p < .001, CI_{95\%} [0.21, 0.40]$) had positive associations with anger. Finally, benign attributions had a negative association with anger ($b_4 = -0.17, t = -3.45, p = .007, CI_{95\%} [-0.27, -0.07]$).¹

Tests of serial mediation showed that extraverted narcissism had a positive indirect association with anger through hostile attributions ($a_2b_2 = 0.08, z = 2.40, p = .016, CI_{95\%} [0.01, 0.15]$). In addition, extraverted narcissism had a negative indirect association with anger through instrumental non-hostile attributions ($a_3b_3 = -0.05, z = -2.54, p = .011, CI_{95\%} [-0.10, -0.02]$). Tests of serial mediation showed that extraverted

narcissism had a positive indirect association with anger through dichotomous thinking via hostile attributions ($a_1d_1b_2 = 0.05$, $z = 3.42$, $p < .001$, $CI_{95\%} [0.02, 0.80]$).

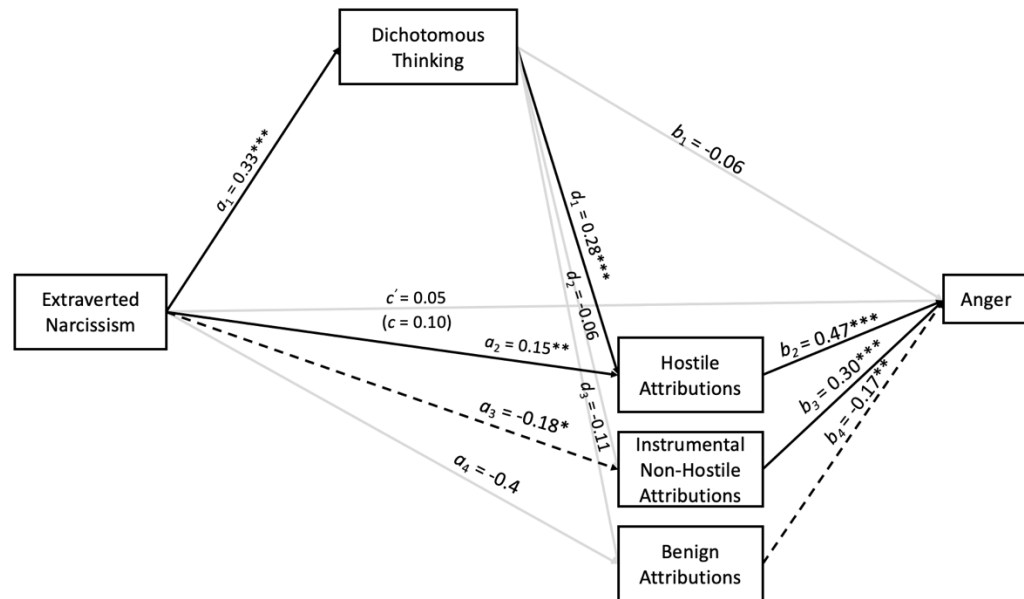


Figure 2. Study 2: The results of the serial parallel multiple mediation analysis with dichotomous thinking and attributions mediating the association that extraverted narcissism had with anger. *Note:* The total effect (i.e., c) is presented in parentheses. The significant positive associations are indicated by solid black arrows. The significant negative associations are indicated by dashed black arrows. The nonsignificant associations are indicated by grey lines. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Antagonism Narcissism

The results of the sequential parallel multiple mediation analysis for antagonistic narcissism are presented in Figure 3. The results revealed that antagonistic narcissism had positive associations with dichotomous thinking ($a_1 = 0.38$, $t = 6.77$, $p < .001$, $CI_{95\%} [0.27, 0.49]$), hostile attributions ($a_2 = 0.44$, $t = 7.93$, $p < .001$, $CI_{95\%} [0.33, 0.55]$), and anger ($c = 0.26$, $t = 4.44$, $p < .001$, $CI_{95\%} [0.15, 0.37]$). Antagonistic narcissism had a

negative association with instrumental non-hostile attributions ($a_3 = -0.31, t = -4.97, p < .001, CI_{95\%} [-0.43, -0.19]$). Antagonistic narcissism did not have an association with benign attributions ($a_4 = -0.11, t = -1.69, p = .094, CI_{95\%} [-0.24, -0.19]$). Dichotomous thinking had a positive association with hostile attributions ($d_1 = 0.17, t = 2.98, p = .003, CI_{95\%} [0.06, 0.27]$), but it was not associated with instrumental non-hostile attributions ($d_2 = -0.0013, t = -0.02, p = .983, CI_{95\%} [-0.12, 0.12]$), benign attributions ($d_3 = -0.08, t = -1.21, p = .191, CI_{95\%} [-0.21, 0.04]$), or anger ($b_1 = -0.07, t = -1.38, p = .170, CI_{95\%} [-0.17, .03]$). Hostile attributions ($b_2 = 0.47, t = 8.08, p < .001, CI_{95\%} [0.36, 0.59]$) and instrumental non-hostile attributions ($b_3 = 0.33, t = 6.69, p < .001, CI_{95\%} [0.23, 0.42]$) had positive associations with anger. Finally, benign attributions had a negative association with anger ($b_4 = -0.18, t = -3.58, p = .001, CI_{95\%} [-0.27, -0.08]$).

Tests of serial mediation showed that antagonistic narcissism had a positive indirect association with anger through hostile attributions ($a_2b_2 = 0.21, z = 5.63, p < .001, CI_{95\%} [0.14, 0.29]$). In addition, antagonistic narcissism had a negative indirect association with anger through instrumental non-hostile attributions ($a_3b_3 = -0.10, z = -3.97, p < .001, CI_{95\%} [-0.15, -0.06]$). Tests of serial mediation showed that antagonistic narcissism had a positive indirect association with anger through dichotomous thinking via hostile attributions ($a_1d_1b_2 = 0.03, z = 2.59, p = .010, CI_{95\%} [0.01, 0.06]$).²

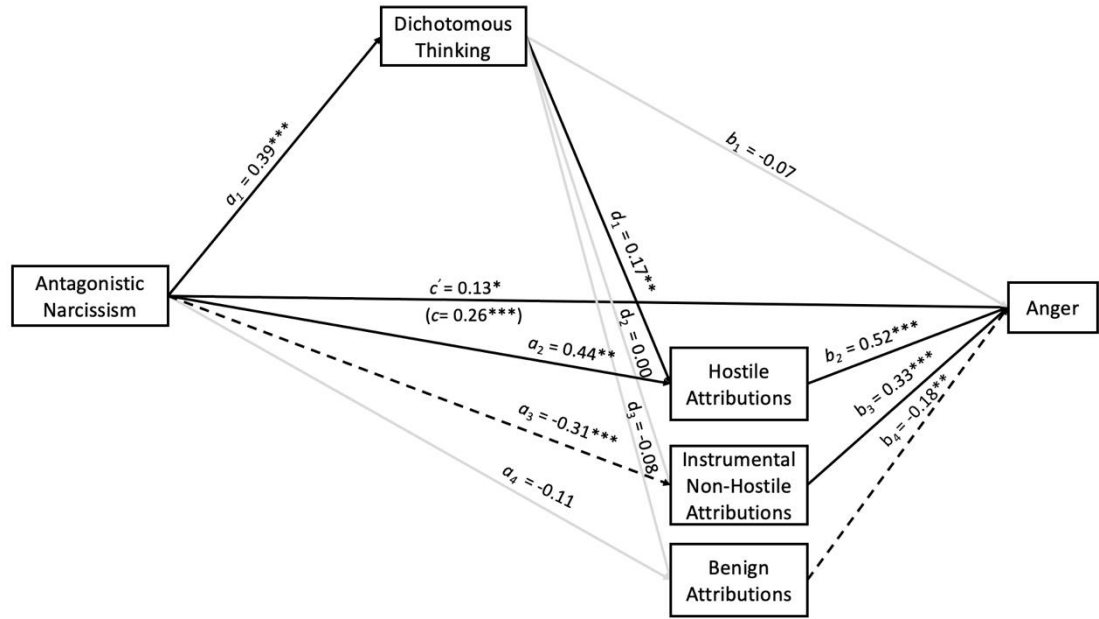


Figure 3. Study 2: The results of the serial parallel multiple mediation analysis with dichotomous thinking and attributions mediating the association that antagonistic narcissism had with anger. *Note:* The total effect (i.e., c) is presented in parentheses. The significant positive associations are indicated by solid black arrows. The significant negative associations are indicated by dashed black arrows. The nonsignificant associations are indicated by grey lines. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Neurotic Narcissism

The results of the sequential parallel multiple mediation analysis for neurotic narcissism are presented in Figure 4. The results revealed that neurotic narcissism had positive associations with dichotomous thinking ($a_1 = 0.20$, $t = 3.33$, $p = .001$, $CI_{95\%} [0.80, 0.31]$), hostile attributions ($a_2 = 0.15$, $t = 2.54$, $p = .012$, $CI_{95\%} [0.03, 0.26]$), instrumental non-hostile attributions ($a_3 = 0.13$, $t = 2.15$, $p = .032$, $CI_{95\%} [0.011, 0.25]$), benign attributions ($a_4 = 0.14$, $t = 2.32$, $p = .021$, $CI_{95\%} [0.02, 0.26]$), and anger ($c = 0.30$, $t = 5.29$, $p < .001$, $CI_{95\%} [0.19, 0.42]$). Dichotomous thinking had a positive association

with hostile attributions ($d_1 = 0.30, t = 5.28, p < .001, CI_{95\%} [0.19, 0.42]$). Dichotomous thinking had negative associations with instrumental non-hostile attributions ($d_2 = -0.14, t = -2.38, p = .019, CI_{95\%} [-0.26, 0.02]$) and benign attributions ($d_3 = -0.15, t = -2.53, p = .012, CI_{95\%} [-0.27, -0.034]$). Dichotomous thinking did not have an association with anger ($b_1 = -0.08, t = -1.61, p = .110, CI_{95\%} [-0.17, .02]$). Hostile attributions ($b_2 = 0.47, t = 8.82, p < .001, CI_{95\%} [0.36, 0.57]$) and instrumental non-hostile attributions ($b_3 = 0.27, t = 5.73, p < .001, CI_{95\%} [0.17, 0.36]$) had positive associations with anger. Finally, benign attributions had a negative association with anger ($b_4 = -0.22, t = -4.48, p < .001, CI_{95\%} [-0.32, -0.13]$).

Tests of serial mediation showed that neurotic narcissism had a positive indirect association with anger through hostile attributions ($a_2b_2 = 0.07, z = 2.44, p = .015, CI_{95\%} [0.14, 0.13]$). In addition, neurotic narcissism had a positive indirect association with anger through instrumental non-hostile attributions ($a_3b_3 = 0.03, z = 1.99, p = .047, CI_{95\%} [0.01, 0.07]$). Neurotic narcissism had a negative indirect association with anger through benign attributions ($a_4b_4 = -0.03, z = -2.02, p = .043, CI_{95\%} [-0.06, -0.01]$). Tests of serial mediation showed that neurotic narcissism had a positive indirect association with anger through dichotomous thinking via hostile attributions ($a_1d_1b_2 = 0.03, z = 2.68, p = .007, CI_{95\%} [0.01, 0.06]$).^{3,4,5}

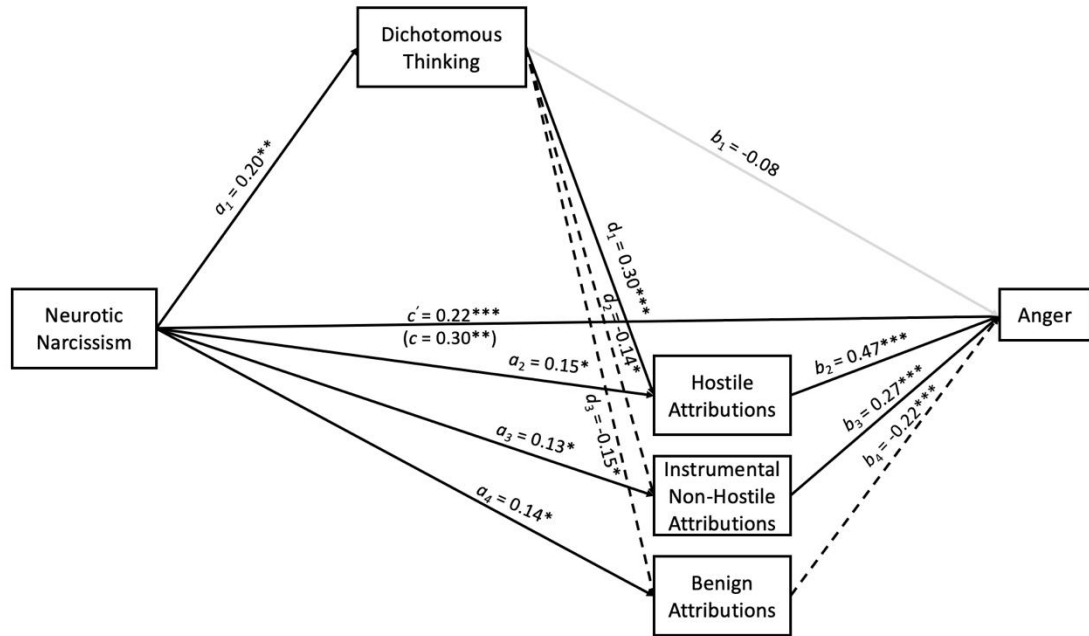


Figure 4. Study 2: The results of the serial parallel multiple mediation analysis with dichotomous thinking and attributions mediating the association that neurotic narcissism had with anger. *Note:* The total effect (i.e., c) is presented in parentheses. The significant positive associations are indicated by solid black arrows. The significant negative associations are indicated by dashed black arrows. The nonsignificant associations are indicated by grey lines. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Discussion

The purpose of Study 2 was to assess whether dichotomous thinking mediated the association between narcissism and anger in response to hypothetical vignettes. Overall, I found partial support for my predictions. I found support for Hypotheses 1a and 2a such that extraverted narcissism and antagonistic narcissism were positively associated with dichotomous thinking. For neurotic narcissism (Hypothesis 3a), I did not have a clear prediction regarding its association with dichotomous thinking. Interestingly, the results

showed that neurotic narcissism was positively associated with dichotomous thinking, a finding inconsistent with the zero-order correlation from Study 1.

I predicted in Hypothesis 1b that dichotomous thinking would mediate the connection that antagonistic narcissism had with anger. However, I had no specific predictions regarding whether dichotomous thinking would mediate the connections that extraverted narcissism (Hypothesis 2b) or neurotic narcissism (Hypothesis 3b) had with anger. The results did not support any of these hypotheses. That is, dichotomous thinking did not mediate the connection between any form of narcissism and anger. However, the findings revealed that hostile attributions mediated the relationships that each type of narcissism had with anger. More notably, dichotomous thinking further mediated the connection each type of narcissism had with anger via hostile attributions. This suggests that the high levels of dichotomous thinking reported by individuals with high levels of narcissism may explain their tendency to adopt hostile attributions, which, in turn, contributes to their elevated anger.

In essence, it appears that dichotomous thinking is playing a role regarding the relationship between narcissism and anger, but only when individuals with high levels of narcissism perceive the intentions behind the aversive – yet ambiguous – situations to be deliberately hostile. These findings are consistent with past research showing that narcissism is associated with dichotomous thinking (Jonason et al., 2018; Oshio, 2009a, 2012b), hostile attribution bias (Subra, 2023), and with anger (e.g., Križan & Johar, 2015). The patterns observed suggest that dichotomous thinking may shape how individuals with high levels of narcissism interpret ambiguity, with hostile interpretations possibly contributing to their heightened – and often unwarranted – anger.

As mentioned above, the results revealed that hostile attributions mediated the relationship between each type of narcissism and anger, consistent with prior research linking narcissism to hostile attributions (Subra, 2023). It is important to note that additional indirect effects emerged for the attributions such that instrumental non-hostile attributions mediated the relationship between each type of narcissism and anger. The results revealed that individuals with high levels of extraverted and antagonistic narcissism are still angry, but they are less likely to think that the intentions behind aversive situations are driven by other's desire for personal gain (i.e., instrumental non-hostile attributions). In contrast to this finding, the results revealed that individuals with high levels of neurotic narcissism are more likely to consider that the intentions behind aversive situations are driven by other's desire for personal gain (i.e., instrumental non-hostile attributions), which in turn is contributing to high levels of anger. Additionally, the results revealed that benign attributions mediated the association between neurotic narcissism and anger. Specifically, individuals with high levels of neurotic narcissism are more likely to think that the intentions behind aversive situations are unpleasant but are not intended to cause harm (i.e., benign attributions), which results in lower levels of anger. Collectively, individuals with high levels of neurotic narcissism seem to think that all attributions (i.e., hostile attributions, instrumental non-hostile attributions, benign attributions) could be occurring when presented with ambiguous stimuli. This might be explained, at least in part, by the neurotic elements at play. Individuals with high levels of neurotic narcissism may be over thinking the situation which in turn is making them think that all attributions are possible.

Taken together, the results of Study 2 highlight that dichotomous thinking plays a role in terms of the relationship that each type of narcissism has with anger, but only when individuals attribute hostility to ambiguous situations. This effect is true for all types of narcissism which suggests that there is something at the core of narcissism playing a part regarding these relationships. One possible explanation is that at the basic level, individuals with high levels of narcissism are concerned with protecting and maintaining their self-inflated views. For them, it may be more beneficial to view any ambiguity as hostile in order to protect and maintain their grandiose self-views. Past research has found similar findings such that individuals with high levels of narcissism are more likely to attribute hostile attributions to ambiguous stimuli (e.g., Sobra, 2023). People with high levels of narcissism may be viewing these aversive – yet ambiguous – situations as potentially ego threatening. My findings suggest that dichotomous thinking may help explain why individuals with high levels of narcissism are quick to attribute hostility to ambiguous situations. That is, due to dichotomous thinking they are unable to see the nuance to these ambiguous situations. Overall, these findings suggest that it is important to examine dichotomous thinking and how individuals with high levels of narcissism view the intentions behind certain situations when it comes to investigating the link that narcissism has with anger

CHAPTER 4

STUDY 3: DICHOTOMOUS THINKING AS A MEDIATOR OF THE ASSOCIATIONS NARCISSISTIC PERSONALITY TRAITS HAVE WITH ANGER IN RESPONSE TO RECALLED EVENTS

The purpose of Study 3 was to replicate and extend the results of Study 2 by examining whether dichotomous thinking mediated the association between narcissism and anger via recalled events. Study 3 was similar to Study 2 but instead of reading ambiguous scenarios participants were asked to recall an ambiguous memory of their own. Past research has found that recalling memories can make affective reactions more potent (e.g., McIsaac & Eich, 2002). As a result, it was important to examine whether dichotomous thinking mediated the association between narcissism and anger from personal recollections of events. The predictions of Study 3 were consistent with those of Study 2. Again, I predicted that dichotomous thinking would mediate the connection that antagonistic narcissism has with anger. More specifically, I predicted that antagonistic narcissism would be positively associated with dichotomous thinking, which, in turn, would be positively associated with anger. I predicted that hostile attributions would further mediate this association such that antagonistic narcissism would have a positive indirect association with anger through dichotomous thinking via hostile attributions. I did not have a clear prediction about whether instrumental non-hostile attributions would further mediate the association that antagonistic narcissism has with anger through dichotomous thinking. I also examined whether dichotomous thinking would mediate the

connections that extraverted narcissism and neurotic narcissism had with anger, hostile attributions, and instrumental non-hostile attributions for exploratory purposes.

Method

Participants and Procedure

Participants were 256 community adults recruited from the United States via Prolific. Participants were asked to provide informed consent and were reminded that they could discontinue their involvement in the study at any time. Participants provided basic demographic information (e.g., age, racial/ethnic background) and completed measures of narcissism and dichotomous thinking – as well as other measures that are not relevant to the present study – via a secure website (i.e., Qualtrics). A power analysis for the average effect size in social-personality psychology in conjunction with the guidelines for reducing estimation error in social-personality psychology (Richard et al., 2003; Schönbrodt & Perugini, 2013) led me to conclude that the sample size for this study should be at least 250. However, I deliberately oversampled in an effort to increase the statistical power of the study. Data were excluded for a total of 28 participants due to careless or inattentive responding: 22 participants were excluded for missing data, 4 participants were excluded for short completion time (De Maesschalck et al., 2000; see Curran, 2016, for a review of methods for detecting careless or inattentive responding). I also examined whether participants successfully completed directed response items that were included in the instruments to identify inattentive responding (e.g., “Answer this item with ‘Strongly Disagree’”) and demonstrated inconsistent responding as assessed by inter-item standard deviation (Marjanovic et al., 2015), a total of 2 participants were excluded for these reasons. The final sample consisted of 228 participants (111 men, 117

women). The mean age of the final participants was 43.54 years ($SD = 12.3$) and their racial/ethnic composition was 77% White, 8% Black, 4% Asian, and 11% other.

Measures

Narcissism. As in Studies 1 and 2, extraverted narcissism ($\alpha = .91$), antagonistic narcissism ($\alpha = .93$), and neurotic narcissism ($\alpha = .90$) were measured using the FFNI.

Dichotomous Thinking. As in Studies 1 and 2, dichotomous thinking was measured using the Dichotomous Thinking Inventory ($\alpha = .88$).

Recalled Ambiguous Situations and Anger. Ambiguous stimuli were captured using a recall method. Participants were asked to read the following instructions: “*Please recall an incident from your life that occurred during the past month where someone did something to you that was bad or unpleasant BUT you do not know why they engaged in that behavior.*” Participants were asked to read examples from the SIP-ABQ (Coccaro et al., 2009) used in Study 2 to gain a better understanding of the recall assignment. Participants were instructed to describe a similar situation that had happened to them during the past month in 3-4 sentences. Participants were asked a series of questions similar to that of Study 2 regarding intentions (e.g., hostile attributions, instrumental non-hostile attributions) and how angry this situation made them feel. The measure provides scores for *hostile attributions* (i.e., “The person had hostile attributions. That is, the person who did something unpleasant to me wanted to deliberately hurt me in some way. For example, this person may have wanted to physically harm me or make me feel bad.”) *instrumental non-hostile attributions* (i.e., “The person had instrumental non-hostile attributions. That is, the person who did something unpleasant to me was trying to accomplish another goal. For example, this person may have been in a hurry or wanted to

get a promotion at work.”), and benign attributions (i.e., “The person had neutral or benign attributions. That is, the person who did something unpleasant to me did not intend to cause me any harm. For example, this person may have done something by accident or because they were distracted.”). Participants were asked to rate their level of agreement with each statement using a scale that ranged from 0 (*not at all likely*) to 3 (*very likely*). In addition, the measure provides a score for anger (i.e., “How angry did this situation make you feel?”). Participants were asked how angry they would be if this situation happened to them using a scale that ranges from 0 (*not at all angry*) to 3 (*very angry*).

Results

Descriptive statistics and zero-order correlations are presented in Table 3.

Extraverted narcissism had medium-to-large positive correlations with antagonistic narcissism, dichotomous thinking, and anger, whereas it had small-to-medium negative correlations with neurotic narcissism and instrumental non-hostile attributions.

Extraverted narcissism was not correlated with hostile attributions or benign attributions.

Antagonistic narcissism had small-to-medium positive correlations with dichotomous thinking, hostile attributions, and anger, whereas it was not correlated with neurotic narcissism, instrumental non-hostile attributions, or benign attributions.

Neurotic narcissism was not correlated with dichotomous thinking, hostile attributions, instrumental non-hostile attributions, benign attributions, or anger.

Dichotomous thinking had a medium positive correlation with anger, whereas it had a small negative correlation with benign attributions. Dichotomous thinking was not correlated with hostile attributions or instrumental non-hostile attributions.

Table 3
Study 3: Intercorrelations and descriptive statistics

	1	2	3	4	5	6	7	8
1. Extraverted Narcissism	-							
2. Antagonistic Narcissism	.49***	-						
3. Neurotic Narcissism	-.21***	.01	-					
4. Dichotomous Thinking	.20**	.16*	.05	-				
5. Hostile Attributions	.09	.18*	.06	.11	-			
6. Instrumental Non-Hostile Attributions	-.13*	.09	.12	-.01	-.16*	-		
7. Benign Attributions	-.01	.02	-.05	-.16*	-.51***	.12	-	
8. Anger	.25***	.24***	.08	.20**	.32***	.08	-.19**	-
<i>Mean</i>	2.79	2.00	2.84	3.74	2.20	2.42	2.41	2.69
<i>Standard Deviation</i>	0.80	0.60	0.86	0.85	0.95	0.96	1.01	0.96

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

As in Study 2, I conducted a series of sequential parallel multiple mediation analyses to examine whether narcissistic personality traits had indirect associations with anger through dichotomous thinking (the primary mediator) as well as hostile attributions, instrumental non-hostile attributions, and benign attributions (the secondary mediators) using a custom model of the PROCESS macro developed by Hayes (2018) for SPSS. The PROCESS macro generated a 95% bias-corrected confidence interval using a bootstrap resampling process that was repeated 10,000 times. The VIF values for this analysis were less than 1.54 which suggests that multicollinearity was not an issue. Again, it is important to note that narcissistic personality traits were included in separate models in order to decrease interpretive challenges (Lyman et al., 2006).

Extraverted Narcissism

The results of the sequential parallel multiple mediation analysis for extraverted narcissism are presented in Figure 5. The results revealed that extraverted narcissism had positive associations with dichotomous thinking ($a_1 = 0.20$, $t = 3.07$, $p = .002$, $CI_{95\%} [0.72, 0.33]$) and anger ($c = 0.25$, $t = 3.86$, $p < .001$, $CI_{95\%} [0.12, 0.38]$). Extraverted narcissism did not have an association with hostile attributions ($a_2 = .08$, $t = 1.24$, $p = .216$, $CI_{95\%} [-0.50, 0.22]$), instrumental non-hostile attributions ($a_3 = -0.12$, $t = 0.23$, $p = .982$, $CI_{95\%} [-0.13, 0.14]$) or benign attributions ($a_4 = 0.02$, $t = 0.29$, $p = .982$, $CI_{95\%} [-0.12, 0.16]$). In turn, dichotomous thinking had a negative association with benign attributions ($d_3 = -0.18$, $t = -2.57$, $p = .011$, $CI_{95\%} [-0.31, -0.04]$). Dichotomous thinking did not have an association with hostile attributions ($d_1 = 0.09$, $t = 1.43$, $p = .16$, $CI_{95\%} [-0.04, 0.24]$), instrumental non-hostile attributions ($d_2 = 0.001$, $t = 0.23$, $p = .98$, $CI_{95\%} [-0.13, 0.14]$) or anger ($b_1 = 0.12$, $t = 1.80$, $p = .98$, $CI_{95\%} [-0.01, 0.24]$). Hostile attributions

($b_2 = 0.29$, $t = 4.08$, $p < .001$, $CI_{95\%} [0.15, 0.43]$) and instrumental non-hostile attributions ($b_3 = 0.16$, $t = 2.63$, $p = .009$, $CI_{95\%} [0.04, 0.29]$) had positive associations with anger. Finally, benign attributions did not have an association with anger ($b_4 = -0.04$, $t = -0.68$, $p = .491$, $CI_{95\%} [-0.19, 0.09]$). Tests of serial mediation showed that extraverted narcissism did not have any indirect associations with anger.⁶

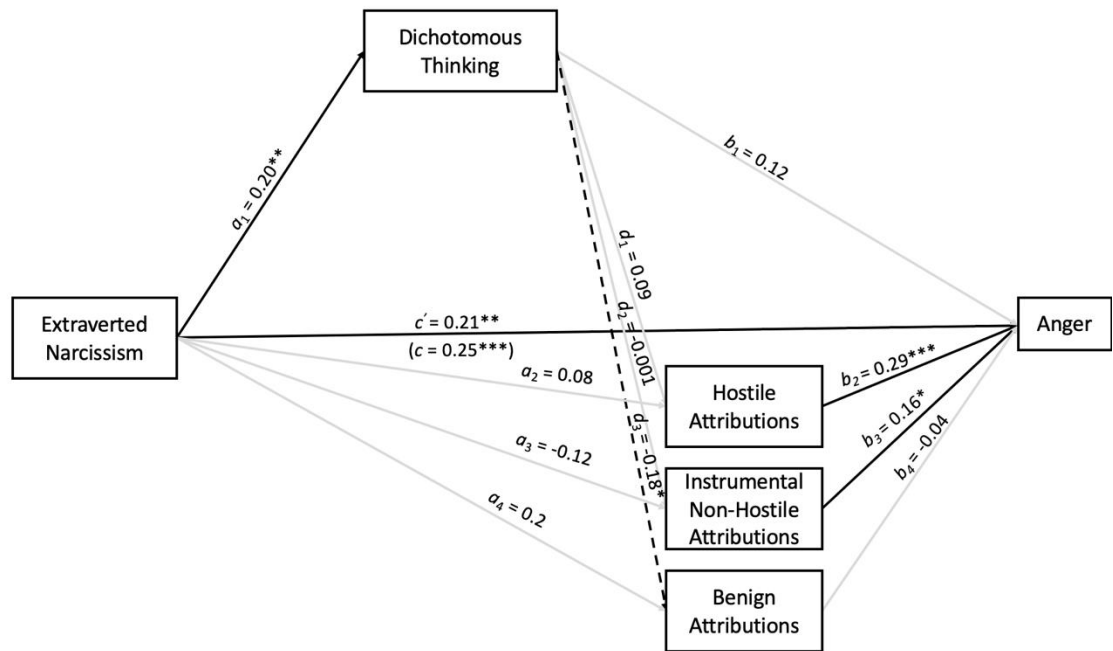


Figure 5. Study 3: The results of the serial parallel multiple mediation analysis with dichotomous thinking and attributions mediating the association that extraverted narcissism had with anger. *Note:* The total effect (i.e., c) is presented in parentheses. The significant positive associations are indicated by solid black arrows. The significant negative associations are indicated by dashed black arrows. The nonsignificant associations are indicated by grey lines. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Antagonism Narcissism

The results of the sequential parallel multiple mediation analysis for antagonistic narcissism are presented in Figure 6. The results revealed that antagonistic narcissism had positive associations with dichotomous thinking ($a_1 = 0.14, t = 2.24, p = .025, CI_{95\%} [0.01, 0.28]$), hostile attributions ($a_2 = 0.18, t = 2.72, p = .006, CI_{95\%} [0.05, 0.31]$), and anger ($c = 0.24, t = 3.67, p < .001, CI_{95\%} [0.11, 0.37]$). Antagonistic narcissism did not have an association with instrumental non-hostile attributions ($a_3 = 0.10, t = 1.60, p = .11, CI_{95\%} [-0.24, -0.24]$) or benign attributions ($a_4 = 0.03, t = 0.45, p = .65, CI_{95\%} [-0.10, 0.16]$). Dichotomous thinking had a positive association with anger ($b_1 = 0.14, t = 2.14, p = .034, CI_{95\%} [0.01, .26]$) and a negative association with benign attributions ($d_3 = -0.18, t = -2.60, p = .009, CI_{95\%} [-0.31, -0.04]$). Dichotomous thinking was not associated with hostile attributions ($d_1 = 0.09, t = 1.31, p = .192, CI_{95\%} [-0.04, 0.22]$) or instrumental non-hostile attributions ($d_2 = -0.04, t = -0.58, p = .562, CI_{95\%} [-0.17, 0.09]$). Hostile attributions ($b_2 = 0.28, t = 3.67, p < .001, CI_{95\%} [0.12, 0.42]$) had a positive association with anger. Instrumental non-hostile attributions ($b_3 = 0.12, t = 1.89, p = .059, CI_{95\%} [-0.05, 0.24]$) and benign attributions ($b_4 = -0.05, t = -0.72, p = .468, CI_{95\%} [-0.19, 0.09]$) were not associated with anger. Tests of serial mediation showed that antagonistic narcissism had a positive indirect association with anger through hostile attributions ($a_2b_2 = 0.05, z = 2.14, p = .032, CI_{95\%} [0.01, 0.10]$).⁷

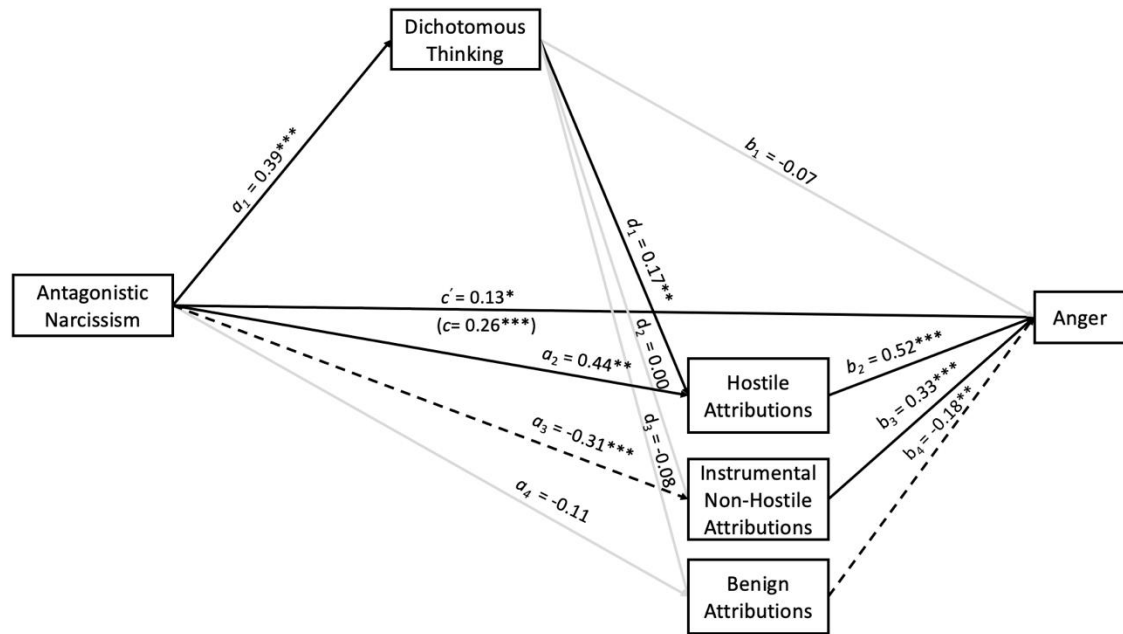


Figure 6. Study 3: The results of the serial parallel multiple mediation analysis with dichotomous thinking and attributions mediating the association that antagonistic narcissism had with anger. *Note:* The total effect (i.e., c) is presented in parentheses. The significant positive associations are indicated by solid black arrows. The significant negative associations are indicated by dashed black arrows. The nonsignificant associations are indicated by grey lines. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Neurotic Narcissism

The results of the sequential parallel multiple mediation analysis for neurotic narcissism are presented in Figure 7. The results revealed that neurotic narcissism had a negative association with benign attributions ($a_4 = -0.17$, $t = -2.52$, $p = .012$, $CI_{95\%} [-0.30, -0.03]$). Neurotic narcissism was not associated with dichotomous thinking ($a_1 = 0.05$, $t = 0.78$, $p = .434$, $CI_{95\%} [-0.07, 0.18]$), hostile attributions ($a_2 = 0.06$, $t = 8.49$, $p = .396$, $CI_{95\%} [-0.07, 0.18]$), instrumental non-hostile attributions ($a_3 = 0.11$, $t = 1.70$, $p = .090$,

$CI_{95\%} [-0.017, 0.25]$), or anger ($c = 0.09$, $t = 1.28$, $p = .200$, $CI_{95\%} [-0.04, 0.21]$).

Dichotomous thinking had a positive association with anger ($b_1 = 0.16$, $t = -2.46$, $p = .014$, $CI_{95\%} [0.03, 0.28]$), whereas it was negatively associated with benign attributions ($d_3 = -0.17$, $t = -2.53$, $p = .012$, $CI_{95\%} [-0.27, -0.034]$). Dichotomous thinking was not associated with hostile attributions ($d_1 = 0.11$, $t = 1.66$, $p = .097$, $CI_{95\%} [-0.02, 0.25]$) or instrumental non-hostile attributions ($d_2 = -0.03$, $t = -0.43$, $p = .665$, $CI_{95\%} [-0.16, 0.10]$). Hostile attributions ($b_2 = 0.31$, $t = 4.28$, $p < .001$, $CI_{95\%} [0.17, 0.46]$) and instrumental non-hostile attributions ($b_3 = 0.14$, $t = 2.10$, $p = .036$, $CI_{95\%} [0.01, 0.26]$) had positive associations with anger. Finally, benign attributions were not associated with anger ($b_4 = -0.03$, $t = -0.39$, $p = .694$, $CI_{95\%} [-0.17, -0.11]$). Tests of serial mediation showed that neurotic narcissism did not have any indirect associations with anger.⁸

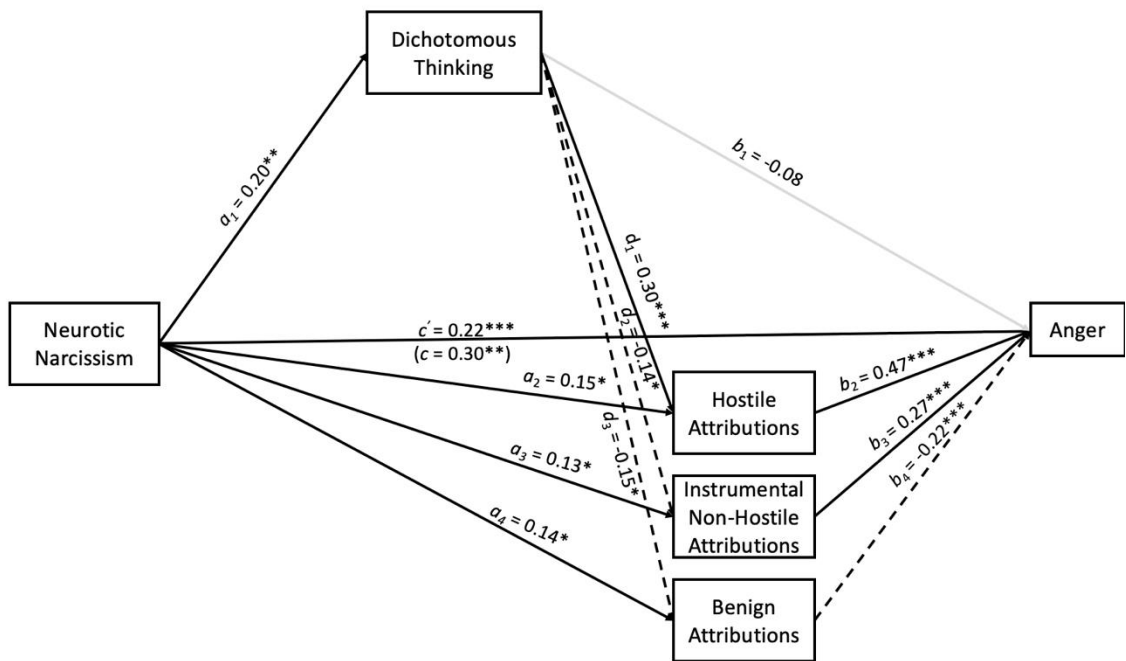


Figure 7. Study 3: The results of the serial parallel multiple mediation analysis with dichotomous thinking and attributions mediating the association that neurotic narcissism had with anger. *Note:* The total effect (i.e., c) is presented in parentheses. The significant

positive associations are indicated by solid black arrows. The significant negative associations are indicated by dashed black arrows. The nonsignificant associations are indicated by grey lines. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Discussion

The goal of Study 3 was to replicate and extend the findings of Study 2 by examining whether dichotomous thinking mediated the association between narcissism and anger through recalled events. The results showed that antagonistic narcissism (Hypothesis 1a) and extraverted narcissism (Hypothesis 2a) were positively associated with dichotomous thinking. These findings align with those from Studies 1 and 2. However, I did not have a specific prediction regarding the association between neurotic narcissism and dichotomous thinking (Hypothesis 3a), and the results revealed no connection. This aligns with the correlational results from Study 1 but contradicts the findings of Study 2.

Only one indirect association was observed: hostile attributions mediated the relationship between antagonistic narcissism and anger. This suggests that the tendency for individuals with high levels of antagonistic narcissism to attribute hostile intentions to others may explain their tendency to experience anger. This finding was consistent with the results of Study 2.

It is important to note that I did not find support for my predictions regarding dichotomous thinking mediating the relationships between narcissism and anger. Specifically, I predicted that dichotomous thinking would mediate the connection between antagonistic narcissism and anger (Hypothesis 1b), but this was not supported. I lacked clear predictions about whether dichotomous thinking would mediate the

associations that extraverted narcissism (Hypothesis 2b) and neurotic narcissism (Hypothesis 3b) had with anger. Unlike the results of Study 2, there was no support for mediation in Study 3.

In Study 2, dichotomous thinking mediated the connections between each type of narcissism and anger through hostile attributions; however, this effect did not replicate in Study 3. One possible explanation for this discrepancy lies in the recall task used in Study 3. In Study 2, participants read ambiguous scenarios, whereas in Study 3 they were asked to recall an ambiguous memory. This design choice was based on prior research indicating that recalling memories can intensify emotional responses (e.g., McIsaac & Eich, 2002). However, a limitation of the recall task is that participants were instructed to identify a situation they personally viewed as ambiguous, potentially reducing the impact of dichotomous thinking. In contrast, in Study 2, the nature of the task may have allowed dichotomous thinking to be more readily activated among those with high levels of narcissism.

CHAPTER 5

GENERAL DISCUSSION

The primary objective of the present studies was to investigate whether dichotomous thinking played a role in the associations that different types of narcissism (i.e., extraverted narcissism, antagonistic narcissism, neurotic narcissism) had with anger. I found partial support for the idea that different types of narcissism are linked with dichotomous thinking. Across all three studies, antagonistic narcissism (Hypothesis 1a) and extraverted narcissism (Hypothesis 2a) were positively associated with dichotomous thinking. This finding is important because it shows that people with high levels of antagonistic narcissism and extraverted narcissism may think about the world in a very similar black and white way. This similarity may be because both antagonistic narcissism and extraverted narcissism are connected to grandiose narcissism. Individuals with high levels of grandiose narcissism have a strong sense of entitlement (e.g., Miller et al., 2021). As a result, this strong demand or expectation to be treated in a certain way may impact the cognitive processes of individuals with high levels of narcissism. Individuals with high levels of narcissism are on high alert for potential ego threats. It is possible that a quick way to accomplish that goal is to be decisive by placing experiences into either ego threatening or non-ego threatening categories. That is, individuals with high levels of narcissism may view the world with a zero-sum attitude in order to quickly assess whether their ego is being threatened and to quickly protect their grandiose beliefs. As for neurotic narcissism, I did not have a specific prediction (Hypothesis 3a) regarding its relationship with dichotomous thinking. Collectively, the data revealed that neurotic

narcissism has a sometimes weak and inconsistent association with dichotomous thinking. Specifically, after controlling for extraverted narcissism and antagonistic narcissism, neurotic narcissism was associated with dichotomous thinking in Study 1. In Study 2, neurotic narcissism was associated with dichotomous thinking, but the effect did not emerge in Study 3. Despite the association between neurotic narcissism and dichotomous thinking being weak and inconsistent, the effect was in the same positive direction across all three studies.

I predicted that dichotomous thinking would mediate the relationship that antagonistic narcissism had with anger (Hypothesis 1b). I did not find support for the simple version of this hypothesis, but I did find support for a more complex version involving hostile attributions in Study 2. That is, the results of Study 2 revealed that dichotomous thinking mediated the connection that antagonistic narcissism has with anger through hostile attributions. This mediation effect revealed that the high levels of dichotomous thinking reported by individuals with high levels of antagonistic narcissism influenced their tendency to adopt hostile attributions, which, in turn, contributed to their high levels of anger. This finding shows that individuals with high levels of antagonistic narcissism perceive ambiguous situations in a hostile way, which in turn contributes to their levels of anger and this may be explained at least in part by dichotomous thinking. This is an important finding because it sheds light on the cognitive process of individuals with high levels of antagonistic narcissism and may help explain why they are typically angry. It appears that individuals with high levels of antagonistic narcissism view the world in a very hostile way because of their tendency to engage in dichotomous thinking. That is, individuals with high levels of antagonistic narcissism are unable to see the

nuance or consider alternative explanations when faced with ambiguity. This may be because individuals with high levels of antagonistic narcissism want to protect their grandiose feelings of self-worth. As a result, they may interpret ambiguity in a hostile – and potentially ego threatening – manner because it is better to err on the side of caution as opposed to possibly missing an ego threat. Experiencing an ego threat makes the individual with high levels of antagonistic narcissism angry, which may serve as a signal to others that they are being treated unfairly. Although this interesting finding emerged in Study 2, it is important to note that this effect did not emerge in Study 3.

It is worth noting that a simple mediation effect emerged such that hostile attributions mediated the connections that antagonistic narcissism had with anger. The results revealed that the high levels of hostile attributions reported by individuals with high levels of antagonistic narcissism contributed to their high levels of anger. This finding was supported by the results from Study 2 and was replicated in Study 3. Additional indirect effects emerged in Study 2 but did not replicate in Study 3 for the attributions. In Study 2, instrumental non-hostile attributions mediated the relationship that antagonistic narcissism has with anger. Specifically, individuals with high levels of antagonistic narcissism are still angry, but they are less likely to think that the intentions behind aversive – yet ambiguous – situations were driven by the desire of other people for personal gain (i.e., instrumental non-hostile attributions) and instead believe the intention behind the action was hostile in nature. Collectively, these findings are noteworthy because they highlight that those with high levels of antagonistic narcissism view the intentions of others in ambiguous situations as hostile. Given that the world can

often be ambiguous, these findings may help explain why individuals with high levels of antagonistic narcissism are often angry.

As for extraverted narcissism, I did not have a clear prediction (Hypothesis 2b) concerning whether dichotomous thinking would mediate the relationships that extraverted narcissism had with anger. The results of Study 2 revealed that dichotomous thinking mediated the connections that extraverted narcissism had with anger through hostile attributions. This mediation effect revealed that the dichotomous thinking reported by individuals with high levels of extraverted narcissism influenced their tendency to adopt hostile attributions which in turn contributed to their anger. This finding suggests that individuals with high levels of extraverted narcissism view ambiguity as hostile, which in turn contributes to their levels of anger and this may be explained at least in part by dichotomous thinking. Given that individuals with high levels of extraverted narcissism want to protect their grandiose feelings of self-worth they too may view ambiguity as hostile and potentially ego threatening. Again, it may be better for them to err on the side of caution and become angry in response to potential provocations than to possibly miss an ego threat. It is important to note that this effect did not emerge in Study 3.

Again, additional indirect effects emerged for the attributions. The results revealed that hostile attributions mediated the relationship that extraverted narcissism had with anger. In addition, instrumental non-hostile attributions mediated the relationship that extraverted narcissism has with anger. These findings indicate that individuals with high levels of extraverted narcissism are angry, however they are less likely to consider that the intentions behind aversive – yet ambiguous – situations are driven by other's

desire for personal gain (i.e., instrumental non-hostile attributions) and instead believe that the intentions behind the actions were antagonistic (i.e., hostile attributions). These findings are noteworthy because they highlight that individuals with high levels of extraverted narcissism also view the intentions of ambiguous situations as hostile, and this may help explain why these individuals are angry. These findings were supported by the results from Study 2 and were not replicated in Study 3.

As for neurotic narcissism, I did not have a clear prediction (Hypothesis 3b) concerning whether dichotomous thinking would mediate the relationships that neurotic narcissism has with anger. The results revealed that the high levels of dichotomous thinking reported by individuals with high levels of neurotic narcissism influenced their tendency to adopt hostile attributions which in turn contributed to their high levels of anger. This finding shows that individuals with high levels of neurotic narcissism view ambiguous situations in a hostile way, which in turn contributes to their levels of anger and this may be explained at least in part by dichotomous thinking. This is an important finding because it sheds light on the cognitive process of individuals with high levels of neurotic narcissism. It shows that when it comes to ambiguous situations, individuals with high levels of neurotic narcissism might have somewhat similar thought processes akin to those who have high levels of extraverted narcissism and antagonistic narcissism. It appears that they too may view ambiguity in a hostile way, which in turn, is contributing to their level of anger, and this may be explained at least in part by dichotomous thinking. Due to the inconsistent relationship that neurotic narcissism has with dichotomous thinking it is important for future research to replicate this finding. This inconsistent finding may be due to neurotic narcissism's connection to vulnerable

narcissism. Typically, individuals with high levels of vulnerable narcissism have grandiosity that is insecure. In addition, they may be overthinking situations, indecisive, or indifferent. As a result, they may still have a desire to maintain their grandiose feelings of self-worth but are not consistently thinking of things in a rigid way.

Further, dichotomous thinking mediated the connections that neurotic narcissism has with anger through hostile attributions. Also, instrumental non-hostile attributions mediated the relationship between neurotic narcissism and anger. As for individuals with high levels of neurotic narcissism, the results revealed that they are angry even when they think the intentions behind aversive – yet ambiguous – situations are driven by other's desire for personal gain (i.e., instrumental non-hostile attributions) or are antagonistic (i.e., hostile attributions). The results also revealed that benign attributions mediated the association between neurotic narcissism and anger. Specifically, individuals with high levels of neurotic narcissism are more likely to believe that the intentions behind aversive – yet ambiguous – situations are unpleasant but are not intended to cause harm (i.e., benign attributions), which resulted in lower levels of anger. This is an interesting finding because it shows the importance of examining intent when it comes to the relationship that neurotic narcissism has with anger. That is, individuals with high levels of neurotic narcissism are still angry but are possibly confused about the intentions behind the ambiguous situation. These results are supported by the data from Study 2 and were not replicated in Study 3.

Despite the lack of support for some of my hypotheses, the results revealed that dichotomous thinking mediated the relationship between each type of narcissism (i.e., extraverted narcissism, antagonistic narcissism, neurotic narcissism) and anger via hostile

attributions. More interestingly, dichotomous thinking further mediated the connections that each type of narcissism had with anger through hostile attributions. That is, high levels of dichotomous thinking reported by individuals with high levels of narcissism influenced their tendency to adopt hostile attributions which in turn contributed to their high levels of anger. These findings were largely supported by the results from Study 2 and were not replicated in Study 3. In Study 3, only the indirect effect of dichotomous thinking mediating the relationship between antagonistic narcissism and anger replicated. As stated previously, one possible explanation for this discrepancy may be explained, at least in part, by the recall task used in Study 3. In Study 2, participants read ambiguous scenarios, whereas in Study 3 they were asked to recall an ambiguous memory. A possible benefit of the recall method is based on past research indicating that recalling memories can intensify emotional responses (e.g., McIsaac & Eich, 2002). However, a limitation of this recall task is that the role of dichotomous thinking may have not been activated because participants were instructed to identify a situation they personally thought was ambiguous. In contrast, the ambiguity of the presented scenarios in Study 2 was not explicitly communicated to participants, likely allowing dichotomous thinking to be more readily activated among those with high levels of narcissism. If dichotomous thinking was not activated in Study 3 this may help explain why indirect effects of dichotomous thinking mediating the relationship between narcissism and anger did not emerge. Future research should focus on other ways to activate dichotomous thinking. For example, future research could possibly bring participants into the lab and have confederates act out aversive – yet ambiguous – situations (e.g., a confederate accidentally spills water on the participant).

In summary, extraverted narcissism and antagonistic narcissism exhibited similar relationships with dichotomous thinking, aligning with previous research linking overall measures of narcissism with dichotomous thinking (e.g., Jonason et al., 2018; Oshio, 2009b, 2012a). Dichotomous thinking may be more strongly associated with both extraverted narcissism and antagonistic narcissism because of their shared connection to grandiose narcissism. There might be something at the core of grandiose narcissism that is driving this effect. It is possible that individuals with high levels of antagonistic narcissism and extraverted narcissism feel very entitled to be treated a certain way, and when they are faced with aversive – yet ambiguous – situations that do not help them maintain their grandiose self-views dichotomous thinking is activated. In contrast, neurotic narcissism exhibited a mixed relationship with dichotomous thinking. In Study 2, neurotic narcissism was positively related to dichotomous thinking, whereas in Studies 1 and 3 no association emerged. The inconsistent relationship that neurotic narcissism has with dichotomous thinking may be due to its relationship with vulnerable narcissism. Typically, individuals with high levels of vulnerable narcissism are overthinkers, indifferent, and have grandiosity that is insecure. Consequently, they may still have a desire to maintain their grandiose feelings of self-worth but are not consistently thinking of things in a rigid way.

These findings provide additional support for distinguishing between narcissistic personality traits because doing so highlights valuable differences that the different types of narcissism have with various outcomes. More importantly, these findings enhance our understanding of the cognitive processes involved in narcissism. Specifically, the rigid thinking style associated with narcissism may hinder individuals from considering

alternative perspectives, which could help explain their propensity for intense anger. The results indicate that dichotomous thinking mediates the association that each type of narcissism has with anger through hostile attributions, revealing that narcissistic individuals may perceive ambiguous situations as hostile, leading to anger. This supports previous research linking narcissism with hostile attributions (Subra, 2023) and extends our understanding by highlighting the role of dichotomous thinking in explaining why narcissistic individuals experience anger. Given that dichotomous thinking mediated the association that each type of narcissism has with anger through hostile attributions, there must be something at the core of narcissism driving this effect. One possible explanation is the narcissistic desire to protect their status. Narcissistic individuals believe that they are more significant than others and believe that they should be treated that way. This grandiose belief and desire to protect their status may prevent these individuals from recognizing non-ego-threatening situations, partly due to the cognitive distortion of dichotomous thinking.

The present research has provided additional insights into how individuals with high levels of narcissism view the world. Specifically, individuals with high levels of narcissism appear to view the world in a very rigid and hostile way when they are faced with ambiguous situations. This way of thinking may consequently contribute to the levels of anger experienced by individuals with high levels of narcissism. This is a helpful finding because it may explain why individuals with high levels of narcissism consistently exhibit anger in situations where anger may not be warranted. It is possible that anger is viewed as a beneficial means to individuals with high levels of narcissism because it may be used as a mechanism to improve how others treat them in the future.

Better treatment in the future, may be advantageous in terms of maintaining or boosting their grandiose self-views. Viewing the world in such a rigid way may help explain some of the negative outcomes (e.g., relationship issues) associated with narcissism. As stated previously, past research has found that individuals with high levels of narcissism are more likely to abuse romantic partners after experiencing jealousy (Ponti et al., 2020) or lash out when sexually rejected (Bushman et al., 2003). The mechanisms driving these responses have been unclear, but the present research sheds additional light on the possible cognitive process at play for individuals with high levels of narcissism. For instance, is possible that they are often viewing situations with their romantic partners in a very rigid, hostile, and incorrect way due to having high levels of dichotomous thinking.

At the clinical level, narcissism is a very difficult disorder to treat (e.g., Campbell & Crist, 2020), but these findings may have important implications for clinical settings. Given that one's level of narcissism is hard to change, it is possible that clinicians could focus on changing one's level of dichotomous thinking. This may be accomplished via cognitive behavioral therapy (e.g., clinicians focus on changing the narcissistic person's rigid thought pattern) or mindfulness (e.g., clinicians focus on teaching the narcissistic person how to notice but not act on their rigid thought pattern). Doing so may allow narcissistic individuals to see the nuance to situations, consider alternative perspectives, and exhibit healthier responses to situations. Overall, it is possible that decreasing one's level of dichotomous thinking may decrease the anger and aggressive behavior that is often associated with narcissism.

This research has illuminated the connections between narcissism and dichotomous thinking, but future studies are needed to replicate and expand upon these findings. It would be particularly beneficial to further explore the connections between different types of narcissism, especially neurotic narcissism, and dichotomous thinking, as the current studies yielded mixed results regarding this connection. Additionally, the writing prompt used in Study 3 may not have effectively allowed for dichotomous thinking to emerge, which may have contributed to the failure to replicate the patterns observed in Study 2. Therefore, future research should further investigate the role that dichotomous thinking plays in the connection between narcissism and anger using other approaches. Specifically, attempts to replicate the findings from Study 2 showing that dichotomous thinking mediated the link between narcissism and anger via hostile attributions would strengthen our understanding of the role of dichotomous thinking in the context of narcissism and anger. For example, future research could design studies where individuals come to the lab and are faced with ambiguous situations.

Future research should explore whether dichotomous thinking offers any potential benefits for different types of narcissism. While the current studies indicate that dichotomous thinking is linked with anger in individuals with high levels of narcissism through hostile attributions, it is possible that it could lead to some positive outcomes. For example, dichotomous thinking might be advantageous for narcissistic individuals in certain contexts. One possibility is that dichotomous thinking may enhance the performance of individuals with high levels of narcissism in leadership roles by enabling them to make quick decisions. Further, it is possible that having a rigid way of thinking could be beneficial when faced with adversity such that maintaining a very positive – or

possibly grandiose – self-view may contribute to resiliency for individuals with high levels of narcissism. Being an effective leader and remaining resilient in the face of adversity may lead to status gains via promotions at work for individuals with high levels of narcissism.

In addition, future research should examine other possible consequences related to dichotomous thinking for individuals with high levels of narcissism. Dichotomous thinking could shape how these individuals perceive themselves, leading them to adopt a rigid yet grandiose self-view. This cognitive distortion may result in feelings of entitlement, a reluctance to acknowledge mistakes, or the tendency to engage in risky behavior. Examining these connections could help clarify previous findings that suggest individuals with high levels of narcissism struggle to learn from critical feedback (Campbell et al., 2004), exhibit positive biases, such as excessive confidence (Macenczak et al., 2016), and engage in risky behavior (e.g., Buyl et al., 2019). These outcomes could have consequences at the interpersonal level for individuals with high levels of narcissism. For example, if having a rigid way of thinking prevents an individual with high levels of narcissism from considering alternative perspectives or consequences of their risky behavior, this may make them a very difficult co-worker or cause them to make poor financial decisions. Overall, further research should examine whether dichotomous thinking impacts individuals at the intrapersonal and interpersonal level.

The present studies had several strengths, including large sample sizes, but there are also potential limitations that need to be addressed. First, these studies relied solely on self-report measures for assessing narcissism, dichotomous thinking, and anger. This approach may have allowed socially desirable response tendencies to influence the results

(e.g., individuals may have downplayed their narcissistic traits). Future research should incorporate strategies that go beyond self-report measures, such as using observer reports from peers to assess narcissistic traits.

Second, the correlational nature of the studies means that the direction of causality between narcissism, dichotomous thinking, attributions, and anger cannot be established. The proposed model suggested that narcissism influences dichotomous thinking, which, in turn, affects anger. However, this causal relationship remains uncertain, as it is also possible that dichotomous thinking impacts narcissism or that another variable mediates the relationship between narcissism and anger. Future studies should explore these causal links using experimental designs or longitudinal approaches.

Lastly, the current studies were conducted at a single point in time, which limits the ability to assess changes in these constructs over time. Future research should examine whether dichotomous thinking changes over time, particularly since previous studies have shown that narcissism is a dynamic trait that can fluctuate (e.g., Giacomin & Jordan, 2016). Given the dynamic nature of narcissism, it is possible that individuals might shift from a neurotic form of narcissism to a more antagonistic form of narcissism when they are faced with a possible ego threat, and this shift may impact one's level of dichotomous thinking.

Despite these limitations, the results of the present studies enhance our understanding of the connections between narcissism, dichotomous thinking, and anger. The findings overall indicate that extraverted narcissism and antagonistic narcissism share a somewhat similar relationship with dichotomous thinking. In contrast, the relationship that neurotic narcissism has with dichotomous thinking remains unclear.

More importantly, the results of Study 2 show that dichotomous thinking mediated the associations that narcissistic personality traits have with anger via hostile attributions. This suggests that individuals with high levels of narcissism may experience anger due to their perception of ambiguous situations as hostile, a tendency that may be at least partly driven by dichotomous thinking. However, it is important to note that these results did not replicate in Study 3. Nevertheless, these findings to some degree imply that individuals with high levels of narcissism may view their world in strictly “black” and “white” terms, with no shades of grey.

APPENDIX A
MEASURES

FIVE FACTOR MODEL OF NARCISSISM (GLOVER ET AL., 2012; 15 ITEMS)

Instructions: Please read each item carefully and provide your answer that best corresponds to your agreement or disagreement. There are no right or wrong answers. Describe yourself honestly and state your opinions as accurately as possible.

Rating Scale: 1 = the statement is false or that you strongly disagree; 2 = the statement is mostly false or you disagree; 3 = the statement is about equally true or false, you cannot decide, or you are neutral on the statement; 4 = the statement is mostly true or you agree; and 5 = the statement is definitely true or you strongly agree

1. I am extremely ambitious.
2. Others say I brag too much, but everything I say is true.
3. Leadership comes easy for me.
4. When someone does something nice for me, I wonder what they want from me.
5. I deserve to receive special treatment.
6. I get lots of enjoyment from entertaining others.
7. It's fine to take advantage of persons to get ahead.
8. I often fantasize about someday being famous.
9. When people judge me, I just don't care.
10. I don't worry about others' needs.
11. I'm pretty good at manipulating people.
12. I often feel as if I need compliments from others in order to be sure of myself.
13. I hate being criticized so much that I can't control my temper when it happens.
14. When I realize I have failed at something, I feel humiliated.
15. I will try almost anything to get my "thrills".
16. I have a tremendous drive to succeed.
17. I only associate with people of my caliber.
18. I am comfortable taking on positions of authority.
19. I trust that other people will be honest with me.
20. I don't think the rules apply to me as much as they apply to others.
21. I like being noticed by others.
22. I will use persons as tools to advance myself.
23. I often fantasize about having lots of success and power.
24. I don't really care what others think of me.
25. I don't generally pay much attention to the woes of others.
26. I can maneuver people into doing things.
27. I am stable in my sense of self.
28. I have at times gone into a rage when not treated rightly.
29. I feel awful when I get put down in front of others.
30. I am a bit of a daredevil.
31. I aspire for greatness.
32. I do not waste my time hanging out with people who are beneath me.
33. Persons generally follow my lead and authority.
34. I'm slow to trust people.
35. It may seem unfair, but I deserve extra (i.e., attention, privileges, rewards).
36. I like being the most popular person at a party.

37. Sometimes to succeed you need to use other people.
38. I rarely fantasize about becoming famously successful.
39. I'm pretty indifferent to the criticism of others.
40. I'm not big on feelings of sympathy.
41. I can talk my way into and out of anything.
42. I feel very insecure about whether I will achieve much in life.
43. It really makes me angry when I don't get what I deserve.
44. I feel ashamed when people judge me.
45. I would risk injury to do something exciting.
46. I am driven to succeed.
47. I am a superior person.
48. I tend to take charge of most situations.
49. I often think that others aren't telling me the whole truth.
50. I believe I am entitled to special accommodations.
51. I love to entertain people.
52. I'm willing to exploit others to further my own goals.
53. Someday I believe that most people will know my name.
54. Others' opinions of me are of little concern to me.
55. I don't get upset by the suffering of others.
56. It is easy to get people to do what I want.
57. I wish I didn't care so much about what others think of me.
58. I feel enraged when people disrespect me.
59. I feel foolish when I make a mistake in front of others.
60. I like doing things that are risky or dangerous.

DICHOTOMOUS THINKING INVENTORY (OSHIO, 2009b; 15 ITEMS)

Instructions: To what extent do you agree with the following statements?

Rating Scale: 1 (strongly disagree), 2 (disagree), 3 (somewhat disagree), 4 (somewhat agree), 5 (agree), 6 (strongly agree)

1. All things work out better when likes and dislikes are clear.
2. It works out best when even ambiguous things are made clear-cut.
3. I dislike ambiguous attitudes.
4. I want to clarify whether things are "good" or "bad."
5. I prefer it when boundaries are clear for all things.
6. There are only "winners" and "losers" in this world.
7. I think all people can be divided into "winners" or "losers."
8. People can clearly be distinguished as being "good" or "bad."
9. All questions have either a right answer or a wrong answer.

10. I think of everyone as being either my friend or my enemy.
11. I want to clearly distinguish what is safe and what is dangerous.
12. Information should be defined as either true or false.
13. I want to clarify whether things are beneficial to me or not.
14. I prefer to classify information as being useful or useless for me.
15. It is best when competitions have clear outcomes.

INFORMATION PROCESSING–ATTRIBUTION BIAS QUESTIONNAIRE (SIP–ABQ) Instructions: Please read these short stories about relationships with other people and answer all questions asked about the story as honestly as possible. Please circle your answers where indicated.

Story 1. You tell a friend something personal and ask your friend not to discuss it with anyone else. However, a couple of weeks later, you find out that a lot of people know about it. You ask your friend why she/he told other people and your friend says: “Well, I don’t know, it just came up and I didn’t think it was a big deal.”

Rate the likelihood of each statement on a scale of 0–3:

- Not at all likely 0
- Unlikely 1
- Likely 2
- Very likely 3

- A. Why do you think your friend shared your secret when you told them not to share it with anyone?
 - A1. My friend wanted to expose my secret.
 - A2. My friend wanted to impress other people with their secret knowledge about me.
 - A3. My friend forgot that this was an important secret for me.
 - A4. My friend wanted me to feel stupid for asking to keep my secret.
- B. How likely is it that you would be angry if this happened to you?
- C. How likely is it that you would be embarrassed if this happened to you?
- D. How likely is it that you would be upset if this happened to you?

Story 2. Imagine that you are in a karate class competition and you have to demonstrate your abilities to your instructor. You are matched up to “fight” with someone in the class who you do not know well. While you are being evaluated, your karate classmate hits you in a way other than the way you were taught and you are hurt.

Rate the likelihood of each statement on a scale of 0–3:

- Not at all likely 0

Unlikely 1
Likely 2
Very likely 3

- A. Why do you think your karate classmate hit you in a way other than the way you were taught?
A1. My karate classmate wanted to physically hurt me.
A2. My karate classmate wanted to win the match.
A3. My karate classmate did it by accident.
A4. My karate classmate wanted to make me look “bad”.
- B. How likely is it that you would be angry if this happened to you?
C. How likely is it that you would be embarrassed if this happened to you?
D. How likely is it that you would be upset if this happened to you?

Story 3. Early one morning (at “rush hour”) you go to a busy local coffee shop to get a cup of coffee. While you are waiting, someone you see at the coffee shop regularly, but do not know personally, cuts in the line in front of you.

Rate the likelihood of each statement on a scale of 0–3:

Not at all likely 0
Unlikely 1
Likely 2
Very likely 3

- A. Why do you think this person cut in line in front of you?
A1. This person wanted to make me wait longer to get my coffee.
A2. This person was in a hurry to get in to work.
A3. This person didn’t realize that he (or she) cut in line in front of me.
A4. This person wanted me to feel unimportant.
- B. How likely is it that you would be angry if this happened to you?
C. How likely is it that you would be embarrassed if this happened to you?
D. How likely is it that you would be upset if this happened to you?

Story 4. Imagine that you and a group of your co-workers went on a business trip. While at the hotel, waiting to meet a customer, you stop to buy a cup of coffee. Suddenly, one of your co-workers bumps your arm and spills your coffee over your shirt. The coffee is hot and your shirt is wet.

Rate the likelihood of each statement on a scale of 0–3:

Not at all likely 0
Unlikely 1
Likely 2
Very likely 3

- A. Why do you think your coworker bumped your arm making you spill your coffee?
 - A1. My co-worker wanted to burn me with the hot coffee.
 - A2. My co-worker was focused on the meeting.
 - A3. My co-worker did it by accident.
 - A4. My co-worker wanted to make me look “bad” to the customer.
- B. How likely is it that you would be angry if this happened to you?
- C. How likely is it that you would be embarrassed if this happened to you?
- D. How likely is it that you would be upset if this happened to you?

Story 5. You make plans with one of your friends to go on a short trip for the weekend. You’re very excited about these plans and have been looking forward to the trip. However, at the last minute, your friend says that he (or she) no longer wants to go on the trip and has made plans with another friend for the weekend.

Rate the likelihood of each statement on a scale of 0–3:

- Not at all likely 0
- Unlikely 1
- Likely 2
- Very likely 3

- A. Why do you think your friend said he/she no longer wanted to go on the trip?
 - A1. My friend doesn’t want to be with me. 0 1 2 3
 - A2. My friend wanted to do something else.
 - A3. My friend forgot about the plans we made.
 - A4. My friend wanted me to feel unimportant.
- B. How likely is it that you would be angry if this happened to you?
- C. How likely is it that you would be embarrassed if this happened to you?
- D. How likely is it that you would be upset if this happened to you?

Story 6. One day at work you decide to go to the cafeteria for lunch. After you purchase your lunch, you notice that the seating area is very crowded and no empty tables are available. You notice one of your co-workers sitting alone at a small table and ask if you can join him (or her) for lunch. Your co-worker says “no”

Rate the likelihood of each statement on a scale of 0–3:

- Not at all likely 0
- Unlikely 1
- Likely 2
- Very likely 3

- A. Why do you think your coworker said “no”?
 - A1. My co-worker wanted to exclude me.
 - A2. My co-worker wanted to be alone at that time.

A3. My co-worker was “lost in thought” and didn’t realize I had asked to join him (or her).

A4. My co-worker wanted me to feel bad.

B. How likely is it that you would be angry if this happened to you?

C. How likely is it that you would be embarrassed if this happened to you?

D. How likely is it that you would be upset if this happened to you?

Story 7. Imagine that you go to the first meeting of a club you want to join. You would like to make friends with the other people in the club. You walk up to some of the other club members and say, “Hi!” but they don’t say anything back.

Rate the likelihood of each statement on a scale of 0–3:

Not at all likely 0

Unlikely 1

Likely 2

Very likely 3

A. Why do you think the club members didn’t say anything back to you?

A1. The club members wanted to ignore me.

A2. The club members were more interested in talking among themselves.

A3. The club members didn’t hear me say “Hi”.

A4. The club members wanted me to feel unimportant.

B. How likely is it that you would be angry if this happened to you?

C. How likely is it that you would be embarrassed if this happened to you?

D. How likely is it that you would be upset if this happened to you?

Story 8. You are driving in to work one day and just after you pull into a parking space, another car pulls up into the space to your right. As the person in the other car, a co-worker, gets out of his/her car, their car door hits your passenger side door and leaves a scratch on your car. The person walks away as you get out of your car.

Rate the likelihood of each statement on a scale of 0–3:

Not at all likely 0

Unlikely 1

Likely 2

Very likely 3

A. Why do you think this person acted this way?

A1. This person wanted to damage my car.

A2. This person was in a hurry to get in to work.

A3. This person scratched my car by accident and didn’t notice.

A4. This person wanted me to feel unimportant.

B. How likely is it that you would be angry if this happened to you?

C. How likely is it that you would be embarrassed if this happened to you?

D. How likely is it that you would be upset if this happened to you?

RECALL INSTRUCTIONS: Please recall an incident from your life that occurred during the past month where someone did something to you that was bad or unpleasant BUT you do not know why they engaged in that behavior. Please read the examples below to get an idea of what kind of incident we would like you to recall.

Example 1: One day at work you decided to go to the cafeteria for lunch. You noticed that the seating area was very crowded, and no empty tables were available. You noticed one of your co-workers sitting alone at a small table and asked if you could join them for lunch. Your co-worker said “no.”

Example 2: Early one morning (at “rush hour”) you went to a busy local coffee shop to get a cup of coffee. While you were waiting, someone you see at the coffee shop regularly, but do not know personally, cuts in the line in front of you.

Example 3: You made plans with one of your friends to go on a short trip for the weekend. You were very excited about these plans and had been looking forward to the trip. However, at the last minute, your friend says that they no longer want to go on the trip and has made plans with another friend for the weekend.

In each of these examples, something bad or unpleasant happened to the person, but they are not entirely sure about “why” these events happened. Please describe a similar situation that has happened to you during the past month below. Please write at least 3-4 sentences.

Questions for after the recall assignment:

1. How uncertain did you feel about this situation? 0 (Not at all uncertain) – 3 (Very uncertain)

2. Why do you think the person involved in this situation acted that way?

2a. The person had hostile attributions. That is, the person who did something unpleasant to me wanted to deliberately hurt me in some way. For example, this person may have wanted to physically harm me or make me feel bad.

0 (Not at all likely) – 3 (Very likely)

2b. The person had instrumental non-hostile attributions. That is, the person who did something unpleasant to me was trying to accomplish another goal. For example, this person may have been in a hurry or wanted to get a promotion at work.

0 (Not at all likely) – 3 (Very likely)

2c. The person had neutral or benign attributions. That is, the person who did something unpleasant to me did not intend to cause me any harm. For example, this person may have done something by accident or because they were distracted.

0 (Not at all likely) – 3 (Very likely)

3. How angry did this situation make you feel? 0 (Not at all angry) – 3 (Very angry)
4. How embarrassed did this situation make you feel? 0 (Not at all embarrassed) – 3 (Very embarrassed)
5. How upset did this situation make you feel? 0 (Not at all upset) – 3 (Very upset)
6. How much shame did this situation make you feel? 0 (Not at all upset) – 3 (Very upset)

APPENDIX B

FOOTNOTES

Study 2 Footnotes

1. I also examined whether dichotomous thinking would mediate the association between extraverted narcissism and anger after controlling for antagonistic narcissism and neurotic narcissism. The results of the analysis revealed that extraverted narcissism had a positive indirect association with anger through dichotomous thinking via hostile attributions ($a_1d_1b_2 = 0.01$, $z = 1.99$, $p = .046$, $CI_{95\%} [0.02, 0.03]$). This finding was similar to the effects already described in the text. In the primary analysis, a positive indirect effect emerged such that hostile attributions mediated the association between extraverted narcissism and anger. However, it is important to note that this effect did not emerge in this analysis. Further, in the primary analysis a negative indirect effect emerged such that instrumental non-hostile attributions mediated the association between extraverted narcissism and anger. This effect did not emerge in this analysis.
2. I examined whether dichotomous thinking would mediate the association between antagonistic narcissism and anger even after controlling for extraverted narcissism and neurotic narcissism. Tests of serial mediation showed that antagonistic narcissism had a positive indirect association with anger through hostile attributions ($a_2b_2 = 0.19$, $z = 5.34$, $p < .001$, $CI_{95\%} [0.13, 0.26]$). In addition, antagonistic narcissism had a negative indirect association with anger through instrumental non-hostile attributions ($a_3b_3 = -0.09$, $z = -3.57$, $p < .001$, $CI_{95\%} [-0.15, -0.05]$). Tests of serial mediation showed that antagonistic narcissism had a positive indirect association with anger through dichotomous thinking via hostile

attributions ($a_1d_1b_2 = 0.02$, $z = 2.29$, $p = .022$, $CI_{95\%} [0.00, 0.04]$). These results were similar effects already described in the text.

3. I examined whether dichotomous thinking would mediate the association between neurotic narcissism and anger even after controlling for extraverted narcissism and antagonistic narcissism. Tests of serial mediation showed that neurotic narcissism had a positive indirect association with anger through instrumental non-hostile attributions ($a_3b_3 = 0.05$, $z = 2.53$, $p = .011$, $CI_{95\%} [0.01, 0.09]$). Neurotic narcissism had a negative indirect association with anger through benign attributions ($a_4b_4 = -0.03$, $z = -2.23$, $p = .025$, $CI_{95\%} [-0.06, -0.01]$). Tests of serial mediation showed that neurotic narcissism had a positive indirect association with anger through dichotomous thinking via hostile attributions ($a_1d_1b_2 = 0.01$, $z = 2.04$, $p = .041$, $CI_{95\%} [0.00, 0.03]$). These results were similar effects already described in the text. It is important to note that in the primary text, antagonistic narcissism had a positive indirect association with anger through hostile attributions. However, it is important to note that this effect did not emerge in this analysis.
4. Although I framed dichotomous thinking as a mediator of the associations that narcissism has with anger, I also examined the possibility that dichotomous thinking moderated the association that narcissism has with anger. The results revealed that dichotomous thinking did not moderate the associations that the different types of narcissism have with anger.
5. I also included sex as a potential mediator. However, sex did not emerge as a significant mediator in these analyses nor were the

reported results significantly changed by the inclusion of sex in the analysis. Consequently, I did not include sex in the final analyses in the interest of parsimony.

Study 3 Footnotes

6. I examined whether dichotomous thinking would mediate the association between antagonistic narcissism and anger even after controlling for extraverted narcissism and neurotic narcissism. Hostile attributions ($b_2 = 0.05$, $t = 2.01$, $p < .044$, $CI_{95\%} [0.01, 0.10]$) had a positive association with anger. This result was similar to the effect already described in the text.
7. Although I framed dichotomous thinking as a mediator of the associations that narcissism has with anger, I also examined the possibility that dichotomous thinking moderated the association that narcissism has with anger. The results revealed that dichotomous thinking did not moderate the associations that the different types of narcissism have with anger.
8. As in Study 2, I also included sex as a potential mediator. However, sex did not emerge as a significant mediator in these analyses nor were the reported results significantly changed by the inclusion of sex in the analysis. Consequently, I did not include sex in the final analyses in the interest of parsimony.

APPENDIX C
IRB APPROVAL LETTERs

IRB-FY2021-87 - Initial: Exempt Decision

3 messages

do-not-reply@cayuse.com <do-not-reply@cayuse.com>
To: jkvrabel@oakland.edu, zeiglerh@oakland.edu

Thu, Sep 24, 2020 at 8:59 AM



Institutional Review Board

September 24, 2020

Protocol #: IRB-FY2021-87

Research Team:
Jennifer Vrabel
Virgil Zeigler-Hill

Based on applicable federal regulations, the following study, "Personality and Cognitive Styles " has been determined to be Exempt, with the following categories Category 2.(ii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).

Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation.

Letter and Consent Document:

This letter along with the IRB date stamped consent document can be found in Cayuse in the [Submission Details](#) page under [Letters](#) and [Attachments](#), respectively.

The IRB date stamped consent document must be downloaded and used in consenting participants.

Modifications:

Any changes to this exempt project must be reviewed by the IRB prior to initiation by submitting a MODIFICATION request. Do not collect data while the changes are being reviewed. Data collected during this time cannot be used in research.

Record Retention:

Exempt projects will be retained by the IRB office for three years after the last action on the project.

You are approved to start the research. Please retain a copy of this notification for your records.

If you have any questions, please contact the IRB office.

Thank you.

The Oakland University IRB



Institutional Review Board

Date: December 21, 2022

Study #: IRB-FY2021-205

Study Title: Interpersonal Situations

Submission Type: Modification

IRB Decision: Exempt

Research Team:
Virgil Zeigler-Hill

The IRB has reviewed the Modification submission related to the above referenced study and determined that the changes listed below do not affect the exemption status of the study. The Modification submission is Approved and the study remains Exempt per federal regulations.

The approved modifications are the following:

- Increase number of participants from 1000 to 2000.
- Change in survey questions

You are approved to implement the aforementioned modifications. Please retain a copy of this notification for your records.

This letter can also be found in Cayuse under the Letters tab in the Submission Details page.

If you have any questions, please contact the IRB office.

Thank you.

The Oakland University IRB



Institutional Review Board

Date: May 15, 2023

Study #: IRB-FY2022-380

Study Title: Personality and Romantic Relationships S22

Submission Type: Modification

IRB Decision: Exempt

Research Team:

Virgil Zeigler-Hill

The IRB has reviewed the Modification submission related to the above referenced study and determined that the changes listed below do not affect the exemption status of the study. The Modification submission is Approved and the study remains Exempt per federal regulations.

The approved modifications are the following:

1. Increase the sample size from 1,000 to 1,500.
2. Revise the questionnaires.

This submission includes the following approved documents:

- Date-Stamped Information Sheet V 5/15/23
- Revised Survey Questionnaire

The IRB approved (date-stamped) information sheet has been published under Attachments in the Submission Details page. Please make sure to use the most recent IRB approved version of the consent form in consenting participants.

You are approved to implement the aforementioned modifications. Please retain a copy of this notification for your records.

This letter can also be found in Cayuse under the Letters tab in the Submission Details page.

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