Running head: WHO IS THE MOST ENVIOUS?

Who is the most envious of them all?

Examining how 3 narcissistic subtypes relate to dispositional and episodic envy

by

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Abstract

Both clinical theory (Kernberg, 1974a) and diagnostic nomenclature (DSM-IV-TR; APA, 2000) describe narcissists as envious, although what little evidence exists suggests this relationship may be weak or nonexistent (Gold, 1996). To examine this discrepancy, 204 young adult students completed dispositional measures of narcissism (grandiose [adaptive, pathological] and vulnerable), entitlement, and envy. Later, students competed against ostensibly advantaged opponents in a betting simulation, completed self-report measures of relative deprivation and envy, and could spend some of their earnings to *burn* their opponents' earnings (assessing possible behavioural effects of envy). Structural equation models were evaluated for each episodic envy variant (self-reported, behavioral, indirect). Only the self-reported envy model demonstrated adequate fit and variance explained. Vulnerable narcissism strongly predicted envy via a "trait" route entailing susceptibility to chronic envy and a "triggered" route implicating frustrated entitlements, whereas adaptive narcissism predicted envy via the "triggered" route only. Possible theoretical and clinical implications are discussed.

Keywords: narcissism, envy, entitlement, structural equation modeling (SEM)

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Who is the most envious of them all? Examining how 3 narcissistic subtypes relate to dispositional and episodic envy

Narcissistic personality disorder (NPD) has been conceptualized as consisting in a pervasive pattern of grandiosity and self-importance, a lack of empathy, and sense of entitlement (American Psychiatric Association, 2000). While these traits may provide some short-term benefits (such as confidence in social situations, achievement motivation, and competitiveness), the inflexibility of these traits are ultimately maladaptive and often result in functional impairment and strained interpersonal relationships (Miller, Campbell, & Pilkonis, 2007). Despite a grandiose exterior, theorists have long suspected narcissism is coupled with fragility (Kernberg, 1974a, 1974b). Indeed, the Diagnostic and Statistical Manual of Mental Disorders-IV-Text Revision (DSM-IV-TR; APA, 2000) describes narcissists as highly envious of others – an emotion that implies feelings of inferiority (Smith & Kim, 2007). However, NPD may be diagnosed when envy is absent. Despite a rich theoretical basis suggesting a linkage exists, minimal empirical research explores this important clue to narcissistic fragility. What little evidence does exist suggests there may be no relationship (or, at best, a weak relationship) between these constructs. In particular, research utilizing the most widely used measure of narcissism (the Narcissistic Personality Inventory; NPI) found no association between self-reported dispositional envy and narcissism (Gold, 1996).

Identifying whether narcissists are envious is an important question in clinical and social/personality psychology. Kernberg (2007) writes that envy is a critical barrier to effective psychotherapy and a collaborative treatment approach with narcissists. Understanding why narcissists may be vulnerable to frequent and intense envy will aid

clinicians in treating these individuals and developing effective interventions to reduce this painful emotional experience. For social/personality theorists, these insights may complement and clarify the many findings on how narcissists respond in social situations, such as aggressing against outperformers (Bushman & Baumeister, 1998).

A comprehensive examination of the narcissism-envy relationship necessitates several important considerations. Narcissism may be comprised of at least two distinct subtypes: grandiose and vulnerable. Although there is some uncertainty about how to conceptualize narcissism as measured by the NPI, it appears to assess some degree of grandiose narcissism. However, it neglects the important dimensions of hypersensitivity and shame-proneness underlying the second subtype (e.g., Hibbard, 1992; Pincus, Ansell, Pimentel, Cain, Wright, & Levy, 2009). This distinction implies that, while grandiose narcissists may appear unwilling or unable to acknowledge their pathological weaknesses, vulnerable narcissists are more able to do so and may therefore show an association with envy on self-report measures. Envy may be conceptualized as both a dispositional trait and an episodic state. This important distinction implies that narcissists may experience intense episodic envy even if they indicate no proclivity towards dispositional envy. Both groups would be expected to show linkages with envy on behaviours that reflect envy but do not require acknowledging envious feelings or thoughts. Thus, there is an important difference between experiencing, acknowledging, and acting on episodic feelings of envy and acting on this envy that may be reflected across narcissistic subtypes.

In this study I incorporate ideas related to the distinctions between grandiose and vulnerable narcissism, dispositional and episodic envy, and incorporate several measures

that may potentially measure episodic envy (self-report, behavioural, and indirect). Additionally, I test and evaluate a conceptual model specifying how grandiose and vulnerable narcissism may uniquely relate to envy, as well as intermediary variables that may mediate these relationships.

Conceptualizing narcissism: Categorical or dimensional?

The DSM-IV-TR (APA, 2000) conceptualizes NPD categorically as a syndrome defined by a "pervasive pattern of grandiosity (in fantasy or behavior), need for admiration, and lack of empathy (p. 685)." This implies that NPD is a distinct personality disorder that can be differentiated from other personality disorders by its central features of superiority and specialness, along with other characteristic symptoms. Envy represents one characteristic symptom of NPD, alongside others such as entitlement and exploitativeness.

In addition to the discrete categorical understanding used in the DSM-IV-TR, NPD has also been conceptualized as a continuous dimensional aspect of normal personality (cf. Freud, 1957). From this perspective, an individual could possess varying degrees of a trait such as narcissism rather than be classified dichotomously (present/absent). A separate though related issue is methodological, as personality traits can be assessed using categorical or continuous measures. Continuous measures have frequently been used in narcissism research, such as the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979). The present study operationalizes narcissism as a continuous, dimensional personality variable that is best assessed using continuous measures.

Over the past 20 years, the majority of studies that assessed narcissism as a dimensional personality trait using continuous measures, among which the NPI emerged as the most popular assessment tool. This 40-item measure was developed based on DSM-III NPD criteria. Most theorists agree that the NPI contains distinct factors, although they disagree on how many factors exist. Emmons' (1984) 4-factor solution has been one of the two most widely accepted. His proposed factors include Leadership/Authority (L/A), Self-Absorption/Self-Admiration (S/S), Superiority/Arrogance (S/A), and Exploitativeness/Entitlement (E/E). Alternatively, Raskin and Terry (1988) propose a 7-factor solution that includes Superiority, Authority, Exhibitionism, Self-Sufficiency, Vanity, Exploitativeness, and Entitlement.

While the NPI has proven useful in some ways across research studies, it has also been heavily criticized. Some authors cite its inconsistent factor structure and weak psychometric properties (Brown, Budzek, & Tamborski, 2009). The generally weak internal consistency of Emmons' E/E factor (dipping as low as α=.44) has led some researchers to report only total NPI scores rather than subscale scores (Tamborski & Brown, 2011). However, this approach is misleading because the NPI appears to contain both adaptive and maladaptive factors (Ackerman, Witt, Donnellan, Trzesniewski, Robins, & Kashy, 2011), with the majority of items capturing adaptive aspects (Pincus et al., 2009). This has prompted speculation that the NPI may only address a portion of the narcissism continuum, limited to a relatively adaptive form of the construct.

Finally, the NPI has been criticized for capturing only one form of narcissism. While it assesses a grandiose variant of narcissism, it ignores a second, vulnerable subtype of narcissism that has generated considerable research attention and is described

in more detail in the next section (Pincus et al., 2009). In contrast to vulnerable narcissists who display high neuroticism coupled with low agreeableness and extraversion on the Big Five personality traits, individuals who score high on the NPI tend to be extraverted but show little neuroticism, though they are similarly disagreeable (Ackerman et al., 2011; Miller & Maples, 2011). Additionally, NPI scores do not predict self-reported shame (Watson, Hickman, & Morris, 1996) and are negatively related to depression (Watson, Sawrie, Greene, & Arredono, 2002). As Pincus and Lukowitsky (2010) write, individuals with high NPI scores are "reactive to unmet expectations, resistant to feedback disconfirming of positive self-views, manipulative, self-enhancing, prone to aggression, and exhibiting a dominant interpersonal style" (p.425). In summary, it appears that the NPI is omitting vulnerable narcissism and doing an inadequate job of assessing grandiose narcissism.

Narcissism and its subtypes

Miller, Widiger and Campbell (2010) indicate that narcissism encompasses a variety of pathological characteristics and interpersonal consequences. Narcissists frequently utilize self-enhancement strategies to regulate their self-esteem and employ a variety of cognitive distortions. As a result, they overestimate their knowledge, abilities and social contributions relative to others. In relationships, narcissists typically make positive first impressions, but these favourable images fade over time, due in large part to the self-centered nature of narcissists' interpersonal behaviour. Narcissists also lack insight into aspects of their personality, as evidenced by low correlations among self- and observer-ratings.

Grandiose narcissists generally possess high explicit self-esteem and report low levels of self-conscious emotion, such as shame (Watson, Hickman, & Morris, 1996). Gramzow and Tangney (1991) found that total NPI scores were negatively correlated with shame. However, the maladaptive Exploitativeness/Entitlement (E/E) factor of the NPI was positively correlated with self-reported shame. Gabbard (1994) remarks that grandiose narcissists appear "oblivious" because they lack awareness of their impact on others: they are self-absorbed, need to be the center of attention, and are surprisingly unaware of others' negative reactions towards them (e.g., frustration, boredom). They are highly competitive and keenly aware of opportunities for self-promotion – chances to demonstrate their superiority and reinforce their grandiose self (Morf & Rhodewalt, 2001). Grandiose narcissists typically respond aggressively following a narcissistic "injury" (also referred to as "ego threat"), such as being outperformed by a peer, and regulate their self-esteem by seeking continued success in competitive domains (Bushman & Baumeister, 1998; Zeigler-Hill, Clark, & Pickard, 2008).

Vulnerable narcissism is currently unrecognized by the DSM-IV-TR as a subtype of NPD, and therefore does not enjoy the same validation as grandiose narcissism. However, this second subtype has been proposed by the Psychodynamic Diagnostic Manual (American Psychoanalytic Association, 2006), clinical writings (Gabbard, 1994; Kernberg, 1984; Kohut, 1971), and an abundance of social, personality, and clinical research studies (cf., Cain, Pincus, & Ansell, 2008). Including both grandiose and vulnerable narcissistic subtypes may prove to be a useful distinction. Several labels have been used to identify this vulnerable narcissistic subtype, including depleted (APA,

2006), covert (Hendin & Cheek, 1997), and shy (Ronningstam, 2005). I will consistently use the label *vulnerable* in this paper, unless citing literature that uses other terms.

Vulnerable narcissism appears strikingly different from grandiose narcissism. Vulnerable narcissists manifest low self-esteem that is contingent across a breadth of domains (Zeigler-Hill, Clark, & Pickard, 2008). Unlike its grandiose counterpart, there are no self-protective benefits of vulnerable narcissism: these individuals are hypersensitive to chronic feelings of shame and emptiness (Cain, Pincus, & Ansell, 2008). In a study by Wink (1991), spousal ratings characterized vulnerable narcissists (but not grandiose narcissists) as worrying, emotional, defensive, anxious, and immature.

These differences between narcissistic subtypes are also illustrated in their respective attributional styles (Holdren, 2004). When grandiose narcissists encounter negative life events, they typically make defensive attributions (to external, unstable, and specific causes); in contrast, vulnerable narcissists make pessimistic attributions (to internal, stable, and global causes). Other research has suggested that this latter attributional style is related to shame-proneness (Tracy & Robbins, 2004). For positive events (actual and hypothetical), grandiose narcissists tend to make self-enhancing attributions (to internal, stable, and global causes) while vulnerable narcissists demonstrate no consistent attributional pattern.

These subtypes also differ in terms of their conscious and unconscious social motives. Sturman (2000) found that grandiose narcissism (as measured by NPI total scores) was positively associated with unconscious dominance motivation whereas the E/E factor was negatively correlated with unconscious affiliation motivation. In conscious daily behaviour, grandiose narcissism was positively associated with power

motivation – pursuing interpersonal influence, impact, and positions of leadership. Foster and Trimm (2008) note that grandiose narcissism has been strongly linked to approach motivation and weakly to avoidance motivation, as evident in their friendship strategies, risk taking and decision making strategies. In contrast, vulnerable narcissism (as measured by the Serkownek Narcissism-Hypersensitivity Scale) was negatively related to unconscious motives for power, dominance and affiliation and demonstrated no significant correlations with conscious motives (Sturman, 2000).

While considerable differences between these subtypes have been illustrated, these subtypes share underlying core features that warrant their mutual inclusion as narcissistic subtypes. Pincus and Roche (2011) suggest that a broad, inclusive understanding of narcissism reflects efforts to maintain a positive self-image through an inflexible and excessive pursuit of self-enhancement opportunities and admiration coupled with dysfunctional self- and affect-regulatory strategies. Additionally, these subtypes share a pervasive sense of entitlement, feeling they ought to possess something even when no justifiable basis exists (Dickinson & Pincus, 2003). Narcissists exemplify entitlement in daily life, believing they are deserving of special treatment, status, and exemption from normative rules and laws (Morf & Rhodewalt, 2001; Beck, Freedman, & Davis, 2004). They are easily offended by others' transgressions, view forgiveness as costly and morally unappealing, and are less likely to forgive others immediately and over time (Exline, Baumeister, Bushman, Campbell, & Finkel, 2004). Consequently, narcissists' romantic relationships tend to suffer. They make self-centered choices, exhibit a lack of empathy, and alternate between idealizing and devaluing their partners – behaviours that result in psychological distance between partners, infidelity, and

ultimately the destruction of their romantic relationships (Akhtar, 2009). Taken together, narcissists' pervasive sense of entitlement, motivation to self-enhance at all costs, and depleted regulatory capacity to cope with negative outcomes may promote feelings of envy. However, due to the important differences between these subtypes in several respects (e.g., characteristic symptoms, attributions, contingent self-esteem, and approach/avoidance motivation), envy may manifest very differently in either subtype.

Clinical theory suggests both subtypes are vulnerable to experiencing envy. Otto Kernberg (1974a; 1974b; 1984; 2007) wrote that narcissists experience frequent and intense envy (both conscious and unconscious) as they constantly compare themselves to others. These comparisons elicit painful feelings of inferiority and longing in the narcissist. This pervasive envy is most evident in therapy where the narcissist encounters an "expert" therapist whose creativity and brilliance threatens his/her grandiose self. Although the narcissist may initially idealize the therapist, this idealization is defensive and temporary; it will quickly turn to devaluation and envy if the narcissist perceives the therapist as superior to him/herself (Kernberg, 2007). In his view, successful treatment must investigate "the resentment and envy of the therapist's good life, the wishes to destroy it, and that the sense of the good image of the therapist inside has been destroyed by the patient's own reaction of hatred" (Clarkin, Yeoman, & Kernberg, 2006, p.304).

Heinz Kohut also wrote extensively on narcissism. Although envy did not share the same prominent place as in Kernberg's writings, it still played an important role. Kohut (1971) suggested that narcissists' "predominant tendency is to be overwhelmed by shame" resulting from a failure to meet their own goals or ideals (p.232). Intense envy often followed these feelings of shame, leading to self-destructive impulses (e.g.,

aggression) that he labelled as narcissistic rage. This is an important basis for my hypothesis that grandiose and vulnerable narcissists are so highly motivated to harm others, threatening that they are willing to sacrifice their own advantage.

Gabbard (1994) comments that Kernberg and Kohut's writings largely pertain to different narcissistic subtypes, with Kernberg describing more severe grandiose narcissistic pathology (from an inpatient and outpatient sample) and Kohut describing a milder form of vulnerable narcissism among outpatients. While envy is characteristic of both narcissistic subtypes, several authors have commented that (unlike grandiose narcissists) the primary problem for vulnerable narcissists is shame, with envy relegated to a secondary status (Pincus & Lukowitsky, 2010; Ronningstam, 2005).

Envy: Components and variants

Envy is a complex and multifaceted emotion. Conceptually, envy is comprised of four principal components: longing, hostility, inferiority and resentment (Smith, Parrott, Diener, Hoyle, & Kim, 1999). This unpleasant emotion arises when a person becomes aware of another person or group who enjoy(s) a desired possession (Smith et al., 1999). This unflattering social comparison with such an individual is particularly likely to lead to envy when the possessor of the desired object (hereafter referred to as the possessor) is similar to the envier, as this provides some basis to expect similar outcomes (Smith & Kim, 2007). Additionally, envy often occurs along self-relevant comparison domains – areas in which one's performance carries high importance to the self (Tesser, 1991).

The negative social comparison intrinsic to envy revolves around a desired object or status one wishes to obtain. This is self-evident, as an undesirable or neutral object would not be expected to provoke envy towards its possessor. Some theorists have

equated longing with envy, partitioning out its other relevant attributes as discrete emotions that co-occur or follow envy (Feather & Sherman, 2002; Leach & Spears, 2008). However, as many authors argue, envy necessarily includes a blending of other emotions (e.g., Brigham, Kelso, Jackson, & Smith, 1997; Kets de Vries, 1992; Parks, Rumble, & Posey, 2002).

Hostility towards the possessor is one such necessary emotion within envy. The intensity of envy appears to vary on a continuum as a result of the degree of hostility present: from mild forms expressed as chagrin or discontent, to moderate forms expressed as resentment or ill will, and finally severe forms experienced as a desire to destroy the envied object and/or impulses to perform spiteful, malicious action towards the possessor (Spielman, 1971). While hostility can vary in intensity, it is always present to some degree in envy. Envy proper is fundamentally different from benign, hostility-free envy, which is better labelled as admiration and differs in terms of felt experience and likely consequences (Cohen-Charash, 2009; D'Arms & Kerr, 2008; Smith & Kim, 2007).

Envy is a social comparison based emotion that threatens one's self-worth and underscores feelings of inferiority (Powell, Smith, & Schurtz, 2008). As such, it is particularly painful when a similar person possesses a desired object, particularly when it involves a self-relevant domain. The classmate accepted to graduate school, the co-worker receiving the promotion you hoped for, or the teammate receiving additional playing time or top-line status – they may all prompt agonizing discomfort. Spielman (1971) referred to this sense of inferiority as a "narcissistic wound" – a painful sensation connected to feelings of inadequacy and injured self-esteem. Envy also shares a close

relationship with shame. While envy is caused by specific negative comparisons including hostility that are directed toward the possessor (versus shame's origins as more generalized and resulting in hostility-free, self-conscious introspection), envy has a shame-based component as both are responses to a devalued self (Smith & Kim, 2007). Additionally, envy's socially undesirable nature tends to limit its public expression, further exacerbating inferiority feelings and making hostile affective reactions more likely (Smith et al., 1999; Smith & Kim, 2007).

Resentment is the final component within envy and is concerned with injustice. The envier may believe, "I ought to have that!" which the possessor holds, yet lacks it. In situations where one's failure to obtain the item is objectively unfair, such as discriminatory-based hiring practices, the result is righteous indignation. Unlike envy, this emotion enjoys social validation and is often expressed publically (Powell, Smith, & Schurtz, 2008). Envy's sense of unfairness and resentment is subjectively derived, although the envier may foster evidence of unfairness to legitimize envious feelings (Smith, Parrott, Ozer, & Moniz, 1994; Smith & Kim, 2007). Resentment is a crucial component of envy; in its absence, the hostile aspect of envy lacks justification and is absent. Additionally, feelings of inferiority without resentfulness lead to depressive symptoms, rather than hostility (Smith & Kim, 2007; Smith et al., 1994).

Envy can be conceptualized and measured as both a stable dispositional trait and an episodic emotional state. Dispositional envy scales assess a propensity for enviousness via sensitivity to envy's primary components. Chronically envious individuals may expect low rankings relative to others on important comparison domains, be highly sensitive to negative social comparisons and slights from others, and possess

impoverished coping mechanisms for dealing with envy in more constructive ways (e.g., reframing, ignoring) (Smith et al., 1999). Additionally, dispositionally envious individuals may be predisposed to experience frustration and subjective feelings of deprivation in response to upward social comparisons, and to respond with hostility and ill will (Smith et al., 1999). These individuals are susceptible to frequent and intense bouts of envy as a result.

At present, there are two dispositional envy scales being utilized in the empirical literature. The Dispositional Envy Scale (DES; Smith et al., 1999) is an 8-item, unifactoral scale. In the validation sample, the DES was moderately correlated with depression ($.36 \leq r \leq .51$), neuroticism ($.41 \leq r \leq .56$), hostility ($.48 \leq r \leq .51$), and was mildly correlated with resentment ($r = .33$). The DES also showed moderate-to-high negative correlations to self-esteem ($-.65 \leq r \leq -.41$) and mild negative correlations to self-reported happiness ($r = -.35$). Finally, the DES predicted experiences of envy over a period of 4 weeks across multiple social comparison domains and did so beyond individual differences in neuroticism and social desirability.

The second scale, the York Enviousness Scale (YES; Gold, 1996), has received less attention in the research literature. It is a 20-item, unifactoral scale that includes subtler envy-probing questions than the DES (e.g., no YES items contain the word "envy," while 4 of 8 DES items do). The YES was moderately correlated with trait anger ($r = .43$), hostility ($r = .47$), and inferiority ($r = .45$). Additionally, the YES demonstrated mild to moderate correlations with the depression ($r = .41$), anxiety ($r = .43$), phobic anxiety ($r = .47$), obsessive-compulsive ($r = .37$), and somatization ($r = .27$) subscales of the Brief Symptom Inventory.

Envy appears to be a universally experienced emotion (Cohen, 1986). While some individuals are predisposed to dispositional envy, all experience episodic envy from time to time. Yochi Cohen-Charash has developed the Episodic Envy Scale (2009), a 9-item, 2-factor scale. The Feeling factor assesses a person's negative, hostile emotional experience, while the Comparison factor focuses on the negative social comparison with the envied person. In support of Smith and Kim's (2007) assertion that longing, inferiority, hostility and resentment must be present for dispositional envy to occur, Cohen-Charash contends that Feeling and Comparison factors that encompass these emotions must be jointly present to produce envy. However, these factors demonstrate unique relationships with behavioural and emotional correlates of envy. While the Feeling factor correlated with negative emotional reactions (hostility, anxiety, depression, and mood disturbance) and behaviours intended to harm the possessor, the Comparison factor was related to efforts to improve one's own position (e.g., working harder, building new alliances with others) and inwardly-directed negative emotional reactions (anxiety, depression, and mood disturbances). In addition, the Episodic Envy Scale predicted these relationships beyond the DES. Episodic envy appears to be distinct from dispositional envy as the former appears more complex (bifactoral versus unifactoral structure), it may lead to positive or negative consequences (while dispositional envy generally leads to undesirable outcomes), and is only mildly correlated with the DES (r=.34).

Literature linking narcissism and envy

With a deepened conceptualization of both narcissism and envy, I return to Gold's (1996) study, briefly mentioned in the initial paragraph. His study is one of only two in the literature base that empirically tested the relationship between envy and narcissism.

Specifically, his study examined the relation between dispositional envy (as measured by the York Enviousness Scale) and various indicators of maladjustment, including grandiose narcissism (as measured by the NPI). While the YES was correlated with numerous indicators (see p.9), there was no correlation between the YES and the total NPI score or any of its factors.

How far can these conclusions be generalized? This study included a measure of one's envious tendencies, which may be consciously denied, minimized or beneath conscious awareness (Kernberg, 2007; Smith, Combs, & Thielke, 2008). Narcissists (particularly grandiose narcissists) expend great effort to maintain a positive self-presentation and utilize self-aggrandizing strategies; admitting to regular, intense experiences with envy would undo this motivated self-construction (Morf & Rhodewalt, 2001; Rhodewalt, Tragakis, & Finnerty, 2006). Viewed in this light, the null finding between grandiose narcissism and dispositional envy in the absence of any envy-inducing situation is not surprising. Additional concerns arise in the use of a 7-factor NPI structure (as suggested by Raskin and Terry, 1988), rather than Emmons' (1984) 4-factor structure more commonly seen in the literature, making comparison with other studies difficult. All 80 participants in this study were female students, an important fact when considering that males typically score higher than females on the NPI (Morf & Rhodewalt, 2001). Finally, the NPI has been criticized by some researchers as a measure of "psychological adjustment, interpersonal dominance, and aggression," a mixture of adaptive and

maladaptive traits that is inappropriate as a measure of subclinical narcissism (Pincus et al., 2009, p. 376).[1]

A second study in the literature included measures of narcissism and envy: Luglio (2002) examined whether childhood familial injustice predicted dispositional envy in adulthood, and whether vulnerable narcissism acted as a mediator. She found that vulnerable narcissism mediated this relationship. More importantly (for the present purposes), vulnerable narcissism predicted dispositional envy. She used the Hypersensitive Narcissism Scale to assess vulnerable narcissism (HSNS; Hendin & Cheek, 1997) and a different measure of dispositional envy, the Dispositional Envy Scale (DES; Smith et al., 1999).

These two studies suggest that grandiose narcissism may be unrelated to dispositional envy, while vulnerable narcissism may predict dispositional envy. The relationship between these narcissistic subtypes and episodic envy, however, remains untested. In this next section, I present a theoretical rationale for relating narcissistic subtypes to episodic envy, specify a testable model, including intermediary constructs that may partially or fully mediate this relationship, and discuss preliminary findings from an initial test of this model.

Theoretical rationale for linking narcissism and envy

Although envy is a symptom of NPD and has been observed clinically, the theoretical basis for this relationship is undeveloped. As mentioned earlier, narcissists' pervasive sense of entitlement, excessive need for self-enhancement and admiration, and

[1] This opinion is not universally endorsed, however; other researchers suggest the NPI generates similar personality profiles to individuals with clinical levels of grandiose narcissism (e.g., Miller, Gaughan, Pryor, Kamn, & Campbell, 2009).

difficulties in coping with undesirable outcomes suggest that envy - a painful emotional state prompted by an unflattering comparison with an advantaged other - might be expected to accompany failure to reach anticipated goals.

For grandiose narcissists, unmet expectations stemming from a sense of entitlement prompt frustration, anger and devaluing others; vulnerable narcissists share these entitled expectations and experience anger when these are unsatisfied, but also feel shame and depression (Dickinson & Pincus, 2003). This entitlement stems from the belief in one's grandiose self, a reality for grandiose narcissists and fantasy for vulnerable narcissists. This sense that desired objects are owed to them accompanied by tendencies to make frequent social comparisons may result in frustration and resentment when these entitlements go unmet. This may also accent underlying inferiority feelings in the self (Campbell et al., 2004; Smith et al., 1999). In short, entitled beliefs about themselves leave narcissists susceptible to experiencing envy.

Narcissists appear vulnerable to both dispositional and episodic variations of envy. Particularly for grandiose narcissists, their competitive strivings for dominance and self-promotion at all costs and across situations makes failure to attain one's entitlements a real and likely possibility (Dickinson & Pincus, 2003). In contrast, vulnerable narcissists struggle to integrate grandiose fantasy and powerful entitlements with a reality of unmet expectations, making unflattering comparisons with others likely. Thus, heightened but unsatisfied levels of entitlement in narcissists may lead to a dispositional sensitivity to envy –experiences that are frequent and intense in nature (Smith et al., 1999). On the basis of these studies and writings I expect that entitlement will mediate any relationship between narcissism and dispositional envy.

How this relationship manifests itself empirically, however, is complicated by the different capacities of grandiose and vulnerable narcissists to perceive and report on feelings of envy. In light of the research findings by Gold (1996) and Luglio (2002), I predict that grandiose and vulnerable narcissistic subtypes will relate differently to dispositional envy. I do not expect a relationship to emerge between grandiose narcissism and dispositional envy for two reasons. First, dispositional envy assesses envious tendencies via self-report; individuals complete these measures in the absence of any envy-inducing situation or comparison. Grandiose narcissists may not be aware of their envious tendencies, if these tendencies exist. Secondly, admitting to envy is tantamount to admitting one's inferiority; from previous descriptions of this narcissistic subtype, I can reasonably expect that any envy they may be aware of would either be minimized or adamantly denied. This tendency to bypass threatening emotions is evident in studies on shame and other self-conscious emotions. As O'Leary and Wright (1986) write, grandiose narcissists are well-stocked in defensive mechanisms and defend against emotions that undo their exterior facade. They also demonstrate a lack of insight regarding their own behaviour (Pincus & Lukowitsky, 2010). Envy is not strictly a self-conscious emotion (Tracy & Robbins, 2004). However, envy and shame are closely related emotions. Both involve a focus on the inferior aspects of the self; additionally, envy may be an antecedent to or a consequence of shame (Smith & Kim, 2007). This suggests that if grandiose narcissists possess a dispositional sensitivity to envy, they may be less aware of their tendencies than less narcissistic individuals, and they may consciously deny or minimize any feelings of envy they are consciously aware of.

Conversely, I expect vulnerable narcissists will be dispositionally envious and willing to admit to these tendencies. Luglio's (2002) positive research finding suggests that vulnerable narcissists feel dispositionally envious. Additionally, vulnerable narcissists endorse experiencing shame (Arble, 2008; Gramzow & Tangney, 2002), depression (Wink, 1992), social anxiety (Schurman, 2001), an anxious attachment style (Otway & Vignoles, 2006), interpersonal distress (Dickinson & Pincus, 2003), and low agreeableness coupled with high neuroticism (Hendin & Cheek, 1997). While grandiose narcissism may offer some self-protective benefits that defend against envy, such as high self-reported happiness, self-esteem, and life satisfaction (Paulhus, 1998; Rose, 2002), vulnerable narcissism appears bereft of any such advantages. Because vulnerable narcissists lack defensive self-esteem mechanisms, they may feel a chronic gnawing sense of dispositional envy, whereas grandiose narcissists do not. In summary, this suggests that vulnerable narcissists may be prone to envy, their personalities are poorly defended against this emotion, and they are willing to admit experiences with envy.

At a dispositional level, I expect vulnerable narcissism will predict dispositional envy and that entitlement will play a mediating role. As vulnerable narcissists admit to having envious tendencies, I also anticipate they will report strong feelings of episodic envy. Grandiose narcissism, however, should predict entitlement in the theoretical model but may be unrelated or even negatively predictive of dispositional envy. However, in the face of a highly activating envy-inducing situation, grandiose narcissists may suddenly experience acute feelings of envy which are quickly transmuted into hostile derogation of the possessor or possession – a case of sour grapes. These explanations may account for why vulnerable narcissists but not grandiose narcissists report dispositional envy, but

why both are susceptible to episodic envy. At an episodic level, I expect both narcissistic subtypes will predict intense envy in the face of an envy-inducing experience, although it is possible that grandiose narcissists may experience envy but deny its existence.

Relative deprivation may be an important precursor to envy. It has been defined as a painful emotional state resulting when one both wants and feels deserving of a desired object, but fails to possess it (Crosby, 1982). Like envy, relative deprivation entails a subjective sense of injustice (Cohen-Charash & Mueller, 2007). Relative deprivation appears to encompass a generalized sense of resentment, feelings of injustice, and the subjective belief that one deserves better outcomes (e.g., Olson & Ross, 1984). Additionally, relative deprivation predicts anger and resentment towards another person who possesses the desired object (Olson, Meen, Roese, & Robertson, 1995). Relative deprivation may be especially likely to result in envy when a person is unable to take corrective action to remedy their inferior status relative to another person, although better outcomes can easily be imagined and the envious person feels subjectively (not objectively) deprived (Smith & Kim, 2007). Subjective deprivation implies that one feels unjustly deprived of a desired object, although other individuals would not necessarily agree with their assessment (if they did, this would represent objective deprivation; e.g., discriminatory-based hiring practices).

Dispositionally envious individuals appear more susceptible to experience relative deprivation. Parks, Rumble and Posey (2002) found that individuals with high levels of dispositional envy (highest 33% of their sample) that received inferior payoffs to an opponent in a prisoners dilemma were not placated when given a prize (an extra drawing

into a lottery for a desirable prize). Rather, they persisted in their non-cooperation with their advantaged opponent, behaviour indicative of feelings of envy.

Referent cognitions theory (Folger, 1977, 1986; Folger, Rosenfield, & Robinson, 1983) postulates that relative deprivation arises most intensely from a combination of highly referent outcomes, low likelihood of future success, and low justification. Referent outcomes pertain to how easily alternative scenarios can be imagined where one possesses the desired object. These cognitions provide the basis for one's estimation of how likely he/she is to obtain the object in the future. Justification refers to the explanation or reason for why one lacks this desired object. This theory would predict one would experience relative deprivation in situations where a desirable alternative involving possession of the item is easily imaginable, but this fantasy is unlikely to be realized and the justification for lacking this object is weak or nonexistent. Easily-imaginable outcomes are insufficient to produce relative deprivation, because they may be blunted or neutralized by likely future success (and amelioration of current negative affect) or high justification (no socially-acceptable, objective grounds exist with which to complain) (Folger, 1986).

The present study satisfies all of Folger's conditions, as students can easily imagine being their advantaged rivals in the next room (highly referent outcomes), the paradigm is a one-shot simulation and students cannot hope to be reassigned to the advantaged condition at a later time (low likelihood of future success), and the justification for their status in the disadvantaged group is based solely on one irrelevant question (low justification). These conditions should elicit relative deprivation in most

students, although narcissists appear particularly susceptible to experience relative deprivation in this situation based on their inflated expectancies.

For the narcissist, it seems likely that more situations where one lacks a desired object might result in feelings of relative deprivation. The narcissist's favourable referent cognitions should be easily available through grandiose fantasies of power. And their characteristic sense of entitlement encourages the belief, "I ought to have X," so that when this outcome does not occur, narcissists should subjectively view it as an injustice. The more the narcissist's entitlements are frustrated and deprived, the more intractable the sense of entitlement may become as he/she feels victimized and deserving of recompense (Meissner, 1986; Meissner, 2008). When reality fails to match the narcissist's expectations, he/she is left in a vulnerable position to experience the painful pangs of envy. Unlike envy, relative deprivation does not entail any internalized negative reactions (e.g. feelings of inferiority or depressive affect); thus, both grandiose and vulnerable narcissists are anticipated to endorse feelings of relative deprivation. In terms of the theoretical model, I suggest that relative deprivation may mediate the relationship between intermediary dispositional traits (entitlement, envy) and episodic experiences of envy.

Clinical writings and case descriptions suggest that narcissists may experience inordinate amounts of envy (Beck, Freedman, & Davis, 2004; Gabbard, 1994; Kernberg, 2007). As Clarkin, Yeomans and Kernberg wrote, "severely narcissistic patients experience others as objects to use and exploit, and severely narcissistic patients may respond to others with such intense envy that the usual response is to attack the envied object rather than engage cooperatively" (2006). As mentioned previously, hostility is an

integral component in the theoretical conceptualization of envy (Smith & Kim, 2007; Spielman, 1971). Grandiose narcissists exhibit higher levels of hostility when faced with an upward comparison, a precursor to envy (Bogart, Benotsch, & Pavlovic, 2004). These individuals demonstrate a generalized pattern of hostile externalized responses (Bushman & Baumeister, 1998; Miller, Campbell, & Pilkonis, 2007; Miller, Widiger, & Campbell, 2010). Vulnerable narcissists also appear susceptible to similar hostile externalized responses, although these appear to emerge more often in close relationships (Wink, 1992).

Hostility appears to play an important role in the experience and expression of envy. When envy is saturated with hostility it becomes malicious in nature (Smith & Kim, 2007). The malicious envier is so eager to damage or punish the envied person that he or she is willing to perform behaviours that carry self-harming or personally costly consequences. This illustrates the self-destructive potential of envy. Two studies provide excellent illustrations of this principle and will be described briefly. In a study by Parks and colleagues (2002), participants competed in 20 rounds of a modified prisoner's dilemma for monetary payoff. All players believed their opponent was a fellow student, though they actually competed against a pre-programmed tit-for-tat computer strategy (the computer's decision copied the participant's decision from the previous round). In each round, players could choose to cooperate or defect with the monetary payoff determined by the collective choices made by the player and opponent. Although the best immediate outcome occurred when the player defects against a cooperating opponent, the best long-term approach is complete cooperation. All players were assigned to a deprivation condition where their payoff was always less than their opponent's payoff,

regardless of outcome. This discrepancy was either justified (or not) and the negative outcome was ameliorated (or not) by promising players a ticket in a prize drawing at the study's completion. The results showed dispositional envy was a strong predictor of non-cooperation across trials. Additionally, amelioration failed to appease the most envious individuals. While amelioration increased cooperation for low- and medium-dispositional envy players, it had no effect on the high-dispositional envy players. As each player's earnings are not inversely related to opponent earnings (as in a zero-sum game), the rational choice is to cooperate to maximize one's own earnings. However, the high-dispositional envy students chose to defect – minimizing their opponent's earnings, but also their own.

Relatedly, Zizzo and Oswald (2001) studied utility interdependence in the field of economics. This term refers to the prediction that one's satisfaction with his/her earnings depends in part on the relative outcomes of others. In economic terminology, envy reflects a negative interdependency and would predict people would be willing to sacrifice their own monetary earnings to reduce the earnings of others if they could. To test their predictions, they designed a gambling paradigm in which four students per experimental session would make bets on the outcome of a random number drawing. As this experiment is the basis for much of the current study, I will describe it here in some detail. If a 1 was drawn, players won double their money (plus their wagered amount); if a 2 or 3 were drawn, they lost their bet. An arbitrary and unfair rule was imposed so that the two players with family names occurring closest to the beginning of the alphabet were conferred a monetary advantage, beginning the game with 11 (versus 6) "doblons." This fictional currency was later exchangeable for money at the end of the experiment.

Advantaged players could also bet a higher amount per round than disadvantaged players. After several practice betting rounds and 10 actual rounds of betting, players participated in an elimination round. During the final round, they could anonymously spend any portion of their earnings to "burn" a much larger amount of their opponents' earnings. The cost of the burning varied across conditions, with $0.02, $0.05, $0.1, or $0.25 representing marginal prices to burn $1 of any opponent's earnings.

Their results showed that the majority of players (62.5%) chose to burn a portion of their opponents' earnings. On average, players had nearly half of their total earnings burnt (48.7%). Disadvantaged players targeted advantaged players during the burning round, following a burning pattern of rank egalitarianism whereby the wealthiest player was burnt the most, followed by the second-richest player, who was burned as much or more as the third wealthiest player. A subsequent study confirmed that the unfair nature of the advantage predicted more burning than when the advantage resulted from a fair procedure, a finding consistent with research on relative deprivation (Folger 1986).

These two paradigms demonstrate how hostile envy may promote decisions which inflict harm on others even at an expense to the self. Defection in the prisoner's dilemma and burning alike cost players potential monetary earnings, although they severely reduced their opponents' earnings in the process. They also provide vivid examples of behavioural manifestations of envy. The vulnerability of self-report methodology to bias is an important limitation to the measurement of envy at both a dispositional and episodic level due to conscious efforts to minimize or deny this emotion and present a favourable impression. Behavioural measures provide a subtler way to measure envy as the nature of the dependent variable is less available to participants and thus may be less subject to

defensive biases. This approach is also congruent with the theoretical conceptualization of envy as not consciously available to, or quickly denied by, grandiose narcissists (Kernberg, 2007; Smith, Combs, & Thielke, 2008).

Envy also carries important consequences. Clinical writings suggest the envier would rather see a desired object destroyed than witness another enjoy it (Klein, 1957). Unsurprisingly, dispositional patterns of hostile envy are predictive of *Schadenfreude*, the pleasure one experiences when an envied person experiences a misfortune (Smith, Turner, Garonzik, Leach, Urch-Druskat, & Weston, 1996). *Schadenfreude* appears insensitive to the cause of the misfortune and appears whether the outcome is deserved or not (Brigham et al., 1997). Like envy, *Schadenfreude* is most intense when the envied person's failure is on a highly self-relevant domain (Leach, Spears, Branscombe, & Doosje, 2003). Experiencing *Schadenfreude* permits an escape from upward social comparisons that highlight one's relative inferiority (Smith & Kim, 2007). While not a focus in the present study, Kernberg's (1974a; 1974b; 2007) clinical accounts suggest that narcissists may take advantage of opportunities to alleviate intense envy, with *Schadenfreude* representing a desirable option. Similarly, devaluation of the therapist provides a defence against envy, allowing the narcissist to feel a pleasurable sense of superiority in comparison to the therapist.

Heinz Kohut (1971) has commented that narcissists possess poorly differentiated selves, viewing others as extensions of their archaic selves (self-objects) onto whom they project their negative attributes, retaining only positive attributes in order to maintain a grandiose self-image. This suggests that, when faced with an unflattering social comparison that is envy-inducing, narcissists may defensively maintain an overly positive

view of self and derogate the envied person. If so, then empirically one would expect strong negative correlations between self- and other-ratings for envious narcissists. In contrast, individuals with low levels of narcissism would be expected to be able to differentiate between self and other, resulting in less correlated ratings of self and other.

Morf and Rhodewalt (1993) provide evidence for explicit other-derogation: individuals with high levels of grandiose narcissism (as measured by the NPI) rated an outperforming competitor more negatively than those with lower levels of narcissism in both high- and low-threat conditions. Narcissism predicted the harshest ratings of their opponent under high-threat, private (vs. public) conditions.

Campbell, Reeder, Sedikedes and Elliot (2000) provide evidence that narcissists[2] utilize explicit self-enhancement coupled with implicit other-derogation. In their study, participants completed a bogus creativity test in dyads (experiment 1) and individually (experiment 2) and were given feedback that they had performed "well" or "poorly." Narcissists self-enhanced across all conditions, exhibiting both comparative and non-comparative self-enhancement strategies. The former describes self-enhancement that involves a favourable comparison relative to another person and was assessed by the degree of responsibility participants felt for their outcomes. While all participants took more personal credit when told they did well as opposed to poorly (absolute self-enhancement), narcissists claimed credit at their partner's expense when told they had performed well, but took less credit when told their dyad did poorly. Implicitly, they blamed their partner for their poor results. These differences were significantly different

[2] Narcissism was assessed using the NPI and refers to the grandiose subtype of narcissism only. Narcissists were defined as individuals scoring at least one standard deviation above the sample norm on the NPI. Non-narcissists were defined as individuals scoring at least one standard deviation below the sample norm.

from non-narcissists individuals, who did not appear to use comparative self-enhancement strategies. Non-comparative self-enhancement strategies do not entail a comparison with another person and was assessed by the degree of importance attributed to the results of this test. Narcissists and non-narcissists alike felt the results of the test were more important to them after being told they did well, as opposed to poorly. Thus, while non-narcissists appear to use non-comparative self-enhancement strategies, narcissists appear to use both comparative and non-comparative self-enhancement strategies.

Similarly, Farwell and Wohlwend-Lloyd (1998) report grandiose narcissism (assessed by the NPI) was associated with favourable pre-task predictions for self but unfavourable predictions for a partner in a collaborative task. When told that the collaborative score of self and partner exceeded 85% of other groups and that the scores were significantly different from one another, narcissistic individuals attributed these results to their own ability and effort. Additionally, there was a negative (although non-significant) correlation between attributions of partner ability and effort in relation to the favourable collective outcome. This suggests that, despite their success, narcissistic individuals implicitly derogated their partners by taking most of the credit.

Taken together, these studies suggest that grandiose narcissists use both self-enhancement and other-derogation strategies in order to maintain a grandiose self-image. However, they appear to prefer self-enhancement as their primary strategy and employ it in an effort to assert their superiority (Farwell &Wohlwend-Lloyd, 1998; Horvath & Morf, 2010). While no research has examined whether vulnerable narcissists employ similar interpersonal strategies, similar patterns are expected.

Including other-self ratings in the present study will measure a possible lack of differentiation between others and oneself. This lack of differentiation could manifest in two different ways. Elevated self-ratings and lowered other-ratings may reflect self-enhancement in response to threat and serve to defend against envy feelings. In contrast, elevated other-ratings and lowered self-ratings would suggest feelings of inferiority relative to an advantaged rival, indicative of probable feelings of envy. In response to threatening feedback, I anticipate that grandiose and vulnerable narcissists may elect to self-enhance by inflating their ratings of self-liking and of their own ability and/or derogating their highest-scoring opponent by reporting less liking for him/her, as well as providing lower ratings of his/her ability. These comparative self-enhancement strategies are characteristic of narcissistic individuals and consistent with other results in the research literature (Campbell et al., 2000).

I plan to quantify these ratings as difference scores, computed by subtracting a participant's liking (or ability) for oneself from his/her liking (or ability) rating for an advantaged rival. This procedure will yield two difference scores (liking, ability) that can be summed to form a measure of defensiveness/indirect envy. While most individuals would be expected to express somewhat less liking for an opponent who beats them, narcissists would be expected to express strong dislike (as hostility is an important component in envy). The ability ratings are included because endorsing that one's abilities are superior to someone who has just defeated him/her in a competitive game reflects distorted thinking, based in fantasy rather than reality. It also reflects a characteristic sense of defensiveness among narcissists. I anticipate that the composite other-self difference score will be negatively correlated with burning, as narcissistic

individuals are expected to provide much higher liking and ability ratings for themselves than for advantaged rivals, possibly suggesting defensiveness. Thus, narcissistic individuals may defend against envy feelings by enhancing their self-rated liking and ability relative to an advantaged opponent and subsequently take malicious action against this rival, even though these actions will ultimately hurt one's outcomes.

Significance of the present study

In this study, I address the gap in narcissism-envy research by proposing a testable theoretical model based on a thorough literature review linking grandiose and vulnerable narcissistic subtypes to episodic envy. I also specify intermediary dispositional and episodic constructs that may mediate this relationship. The use of structural equation modeling will allow determination of causation between variables and quality-of-fit assessment for the theoretical model. Additionally, I incorporate a behavioural measure that may indicate envious feelings based on Zizzo and Oswald's (2001) "burn the rich" paradigm as well as Cohen-Charash's (2009) self-report measure of envy. This multi-method assessment of episodic envy will provide a more robust measure of the construct. The gambling paradigm also provides an ecologically-valid context for envy to arise, thereby increasing the generalizability of findings.

I found initial support for the proposed model linking narcissism and self-reported episodic envy during an extensive pilot test with 127 participants. The model statistics were acceptable but left room for improvement ($\chi^2_{(175)}$=260.49, p<.001, χ^2/df=1.49, CFI=.945, RMSEA=.062, AGFI=.795). Vulnerable narcissism directly predicted both entitlement and dispositional envy (on both the DES and YES) and had a significant total model effect. This indicates that vulnerable narcissism predicted self-reported episodic

envy (on the Episodic Envy Scale), although its effect was mediated by intermediary constructs (entitlement, dispositional envy, and relative deprivation).

Consistent with theory and previous research, grandiose narcissism predicted entitlement but demonstrated significant negative path coefficients in predicting dispositional envy. This indicates that grandiose narcissism fostered decreased expressions of dispositional envy, unlike its vulnerable counterpart. Overall I found that grandiose narcissism predicted episodic envy only to the extent that it predicted entitlement; there was no overall model effect for grandiose narcissism. If the findings from this proposed study replicate the patterns from the pilot test phase using both self-reported and behavioural measures of episodic envy, this provides further support to the validity of the conclusions from the pilot research and for the distinction between grandiose and vulnerable narcissistic subtypes.

Grandiose narcissism: Adaptive or pathological?

Recent research has highlighted an apparent distinction between adaptive and pathological variants of grandiose narcissism, which I will briefly describe below. While adaptive narcissism has been discussed in several important research articles, it is still an exploratory construct and does not have same quantity of support as does the vulnerable narcissistic subtype. For this reason, I have left the discussion of adaptive versus pathological grandiose narcissism until this point in the proposal and introduce adaptive narcissism as an exploratory third narcissistic subtype. I also specify a unique pattern of hypotheses for grandiose adaptive narcissism to separate it from grandiose pathological and vulnerable narcissistic subtypes.

Aaron Pincus and colleagues (2009) have developed the Pathological Narcissism Inventory (PNI) in direct response to the controversy surrounding the assessment of grandiose narcissism. The PNI is a 7-factor, 52-item scale that assesses both (pathological) grandiose and vulnerable narcissistic subtypes. As argued in other research articles (eg. Ansell, 2006, Pincus & Lukowitsky, 2010; Sturman, 2000) and discussed previously in this paper, the NPI largely assesses a relatively adaptive form of grandiose narcissism that correlates positively with indicators of adjustment (e.g. achievement, self-esteem) and correlates negatively with indicators of maladjustment (eg. depression, neuroticism). Although Pincus and colleagues use the labels of "normal" and "maladaptive" narcissism, I prefer using "adaptive" and "pathological" grandiose narcissism and use this terminology throughout the thesis except when describing research using different terms. These relations make suspect the claim that the NPI assesses pathological grandiose narcissism. In support of their assertion, they found the PNI to be uncorrelated with the NPI in a clinical sample and weakly correlated in a student sample (r=.13; Pincus et al., 2009). Additionally, the PNI displays a unique pattern of relations to external measures, relative to the NPI. While the NPI total scale is positively correlated with self-esteem (r=.38) and negatively correlated with shame (r=-.15), the PNI total scale score is negatively correlated with self-esteem (r=-.37) and positively correlated with shame (r=.55). Also, in contrast to weak or nonsignificant correlations demonstrated by the NPI, the PNI is moderately to strongly correlated with the use of primitive defenses (r=.60; NPI: r=.08), identity diffusion (r=.62; NPI: r=.02, *ns*), impaired reality testing (r=.47; NPI: r=.09), and low moral values (r=.45; NPI:

r=.17). Thus, grandiose adaptive and pathological variants appear to be orthogonal to one another and would not be expected to covary in the structural equation model.

This distinction suggests that grandiose pathological narcissism can be assessed via the PNI, while grandiose adaptive narcissism can be assessed via the NPI. However, the NPI will necessarily require some modifications to assess this adaptive variant of narcissism. As mentioned previously, Emmons (1987) has divided the NPI into 4 factors. While 3 factors (L/A, S/S, and S/A) are understood as primarily adaptive, the fourth factor (E/E) is distinct. This factor appears to be maladaptive and shows a different pattern of associations with external criterion measures, similar to the PNI (Pincus et al., 2009). Previous studies have recognized the E/E factor's distinction from the other NPI factors and have used it as a measure of pathological narcissism (Sturman, 2000) or vulnerable narcissism (Bosson & Prewitt-Freilino, 2007).

In the present study, grandiose adaptive narcissism will be measured using a modified version of the NPI. Emmons' (1987) 4-factor solution was based on a 37-item version of the NPI, with 8 of these items loading on the E/E factor. I plan to use the 40-item version of the NPI employed in most research studies and remove these 7 items from the scale, leaving a 33-item version of the NPI that includes its 3 adaptive factors as well as several items that did not load onto one of Emmons' four factors. This decision eliminates the possibility of inflated path coefficients between grandiose adaptive narcissism and entitlement, as the E/E factor contains several items that assess entitled attitudes. It also removes one E/E item that assesses envy ("I am envious of other people's good fortune"). Additionally, this deviation generally retains the Emmons' (1987) 4-factor structure and I will examine the items to see whether they load on their

respective factors; however, for the SEM analysis, the E/E items will be removed. Historically, the NPI has been modified by several authors, either as a result of inconsistent factor loadings or an attempt to isolate the most maladaptive elements of the NPI (Ames, Rose, & Anderson, 2006; Sturman, 2000). The present procedure is an attempt to isolate the relatively adaptive elements of the NPI, based on one commonly used factor structure (Emmons, 1987).

This grandiose adaptive/pathological distinction has been illustrated by Wink (1992) in a rare longitudinal study of narcissism. He examined life trajectories for three variants of narcissistic women from college to mid-life, as derived from a factor analysis of California Q-set ratings. He categorized these women as *willful*, *hypersensitive*, and *autonomous*. The willful subtype was characterized by "overt grandeur, power orientation, exhibitionism, poor impulse control and a pleasure-seeking orientation" (p. 9) – most characteristic of the grandiose pathological form. The hypersensitive subtype was characterized by "overt inhibition, introversion, and lack of self-confidence mask(ing) an underlying (covert) sense of self-importance, entitlement, and exhibitionism" (p. 9) – corresponding well to the vulnerable narcissistic subtype described in this paper. His final subtype, autonomous, was characterized by "inner directedness that gives rise to self-reliance, intellectual interests, psychological mindedness, and creativity" (p. 9).

Wink contended this last profile described a healthy variant of narcissism, hypothesizing that willful and hypersensitive subtypes would show deterioration on adjustment measures as they approached mid-life, while autonomous narcissists would demonstrate personal growth and effectively realize several of their important life goals. In support of their distinctions, these subtypes exhibited unique life trajectories, measured

at age 21, 27, and 43. Hypersensitive women had the worst outcome of the three groups. They become increasingly alienated and vulnerable in their 20s, and by mid-life were experiencing declines in personal well-being and responsibility and tended to fail in their occupational pursuits. The willful women exhibited strong personal growth in their 20s (increased social assurance, tolerance, self-control, and well-being), although reported a marginal decrease in wellbeing in mid-life. The autonomous women experienced some conflict in their 20s, increasing on psychological mindedness but decreasing on measures of empathy and socialization. However, this group made several important personal gains from age 27 until midlife, increasing on measures of dominance, independence, maturity of judgment, social acuity, and reported more effective personal functioning. While the autonomous subtype was not definitively the most adaptive subtype in his study, it demonstrated a unique life trajectory from the similar willful subtype and the best outcomes at mid-life. Additionally, both autonomous and willful narcissists experienced better outcomes than the hypersensitive subtype.

Elsa Ronningstam, similarly described 3 narcissistic subtypes based on their characteristic self-esteem dysregulation, affect dysregulation, and interpersonal difficulties (2005a,b; as cited by Cain, Pincus, & Ansell, 2008). While both *arrogant* and *psychopathic* narcissists are subtypes of grandiose narcissism, they are very different from one another. The arrogant subtype defends against self-esteem dysregulation by displaying self-serving and self-enhancing attitudes, they are highly exploitative and have strong entitlement feelings, and are described as highly envious and aggressive (Ronningstam, 2009; Cain et al., 2008). The psychopathic subtype is characterized by aggression and hostility and may engage in criminal or violent behaviour. Ronningstam

understands these actions to be defensive because they protect and enhance the narcissist's self-esteem. Psychopathic narcissists show the greatest deficits in empathy, most extreme reactions to criticism, and may engage in cruel and sadistic behaviour towards others without remorse (Ronningstam, 2009; Cain et al., 2008). Her *shy* narcissistic subtype displays themes of vulnerability characterized by a chronic sense of shame and feelings of guilt. She writes that shy narcissists cope with self-esteem dysregulation by engaging in grandiose fantasy and strivings, they are harshly self-critical, and tend to avoid interpersonal relationships for fear of rejection or criticism (Ronningstam, 2009; Cain et al., 2008).

This distinction was also reported in a recent study by Russ, Shedler, Bradley and Westen (2008) using the Shedler-Westen Assessment Procedure-II (SWAP-II; Westen & Shedler, 1999). The SWAP-II uses a Q-sort procedure whereby clinicians rate how characteristically each of 200 statements describe a patient (from 1 – *least descriptive*, to 7 – *most descriptive*). In a sample of 255 patients with DSM-IV NPD criteria, they identified 3 unique subtypes which they labelled *grandiose/malignant*, *fragile*, and *high functioning/exhibitionistic*. The first subtype corresponds to the grandiose pathological narcissist. These individuals were characterized by their exploitation of others with little regard for their welfare and their grandiosity appeared to be primary, rather than defensive or compensatory. The fragile subtype corresponds to the vulnerable narcissist and was characterized by feelings of grandiosity and inadequacy, which may suggest alternating superior/inferior representations of the self, defensive grandiosity, or a grandiosity that emerges primarily under threat. Finally, the high functioning/exhibitionistic subtype corresponds to the adaptive grandiose narcissist. This

subtype was characterized by competitiveness, attention-seeking, and sexually seductive or provocative behaviour, but also by several significant psychological strengths, such as interpersonal comfort and achievement orientation.

In addition to providing unique descriptions of each subtype, Russ et al. (2008) compared each subtype to a variety of external criterion variables and found a unique pattern of relationships. The grandiose/malignant (pathological) had the highest incidence of commorbid substance use (Axis I), as well as Paranoid and Antisocial PD diagnoses (Axis II). Additionally, they had the highest levels of externalizing behaviour and likelihood of being a perpetrator in an adult abusive relationship, most unstable employment history, and described the highest levels of externalizing behaviour in their childhood. In stark contrast, the fragile (vulnerable) subtype were most likely to have additional major depressive disorder, dysthymia, and generalized anxiety disorder (Axis I), as well as Avoidant, Borderline, and Dependent PD diagnoses (Axis II). The high-functioning/exhibitionistic (adaptive) narcissistic subtype had the lowest levels of commorbid Axis I and II diagnoses, the highest levels of global composite functioning and most stable employment history of the three subtypes. These results provide strong support for the distinction between these three narcissistic subtypes.

Miller and Maples (2011) compared the effect sizes for various personality traits[3] across three narcissism variants (NPI-assessed grandiose narcissism, NPD assessed via semi-structured clinical interviews, and vulnerable narcissism assessed by the HSNS/PNI) in a meta-analysis. Their results suggest that grandiose narcissism and NPD

[3] The personality traits were derived from several models, including the Five-Factor Model (FFM; Costa & McCrae, 1992) or Ashton and Lee's HEXACO model (Lee & Ashton, 2005), among others.

trait models overlap substantially, generally indicating an intensely antagonistic interpersonal style encompassing grandiosity, manipulativeness, deception, greed, inflexibility, and non-cooperativeness personality. However, NPI-assessed grandiose narcissism was uniquely characterized by moderate to strong positive effect sizes for extraversion and related facets and several adaptive traits (e.g., strong effect sizes [d<.50] for social potency, social boldness, assertiveness, sociability, and social self-esteem). This mixture of adaptive and maladaptive personality traits extends the criticisms leveled against the NPI (Pincus et al., 2009), suggesting that without this maladaptive component - likely the E/E factor - the remainder of the scale may correlate positively with various indicators of adjustment.

In summary, while there is less evidence for the adaptive/pathological grandiose narcissism distinction than for the grandiose/vulnerable distinction, the evidence that does exist is compelling. Rather than being a unitary construct, narcissism appears to have 3 important manifestations which display unique relations to external criterion variables (e.g., Russ et al., 2008). These subtypes may also be uniquely related to envy at both a dispositional and episodic level. In particular, I anticipate that vulnerable narcissists will report dispositional envy, while both grandiose variants will not (Luglio, 2002; Gold, 1996). However, I anticipate that only the pathological forms of narcissism (grandiose pathological and vulnerable) will predict self-reported episodic envy. For the adaptive grandiose narcissist[4], their self-protective mechanisms may permit them to deny

[4] One may wonder whether there is a fourth narcissistic subtype: an adaptive variant of vulnerable narcissism. While conceptually this remains a possibility, no authors have commented on this alternative. However, measures of vulnerable narcissism are consistently related to indicators of maladjustment (eg. Hendin & Cheek, 1997; Pincus et al., 2009), suggesting that vulnerable narcissism (at least, as it is measured at present) is

conscious feelings of envy when asked, but I anticipate that they will be willing to endorse unconscious indicators of envy by choosing to "burn" their competitors' earnings and provide discrepant self-other ratings, like their grandiose pathological and vulnerable counterparts. This is suggested by grandiose adaptive narcissists' competitive tendencies and characteristic hostility and aggression in response to ego threat (Bushman & Baumeister, 1998; Zeigler-Hill et al., 2008).

Hypotheses

Specific hypotheses for this study are presented below. Empirical or theoretical work that supports each hypothesis is listed in brackets. Predicted path coefficients are presented first, followed by anticipated patterns of covariance. Next, anticipated relations between variables are illustrated using structural equation models. I include both the full model and a condensed model; the latter highlights how the narcissistic subtypes are anticipated to differ in relation to dispositional and episodic variants of envy. Separate models are depicted for self-reported episodic envy, burning, and other-self difference ratings.

Path Coefficients

1) Grandiose adaptive narcissism will:
    1. Positively predict entitlement (Campbell et al., 2004).
    2. Negatively predict dispositional envy (Gold, 1996).
    3. Positively predict relative deprivation (before intermediary variables are inserted into the model; Meissner, 1986).
    4. Not predict self-reported episodic envy (Neufeld & Johnson, 2010).

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not inherently adaptive. Thus, there appears to be no basis for introducing this possible narcissism variant into the present study.

5. Positively predict burning (before intermediary variables are inserted into the model; Kernberg, 2007).
6. Negatively predict other-self difference scores (before intermediary variables are inserted into the model; Campbell et al., 2000; Kernberg, 1984). This would indicate a participant rated him/herself higher on liking and ability than an advantaged opponent

2) Grandiose pathological narcissism will:
    1. Positively predict entitlement (Russ et al., 2008).
    2. Negatively predict dispositional envy.
    3. Positively predict relative deprivation (before intermediary variables are inserted into the model; Meissner, 1986).
    4. Positively predict self-reported episodic envy (before intermediary variables are inserted into the model; Neufeld & Johnson, 2010).
    5. Positively predict burning (before intermediary variables are inserted into the model; Kernberg, 2007).
    6. Negatively predict other-self difference scores (Kernberg, 1984).
3) Vulnerable narcissism will:
    1. Positively predict entitlement (Russ et al., 2008).
    2. Positively predict dispositional envy (Luglio, 2002).
    3. Positively predict relative deprivation (before intermediary variables are inserted into the model; Meissner, 1986).
    4. Positively predict self-reported episodic envy (before intermediary variables are inserted into the model; Neufeld & Johnson, 2010).

5. Positively predict burning (before intermediary variables are inserted into the model; Kernberg, 2007).
6. Negatively predict other-self difference scores (Kernberg, 1984).

4) Entitlement will:
    1. Positively predict dispositional envy (Smith et al., 1999).
    2. Positively predict relative deprivation (Meissner, 1986).
    3. Positively predict self-reported episodic envy (before intermediary variables are inserted into the model; Neufeld & Johnson, 2010).
    4. Positively predict burning (before intermediary variables are inserted into the model; Kernberg, 2007).
    5. Negatively predict other-self difference scores (before intermediary variables are inserted into the model).
5) Dispositional envy will:
    1. Positively predict relative deprivation (Smith & Kim, 2007).
    2. Positively predict self-reported episodic envy (Cohen-Charash, 2009).
    3. Positively predict burning (Cohen-Charash & Mueller, 2007).
    4. Negatively predict other-self difference scores.
6) Relative deprivation will:
    1. Positively predict self-reported episodic envy (Neufeld & Johnson, 2010).
    2. Positively predict burning (Smith & Kim, 2007).
    3. Negatively predict other-self difference scores.

Covariances

1) Pathological and vulnerable narcissism will covary (Pincus et al., 2009).

2) Adaptive and pathological grandiose narcissism will not covary (Pincus et al., 2009).
3) Adaptive and vulnerable narcissism will not covary (Hendin & Cheek, 1997).

Method

Participants

All research participants were undergraduate students enrolled in PSYC 1200 at the University of Manitoba. Students signed up for this study on the participant pool website and received four experimental credits as compensation for their participation; two credits for each of the phases. Power analysis for structural equation modeling (SEM) analysis based on the root mean square error of approximation (RMSEA) indicated a sample size of 45 participants would achieve a power of .80. (α=.05, df=175, null RMSEA=.1, alt RMSEA=.05; Preacher & Coffman, 2006). However, other authors caution that SEM analysis should include a minimum 5:1 ratio of participants to model parameters (Bentler & Chou, 1987). With up to 75 parameters to be estimated, this suggests a sample size of 375 participants is required. Other authors argue that a "critical sample size" of approximately 200 cases is satisfactory for most SEM analyses (Garver & Metntzer, 1999; as cited in Hoe, 2008). To balance concerns for statistical power and expenses (monetary, time), a final sample of 200 participants was sought.

A total of 256 participants[5] were recruited for the study. Of these, 21 did not attend their phase 2 testing session and were removed from the analysis. One participant was removed due to incomplete phase 1 data, and two were removed due to an experimenter error during testing. Participants were also removed because of possible suspiciousness about a parallel procedure (N=2) or about the study's purpose (N=22)[6].

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[5] Pilot study participants were retained in the analysis as they did not differ from study participants on any dependent variables (ts<1, ns).

[6] Participants were coded as possibly suspicious if they met one of the following criteria: 1) Reference to envy, jealousy, resentfulness or similar emotion in the context of the elimination round; 2) Reference to intense emotional states that implicitly refer to the

Four participants were identified as multivariate outliers and were removed from the analysis, leaving a final sample size of 204 participants (142 female, 61 male, 1 did not indicate sex). Most participants were in their first year of university studies (76%) with an average age of 19.14 years. Regarding ethnicity, the sample was primarily White (56.9%) with smaller groups of students indicating Filipino (13.2%), Chinese (7.8%), or South Asian (5.9%) ethnicity; all other categories comprised less than 5% of the total sample size.

Data collection instruments

In phase 1, students completed dispositional measures of narcissism, entitlement, and envy. In phase 2, students completed episodic measures of relative deprivation and envy, as well as other questions pertaining to their reactions to events occurring during the study and their feelings at several points along the study. See Appendices A and B for each of the measures.

Phase 1: Dispositional measures (Appendix A)

Demographic questions. Participants were asked to provide their age, sex, year in university, first language, ethnicity, and email address (in order to link data from phases 1 and 2).

Adaptive narcissism. The Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979) is a 40-item forced-choice scale that has been commonly used as a measure of subclinical dimensional narcissism (Wallace & Baumeister, 2002). In order to modify this measure to capture only adaptive elements of narcissism, Emmons' (1984) 7-item

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elimination round (e.g., vindictive, malicious), except where mentioned alongside other plausible study purposes; 3) Strong reference to the elimination round (e.g., "sabotage" an opponent); or, 4) Strong suspicion of a parallel procedure occurring in the opposite room.

Exploitativeness/ Entitlement (E/E) factor was removed. Two items were also removed due to low item-total (<.2) and inter-item correlations (nearly all <.3), leaving a 31-item NPI Adaptive scale that had very good internal consistency (α=.829).

Henson (2010) comments that scales must be sufficiently unidimensional in order to be parcelled for SEM analysis. Unidimensionality can be assessed by comparing the first and second eigenvalues; ratios of 3 or higher suggest unidimensionality. The highest eigenvalue was 5.39 and explained 17.38% of total scale variance and was more than 3 times the value of the second-highest eigenvalue. Despite evidence for several factors in prior research (e.g., Emmons, 1984; Emmons, 1987) and low total scale variance explained, the NPI Adaptive scale was sufficiently unidimensional for parcelling.[7]

Pathological and vulnerable narcissism. Both the Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997) and Pathological Narcissism Inventory (PNI; Pincus, Ansell, Pimentel, Cain, Wright, & Levy, 2009) were examined to create modified scales to assess these narcissistic subtypes. The HSNS is a 10-item unidimensional adaptation of Murray's Narcism (*sic*) Scale (1938) that measures vulnerable narcissism, while the PNI is a 52-item scale that assesses both grandiose and vulnerable variants of pathological narcissism and has commonly been divided into 7 factors (4 grandiose, 3 vulnerable). To reduce artificial correlations, five PNI items that duplicated retained NPI items[8] were removed, as was one item that made explicit reference to envy.

[7] Scree plot analysis suggested a 5-factor structure would be plausible. However, an examination of the measurement model based on this factor structure was unreliable (factor loadings well below .7 for several factors, squared multiple correlations <.5).
[8] Two PNI items that duplicated NPI items were retained, as they loaded on Emmons' (1984) E/E factor and had been removed to form the Adaptive Narcissism measure.

Principal components analysis was utilized to determine how the HSNS and PNI items should be arranged to construct Pathological and Vulnerable narcissism scales. An analysis of HSNS and PNI items suggested this composite scale was factorable (KMO = .907). While the original plan had been to divide the PNI along established Grandiose/Vulnerable lines (26 items each), factors did not organize themselves neatly into this format. When all items factor-analyzed using oblique rotation and forced to load on 2 factors, PNI items loaded together in their original factors with nearly perfect consistency. However, some items formerly labeled as Grandiose or Vulnerable loaded on the opposite factor.

This 2-factor structure explained 37.24% of scale variance with eigenvalues of 17.80 (31.79%) and 3.06 (5.46%). The first factor included the HSNS scale (10 items), as well as the Contingent Self-Esteem (11 items), Devaluing (7 items), Entitlement Rage (8 items), and Exploitativeness (1 item) PNI factors, making 37 items total. The second factor included the Grandiose Fantasy (6 items), Self-Sacrificing Self-Enhancement (6 items), and Hiding the Self (7 items) PNI factors, for 19 items total. Due to the nature of these factors, the first was labeled Vulnerable Narcissism and the second, Pathological (Grandiose) Narcissism. This arrangement of the 7 PNI factors in the present study differs from the original factor structure of the PNI; Entitlement Rage and Exploitativeness factors were originally assigned to the Grandiose factor while the Hiding the Self factor was originally assigned to the Vulnerable factor (Pincus et al., 2009).

Both composite scales were sufficiently unidimensional. The Vulnerable Narcissism scale had an eigenvalue of 14.165 (>5x larger than second-largest eigenvalue)

and explained 38.29% of the scale variance. The Pathological Narcissism scale had an eigenvalue of 5.90 (3x larger than second-largest eigenvalue) and explained 31.05% of the scale variance.

These scales displayed very good to excellent internal consistency (VN: α=.953; PN: α=.870).

Entitlement. Entitlement was measured by a modified 8-item Psychological Entitlement Scale (PES; Campbell, Bonacci, Shelton, Exline, & Bushman, 2004). Originally 9 items, one item was removed due to low item-total correlations (r=.204; all other items had r>.7). The remaining 8-item unidimensional measure had very good internal consistency (α=.894). Factor analysis also verified the unifactoral structure of the PES (4.63/57.85%/6x).

Dispositional envy This construct was assessed by combining the 8-item Dispositional Envy Scale (DES; Smith et al., 1999) and 20-item York Enviousness Scale (YES; Gold, 1996). These scales have been used separately in previous studies examining the narcissism-envy relationship. The former is an 8-item unidimensional measure that encompasses both hypothesized components of envy: inferiority and ill will. Items are typically worded as direct, explicit statements that assess dispositional envy (e.g., "Feelings of envy constantly torment me," and "No matter what I do, envy always plagues me"). The YES, in contrast, is a 20-item unidimensional scale that includes relatively subtlety-worded or idiomatic (e.g., "It makes me feel good to rain on someone's parade,") and some reverse-scored items, though conceptualizes envy in a manner similar to the DES. Three items loaded poorly on the total scale (r<.2) and were removed, leaving a 25-item scale that had excellent internal consistency (α=.928). Factor-

analysis suggested the composite scale was sufficiently unidimensional (9.80/39.19%/4x).

Manipulation check. Students rated how honest/distracted/attentive/open they were while answering the previous questionnaires. These items were used previously by Neufeld and Johnson (2010).

Phase 2: Episodic measures (Appendix B)

Optimism. Six exploratory questions were developed by the author to assess students' optimism about good performance in the betting rounds. While no hypotheses were offered regarding this measure, it was included to assess how narcissistic subtypes differed in their expectations towards the outcomes of the game. Four items had high inter-item correlations ($r>.3$) and formed a 4-item unidimensional (2.55/63.66%/3.5x) optimism scale with good internal consistency ($\alpha=.791$).

Following these items, students offered a guess on the question "How many U.S. towns are named 'Fairview'?"). Responses to this question separated students into two rooms.

Betting slip. Participants indicated how much would wager in doblons for each of 5 betting rounds.

Reactions to outcomes. Participants make a rating along a visual analog scale reflecting how they feel (from *Terrible* to *Delighted*) after learning the results from each individual betting round (for rounds 1-4), and considering the results of all 5 rounds collectively.

Relative deprivation. This 6-item Relative Deprivation (RD) scale combines 5 items from Olsen and Ross (1984) and 1 question developed by the author based on

Folger's (1986) referent cognitions theory. The internal consistency for this scale was very good (α=.871). Factor analysis suggested the scale was unifactoral (3.73/62.18%/5x), replicating previous findings (Neufeld & Johnson, 2010).

Self-reported episodic envy. This construct was assessed by Cohen-Charash's (2009) Episodic Envy (EE) Scale. This 9-item scale was reduced to 8 items as one item displayed poor item-total and inter-item correlations (<.3). This modified 8-item scale had very good internal consistency (α=.853). Despite demonstrating a 2-factor structure in prior studies (Cohen-Charash, 2009), this scale loaded well on one factor (4.44/55.54%/4x).

Additional reactions. An additional 15 items were developed by the author to probe students' feelings (regarding envy, entitlement, and related sentiments) following the announcement of scores after the final betting round. Three items were removed due to poor inter-item correlations. The remaining 12-item scale had very good internal consistency (α=.854) and loaded well on one factor (4.75/39.62%/3.5x). Highest-loading individual items suggest this scale encompasses a sense of frustrated entitlement: feeling one ought to have received the top prize (r=.772), bothered that X will walk away with more money than oneself (r=.752), endorsing the importance of this outcome (r=.720), and feeling disappointment that one did not win the game (r=.715). This scale was least characterized by a lack of self-blame regarding the outcome (r=.428), envy towards X's skill during the game (r=.508), and attributions that X won because of luck (r=.527).

Other-self difference ratings. This measure is comprised of visual analog scale ratings that, while not directly assessing envy, may indirectly assess envy processes. Participants rated their liking for Player X relative to themselves. The Indirect envy

composite measure combined both difference scores (i.e., other-rating minus self-rating, for liking and ability ratings). Thus, positive scores indicated greater liking and/or ability ratings for Player X than oneself, while negative scores indicated greater liking and/or ability for the self relative to Player X (and may suggest defensive responding). These ratings were positively correlated (r=.26, p<.01).

Elimination amount. Elimination amount represents the amount of doblons participants were willing to allocate towards eliminating an opponents' earnings. The word "elimination" was used in communication with participants because it was thought to convey less social undesirability than burning, a term used throughout this paper. This behaviour may be indicative of envious feelings (i.e., a behavioural measure of envy). This measure is contained within the Elimination Form in the Appendix and is based on Zizzo and Oswald's (2001) computer program, which allowed participants to indicate how much of their earnings they would allocate to eliminating each of their opponents' earnings. While their program allowed participants to preview what would happen if they chose one of several courses of action, my form provided students with three pre-determined examples of successively aggressive elimination strategies to observe prior to making their elimination choices. In the final example, students viewed highly malicious elimination choices that resulted in the top score in the betting round, but at a cost of nearly all of one's potential earnings (illustrative of how malicious envy can be self-harming). A calculator was provided to assist with completion of this form.

Reactions following completing the elimination form (Post-choice). These 17 items were developed by the author to probe students' motivations for the choices they made on the elimination form prior to learning the outcome of students' collective

choices. Seven items correlated poorly with other items and the total scale and were removed, leaving a 10-item unifactoral measure (5.13/51.27%/4.5x) that displayed very good internal consistency (α=.891). This reduced scale captured felt pleasure in eliminating others' earnings (e.g., "It felt good to eliminate others' winnings; I enjoyed eliminating others' winnings even more than winning my own money"), a rationalization of choices during the elimination round (e.g., "I chose to eliminate because it was unfair; I eliminated because I wanted to win; I only eliminated some earnings of people who really deserved it"), and a sense of malicious joy (e.g., "I wish I could see the look on their face[s] when their money was eliminated").

Post-elimination form. Eight items were developed by the author to probe feelings of *Schadenfreude* (delighting in another's misfortune) and reactions towards an outperformer (X) whose score has been reduced following the elimination round. Examples items include, "I smiled a little, knowing that at least some of X's money was eliminated," and "I secretly hoped that X would experience a small failure." After 1 item was removed due to low inter-item correlations, the remaining 7 item unifactoral (3.69/52.68%/3x) measure had very good internal consistency (α=.838). However, a smaller subset of 5 items appeared to capture *Schadenfreude* and load on a primary factor. This extracted *Schadenfreude* scale was unifactorial (3.38/67.6%/6x) and had very good internal consistency (α=.878).

Experimental procedure

In phase 1, students completed an online questionnaire including demographic information, the dispositional measures and manipulation checks. Dispositional measures were presented in a randomized order to avoid any potential order effects. Students were

emailed a link from Survey Gizmo during their timeslot and were permitted 24 hours to complete the questionnaires. Students were told that this study investigated the influence of personality variables on decisions made during a betting simulation. Students were required to sign up for timeslots in both phases of this study through the online psychology participant pool website and received four experimental credits as compensation for their participation.

In phase 2, students met in groups of two to four in room A of the laboratory approximately one week after completing the phase 1 measures. The experimenter (Neufeld) began this phase by reading the experiment script (see Appendix C), explaining that students will participate in a betting simulation that involves 5 rounds in which they can gain or lose money through betting. This simulation was competitive and students were told that the player with the highest score in each group (of up to four students) may write his/her initials on the "Master of the Bets" award on a poster on the door of the laboratory.

Narcissistic strivings for financial gains are relatively unknown, but their strivings for interpersonal superiority and dominance are well-documented (e.g., Miller, Widiger, & Campbell, 2010). Because narcissists prefer to strive for ego goals versus mastery goals and are motivated by competitive social situations (Morf, Weir, & Davidov, 2000), introducing a non-monetary status prize for competitive behaviour was thought to be attractive for narcissists but less so for non-narcissists. This prize might induce narcissistic individuals to play competitively and try to win the simulation, even if it costs them a large portion of potential earnings. The phase 2 study design is based on the *burn-the-rich* paradigm developed by Zizzo and Oswald (2001) in the field of economics.

Following an introduction to the betting stages and a demonstration of how to complete the betting forms, students completed the "Predictions about the Betting Game" form. This form, as with all phase 2 forms, was presented in a pencil-and-paper format. Participants were divided into pairs (in rounds with less than four participants, individuals occupied a room by themselves) based on their guess of how many U.S. towns are named "Fairview," with the student(s) offering the two lowest guess(es) being moved to room B. This question was designed to be ambiguous (cf. Parks et al., 2002) so that students will not know whether they guessed well or poorly. Both pairs of students received identical feedback: that their guesses were furthest from the correct answer, and that as a result they will be given 500 *doblons* (a fictional currency that converts to $5) during the betting round (while their opponent[s] in the adjacent room will receive 1000 doblons, or $10) and they will be able to bet a maximum of 100 doblons per round (to their opponents' 150 doblons per round).

Students participated in 5 rounds of betting and were required to make a minimum bet of 33 doblons per round. After each round of betting, scores for each player were be posted for both players in each room to see. Scores for supposedly-advantaged students in the opposite room were inflated by 500 doblons to maintain this illusion (i.e., Students in room A believed students in room B had 1000 doblons while they had only 500 doblons; the reverse was be true for students in room B). All betting slips included a visual analog scale asking students to rate how they felt (from *terrible* to *delighted*) immediately after learning the outcome of each betting round and provided a potential manipulation check, as students' ratings should be closer to the *terrible* pole of the

continuum after the betting rounds than before and should improve following the elimination round.

Following the 5 betting rounds, students completed the "Reactions to Scores Following 5 Rounds of Betting" form. This form combines the Relative Deprivation and Episodic Envy scales used in my previous study (Neufeld & Johnson, 2010) with the Additional Reactions scale to probe students' reactions to the discrepant scores and their competitors. Students also rated how much they liked themselves and their highest-scoring opponent and rated their own (and their opponent's) betting ability relative to an average person. Discrepancy scores between other-self ratings on these visual analog scales were later calculated as a potential measure of indirect, unconscious envy.

After participants completed these forms, students were told that there would be an elimination round - an opportunity for them to reduce their opponents' scores. However, this opportunity came at a cost: they must sacrifice a portion of their own money in order to reduce an opponent's earnings. Any amount they chose to spend towards any of their three opponents was multiplied by six; that is, if a player spent 100 doblons towards one opponent, it eliminated 600 doblons of that opponent's earnings. Students could choose to eliminate earnings of multiple opponents. All decisions were indicated on the "Elimination" form.

Clearly, elimination is a self-defeating behaviour – the rational decision is to walk away with one's full earnings and not eliminate the earnings of any opponents. However, the envious person will be acutely aware of this discrepancy and may take advantage of an opportunity to level the playing field. To avoid the possibility pre-emptive eliminations – that students choose to eliminate because they anticipate their opponents

will try to eliminate their earnings – participants were told that their advantaged opponents in the opposite room would not be allowed to eliminate their earnings. However, same-room opponents would be allowed to eliminate each others' earnings.

If narcissistic individuals were highly envious as clinical theory suggests, they will likely spend more of their earnings to eliminate opponents' earnings than individuals low on trait narcissism. The title of "Master of the Bets" and the placard on the award carry no monetary prize but may have provided incentive for narcissistic individuals who were motivated to demonstrate their superiority and status (Morf & Rhodewalt, 2003). Because students were given three hypothetical examples of elimination choices and their corresponding outcomes, they were aware that trying to become the "top" player required a considerable financial sacrifice. Therefore, narcissistic individuals motivated to attain status (rather than financial gain) who felt strong envy may have been enticed to eliminate in this way, whereas non-narcissistic individuals were not thought to be motivated to eliminate based on status incentives.

Following the elimination choices, students completed the "Reactions Following Completing the Elimination" form. Next, the results of the elimination round were announced and students completed the Post-Elimination form, after which students indicated what they believed the study's purpose was as a manipulation check for suspiciousness. Students then reconvened in the same room for a thorough debriefing that included an apology for the deception employed in the study and an explanation of the true purpose of the study including its focus on narcissism and envy. Students were also given a handout of resources that encouraged them to contact the Principal Investigator or Research Supervisor with comments, concerns or questions about the study, and external

health professionals if they experienced lingering discomfort following participation in this study (see Appendix D). Nearly all participants appeared to leave the study in a positive mood, particularly after being paid their monetary earnings; no participants contacted the Principal Investigator or Research Supervisor with ongoing concerns.

Results

Preliminary analyses

Pilot test data revealed that 6 of 7 students spent some of their earnings in the elimination round (M=\$0.43; Range: \$0 to \$1), constituting 35.9% of their post-betting round earnings. Also, no participants indicated suspicion towards the study purpose. There was no difference between elimination amounts between the *doblon* and *dollar* condition (t=.815, *ns*) with participants in the former condition spending slightly more during the round on average. Subsequent groups used *doblons* as currency.

Following data collection, study variables were examined for accuracy of data entry, missing or out-of-range values, and fit between their distributions and the assumptions of SEM analysis. Extreme scale values (z>3.29, p<.001) were identified and reduced to the value of the next-most-extreme value plus 1 unit to reduce the influence of univariate outliers. To improve distributions, Adaptive and Vulnerable narcissism, Entitlement, Relative Deprivation, Ability-Difference scores, Other-Self difference scores and Burning Amount (spent) scores were square root transformed and self-reported Episodic Envy scores were logarithmically transformed.

Multivariate normality was also assessed. One extreme multivariate outlier was identified and removed from the analysis using a conservative mahalanobis distance

value (X^2_{crit} (11)=31.26, p<.001).[9] Three participants were later identified as multivariate outliers following scale parceling according to elevated mahalanobis distance values (X^2_{crit} (23)=49.73, p<.001). Their removal reduced Mardia's multivariate kurtosis statistic from 7.537 to 4.969. This statistic averages the influence of all cases and is strongly influenced by outliers; higher values tend to indicate less peakedness and heavier tails in the sample distribution relative to the multivariate normal distribution (DeCarlo, 1997). Values of 5 or lower can be considered multivariate normal (Bentler, 2005; as cited by Byrne, 2010). While AMOS 18 cannot calculate Mardia's multivariate skewness statistic, DeCarlo (1997) notes that kurtosis is a more important consideration in analyses involving tests of variances and covariances (such as the present study). As multivariate normality requirements were met, compensatory scaling techniques to adjust for multivariate non-normality (such as Satorra-Bentler or Yuan-Bentler residual-based test statistics) were not utilized.

Descriptive statistics

Table 1 provides the means, standard deviations, and possible and actual ranges for all study variables. For many variables, the range of scores obtained spanned most of the range of possible scores. Particularly for phase 2 variables, scores gravitated around the lower bounds of the scale with fewer scores in the high bounds.

[9] The *df* were computed using total scores from the NPI Adaptive, HSNS, PNI, PES, DES, YES, RD, EE, Like-diff, Ability-diff, and Elimination Amount Spent (*df*=11).

Table 1

Means, standard deviations, and possible and actual ranges of scores for study variables

				Range	
Variable	# Items	M	SD	Possible	Actual
Square root adaptive narcissism	31	3.36	0.87	0-5.57	0-5.39
Grandiose narcissism	19	54.32	14.12	0-114	14-90
Square root vulnerable narcissism	47	8.71	1.77	0 - 14.9	4.36 - 12.33
Square root entitlement	8	5.03	0.91	2.83-7.48	2.83-7.42
Dispositional envy	25	61.33	19.18	25-175	27-119
Square root relative deprivation	6	3.97	0.92	2.45 - 6.48	2.45 - 6.40
Log-transformed self-reported episodic envy	8	1.18	0.19	0.90-1.75	0.90-1.64
Liking difference rating (other-self)	1	-0.89	1.48	-8.2 - +8.2	-5.3 - +3.8
Square root ability difference rating (other-self)	1	0.24	0.96	-2.86 - +2.86	-2.0 - 2.35
Other-self difference	2	-0.51	2.23	-16.4 - +16.4	-6.7 - +4.9
Square root elimination amount spent	1	14.13	13.74	0 - n/a	0-46.48
Square root optimism	4	3.71	0.53	2-5.29	2.45-5.29
Square root additional reactions	12	5.86	1.01	3.46-9.17	3.46-8.77
Square root post-choice reactions	10	4.68	1.16	3.16-8.37	3.16-7.55
Post-elimination round reactions	7	18.30	8.24	7-49	7-39
Schadenfreude	5	3.77	0.69	2.24-5.92	2.24-5.74

Table 2 provides the intercorrelation matrix for the study variables. As predicted, vulnerable and grandiose pathological narcissistic subtypes were positively correlated with self-reported episodic envy, and adaptive narcissism was only marginally positively

correlated ($p<.1$). All 3 subtypes were anticipated to positively correlate with other-self difference scores and elimination amount. However, the only significant correlation emerged was between adaptive narcissism and other-self difference ratings, indicating that adaptive narcissism was related to higher liking and ability ratings towards the self, relative to Player X. Vulnerable narcissism was marginally correlated with higher liking for Player X than oneself, though this pattern did not extend to ability ratings, blunting correlations with the composite other-self difference rating.

Table 2

Intercorrelation matrix for main study variables

Variable	AN	PN	VN	Ent.	DE	RD	SRE	L-D	A-D	O/S	Burn	Opt	AR	P/C	P/E	Sch
Adaptive Narcissism	1	.07	-.05	.21**	-.11	.14*	.14^{m}	-.16*	-.15*	-.20**	.04	.20**	.16*	.10	.14*	.10
Pathological Narcissism		1	.69**	.23**	.50**	.10	.16*	-.07	-.09	-.08	-.04	.00	.20**	.00	.17*	.11
Vulnerable Narcissism			1	.36**	.77**	.29**	.40**	.12^{m}	-.06	.05	.06	.03	.37**	.18*	.31**	.27**
Entitlement				1	.29**	.37**	.27**	.01	-.16*	-.09	.08	.27**	.36**	.19**	.24**	.21**
Dispositional Envy					1	.32**	.36**	.13^{m}	-.06	.05	.11	-.03	.33**	.21**	.30**	.30**
Relative Deprivation						1	.56**	.10	-.17*	-.03	.18*	.40**	.64**	.43**	.49**	.42**
Self-reported Envy							1	.13^{m}	-.05	.06	.07	.18*	.72**	.41**	.54**	.40**
Liking Difference Rating								1	.26**	.80**	.08	-.01	.13^{m}	.00	.01	.00
Ability Difference Rating									1	.76**	.15*	-.17*	-.02	.06	-.09	-.10
Other-Self Difference										1	.15*	-.11	.10	.04	-.03	-.04
Burning Amount											1	.08	.19**	.65**	.37**	.28*
Optimism												1	.37**	.23**	.31**	.21**
Additional Reactions													1	.40**	.52**	.37**
Post-Choice Reactions														1	.74**	.65**
Post-Elimination Reactions															1	.85**

Note. AN = Adaptive Narcissism; PN = Pathological Narcissism; VN = Vulnerable Narcissism; Ent. = Entitlement; DE = Dispositional Envy; RD = Relative Deprivation; SRE = Self-reported episodic envy; L-D = Liking Difference rating; A-D = Ability-Difference rating; O/S = Other-self difference rating; Burn = Burning Amount (spent); Opt = Optimism; AR = Additional Reactions; P/C = Post-Choice Reactions; P/E = Post-Elimination Reactions; Sch = *Schadenfreude.*
^{m} $p<.1$. * $p<.05$. ** $p<.01$.

Table 2 also illustrates several important correlations among personality variables. As anticipated, all 3 subtypes were positively correlated with entitlement (AN: r=.21, p<.01; PN: r=.23, p<.01; VN: r=.36, p<.001) and vulnerable narcissism was strongly positively correlated (r=.77, p<.001), while adaptive narcissism was weakly negatively correlated (r=-.11, *ns*) with dispositional envy, though this last correlation was not significant. Contrary to predictions, pathological narcissism was strongly positively (not negatively) correlated with dispositional envy (r=.50, p<.001), though the magnitude of this correlation was weaker than vulnerable narcissism.

Among the episodic variables, relative deprivation was strongly positively correlated with self-reported episodic envy (r=.56, p<.001) and positively correlated with elimination amount (r=.18, p<.05) and negatively with ability difference rating (r=-.17, p<.05), the latter correlation indicating that stronger feelings of deprivation in response to lacking a monetary advantage were related to higher ability ratings toward oneself (vs. Player X). While self-reported episodic envy was positively correlated with all main study variables (although only marginally with adaptive narcissism), other-self difference ratings were only significantly correlated with adaptive narcissism (r=-.20, p<.01) and burning amount was only correlated with relative deprivation (r=.18, p<.05). Examining other-self difference ratings among liking and ability ratings separately revealed that adaptive narcissism was associated with greater liking and ability ratings towards the self than Player X (Note that negative correlations indicate higher self-ratings than other-ratings; Liking: r=-.16, p<.05; Ability: r=-.15, p<.05). In addition, higher self-rated ability (versus Player X) was associated with higher levels of entitlement (r=-.16, p<.05) and relative deprivation (r=-.17, p<.05), whereas lower liking towards the self (versus Player X)

was marginally associated with higher levels of vulnerable narcissism (r=.12, p<.1), dispositional envy (r=.13, p<.1), and self-reported episodic envy (r=.13, p<.1).

Other variables similar to burning amount were examined (e.g., amount spent towards burning each of the other opponents, % of earnings spent towards burning, % of each opponents' earnings burnt, etc.). However, due to their strong positive correlation with burning amount they effectively behaved similarly as burning amount (i.e., they were not correlated with other main study variables) and were not considered further.

Model estimation

Prior to SEM analysis, scales were divided into three equivalent parcels based on loadings on a common factor (Henson, 2010), or mean scores for each item. Items were counterbalanced so that the highest-loading items were paired with the lowest-loading items (or items with the highest mean scores were paired with items with the lowest scores). The better-loading parcelling method was selected for each variable. In summary, factor-loaded parcels were used for vulnerable narcissism, entitlement, relative deprivation, and episodic envy; mean-loaded parcels were used for adaptive and pathological narcissism, and dispositional envy,.

Prior to examining the structural (path) model, the measurement model was examined to determine the adequacy of measurement for the latent variables (Fig. 1). One of the factor loadings for each latent variable was fixed to 1 by default. All indicators had factor loadings >.7 (with some indicators in excess of .9) and squared multiple correlations (representing the proportion of variance explained by a predictor variable) >.5, suggesting adequate fit (Lei & Wu, 2007).

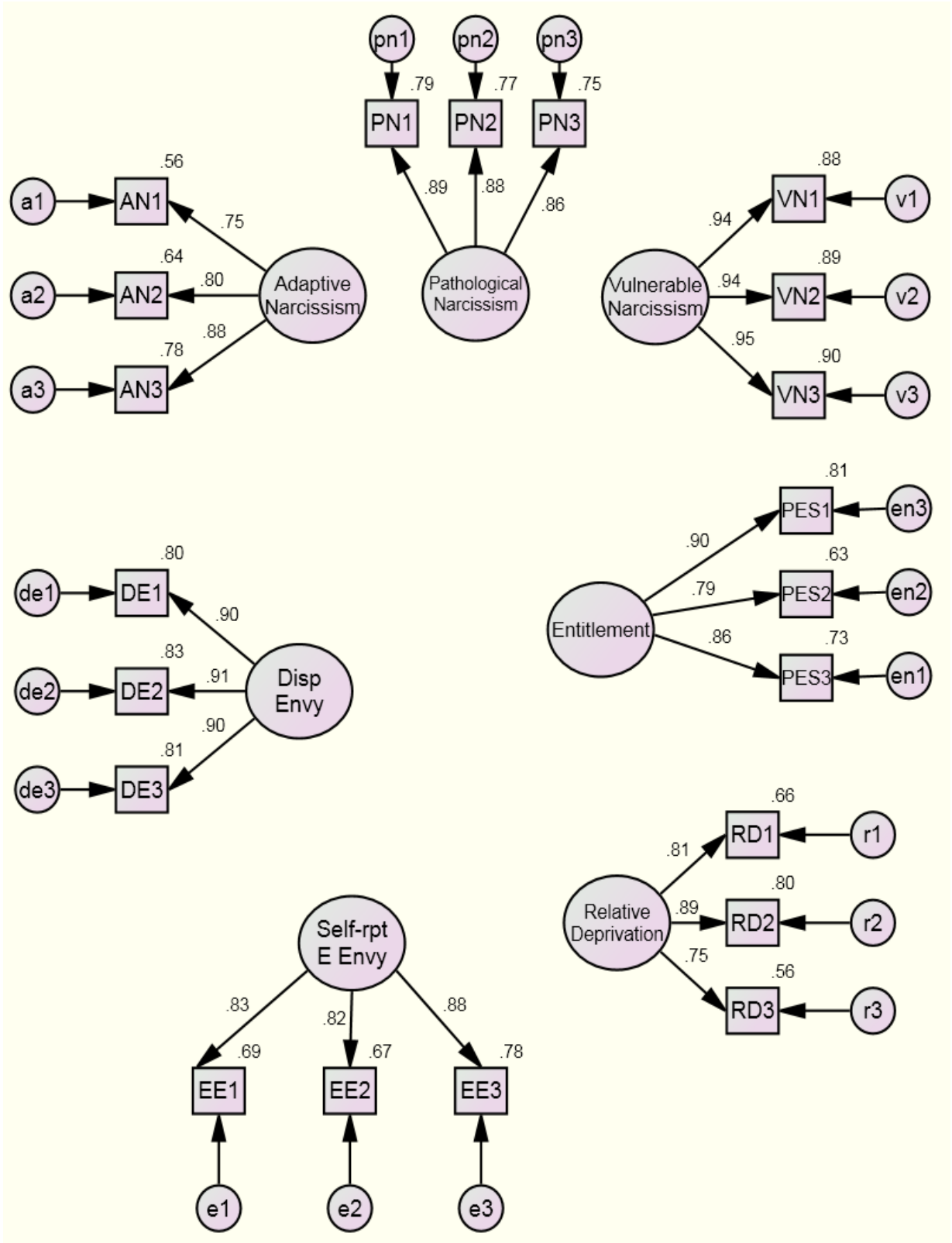

Figure 1. Measurement model for main SEM variables.

Model evaluation

Model fit. As I examine several models and variants within each model, I want to briefly describe the model fit indices and desirable values. The χ^2 (or CMIN, for minimum discrepancy) statistic is an absolute fit index, meaning that it compares the model fit to the best fitting model which has a value of zero; thus, higher values indicate badness of fit (Kenny, 2012).

The *p* statistic indicates misfit between the hypothesized model and the data and suggests that this model should be rejected. However, most researchers are in consensus that this statistic is overly sensitive and is biased against even well-fitting models with larger sample sizes (Byrne, 2010) and recommend dividing the value by the model's degrees of freedom.

The χ^2/df ratio allows comparison of fit between models of varying complexity, with values below two suggesting good fit (Marsh & Hocevar, 1985).

The Comparative Fit Index (CFI) is an incremental fit index, meaning it compares the model to both the worst and best possible models. Bounded by 0 and 1, higher values are preferable and indicate close fit to the best possible model. While values of .90 or higher have been suggested as adequate cut-off values, other researchers suggest the value is too lenient and .95 should be utilized (Hu & Bentler, 1999; Tomarken & Waller, 2005).

The Root Mean Square Error of Approximation (RMSEA) is an absolute measure of fit bounded by values 0 and 1; higher values indicate model misfit. The RMSEA is regarded as one of the "most informed" model fit statistics, with values below .05 (or .06) indicating good fit and values below .08 indicating reasonable fit (Byrne, 2010, p.80). Confidence intervals (90%) may also be constructed around RMSEA values to indicate the precision of the statistic.

Finally, the Standardized Root Mean Square Residual (SRMR) is an absolute fit index bounded by 0 and 1 with higher values indicating badness of fit. Hu and Bentler (1999)

recommend values below .08 as indicative of good fit. The inclusion of multiple fit statistics, in particular the SRMR which is appropriately sensitive to model misspecification (Tomarken & Waller, 2005), allows for a more comprehensive evaluation of model fit and avoids "cherry picking" a favourable fit index (Kenny, 2012).

Model fit statistics were examined for each of the three separate models (self-reported, burning, and other-self difference rating models) incorporating all proposed structural paths (including constraining the covariance between adaptive narcissism and both pathological and vulnerable narcissism to 0, since these were hypothesized to be uncorrelated). The model predicting self-reported envy (Fig. 2) was examined first and demonstrated adequate fit, $\chi^2_{(177)}$=261.57, p<.001, χ^2/df=1.46, CFI=.976, RMSEA=.048 (.034-.06 with 90% confidence), SRMR=.051. The proposed model explained 43.8% of variance in self-reported episodic envy.

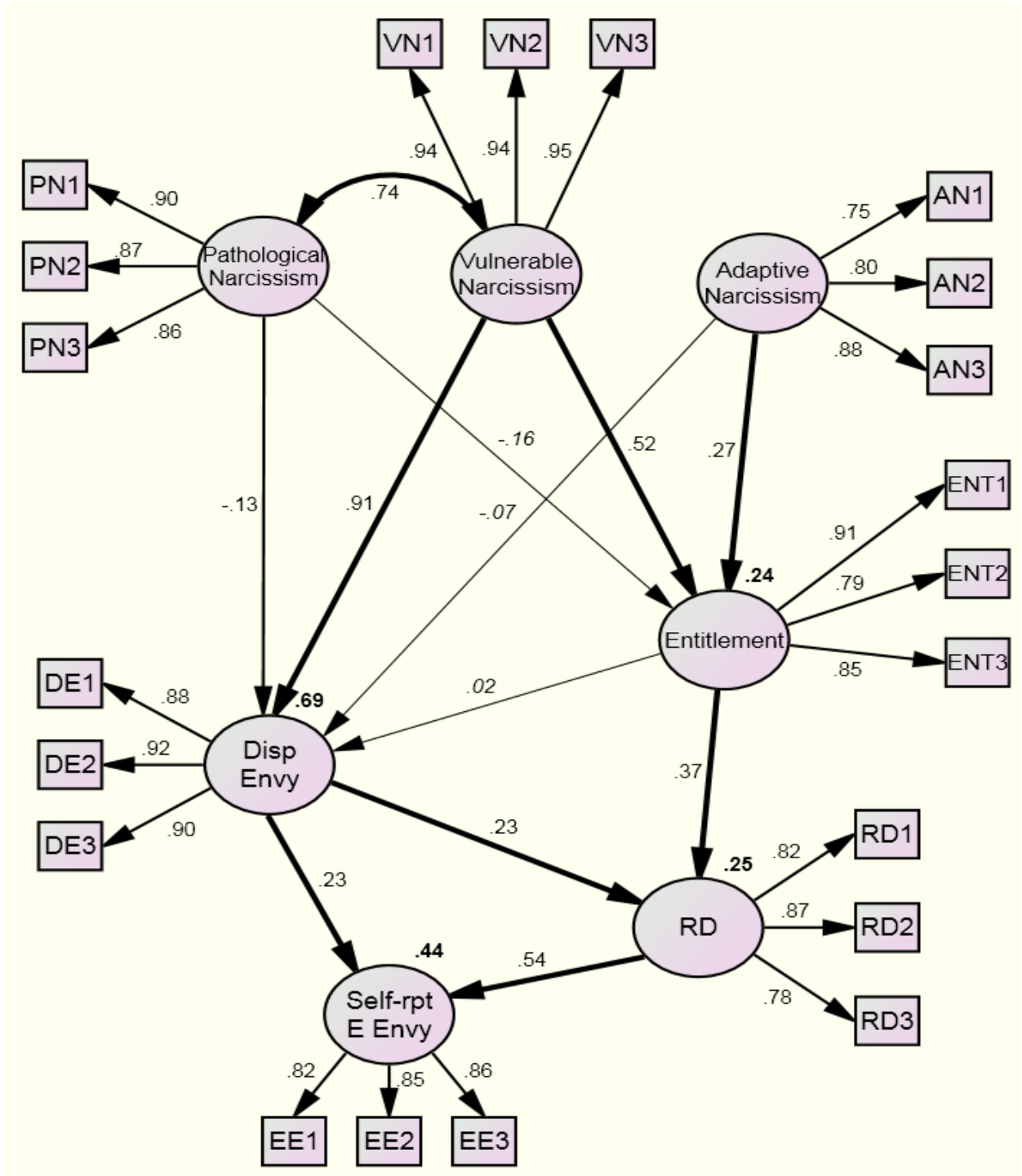

Figure 2. Hypothesized model predicting self-reported episodic envy (Model A), $\chi^2_{(177)}$=261.57, p<.001, χ^2/df=1.46, CFI=.976, RMSEA=.048 (.034-.06 with 90% confidence), SRMR=.051, R^2=.44). Statistically significant paths are indicated with bolded arrows. Marginally significant paths are indicated with medium-thickness arrows. Non-significant paths are indicated with thin arrows and italicized path coefficients. Variance explained (R^2) for each endogenous variable is bolded.

The model predicting burning (Fig. 3) also demonstrated adequate fit, $\chi^2_{(141)}$=185.66, p<.01, χ^2/df=1.32, CFI=.985, RMSEA=.040 (.022-.054 with 90% confidence), SRMR=.046. However, this should be qualified by noting the low explained variance (4.1%) for burning.

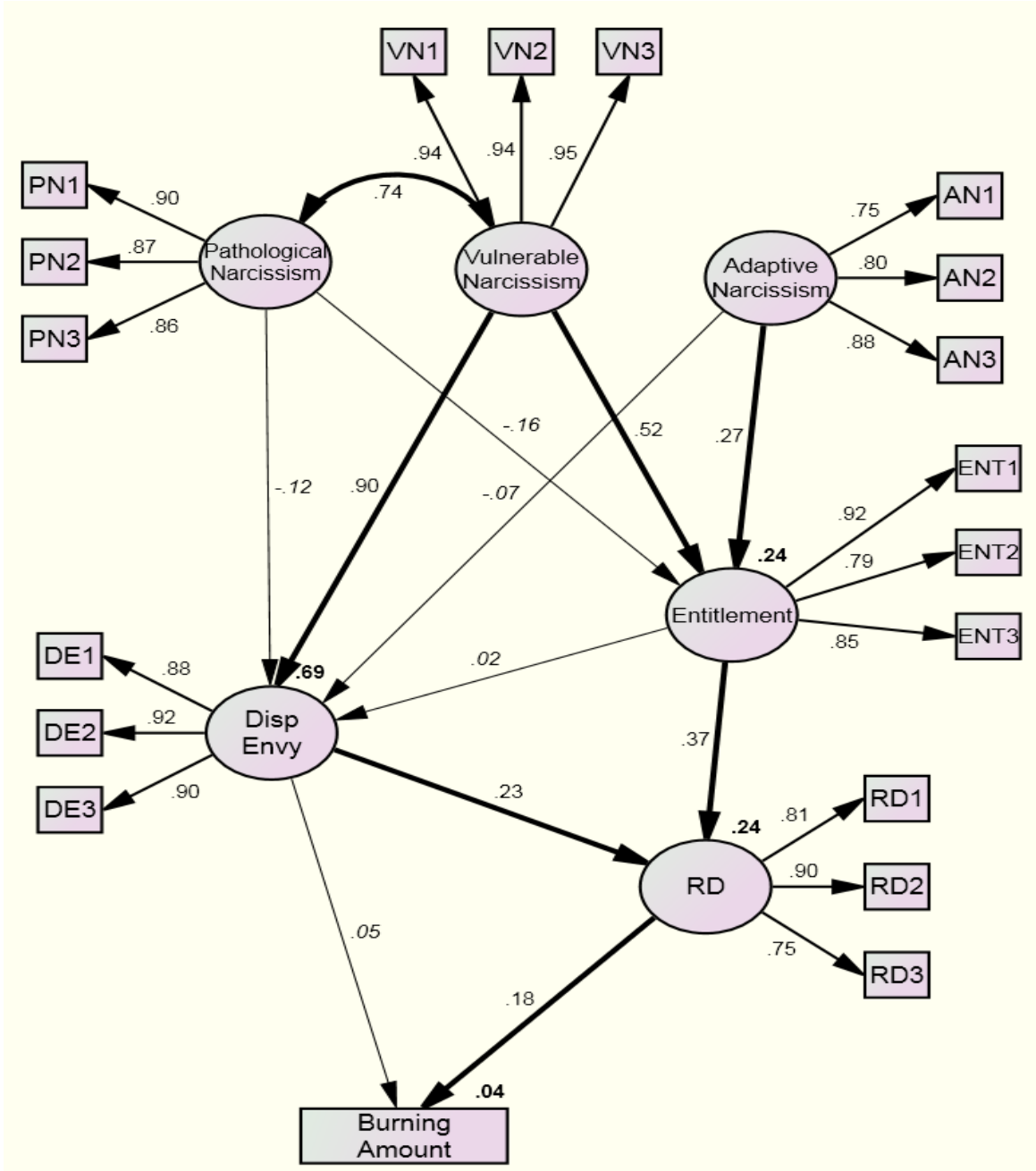

Figure 3. Hypothesized model predicting burning (Model A), $\chi^2_{(141)}$=185.66, p<.01, χ^2/df=1.32, CFI=.985, RMSEA=.040 (.022-.054 with 90% confidence), SRMR=.046, R^2=.04. Statistically significant paths are indicated with bolded arrows. Non-significant paths are indicated with thin arrows and italicized path coefficients. Variance explained (R^2) for each endogenous variable is bolded.

For the model predicting other-self difference ratings (Fig. 4), despite its adequate model fit, $\chi^2_{(141)}$=198.30, p=.01, χ^2/df=1.41, CFI=.980, RMSEA=.045 (.029-.059 with 90% confidence), SRMR=.051, it explained less than 1% of variance in indirect envy scores and no paths significantly predicted indirect envy scores. Thus, this model has no predictive value as it currently operates.

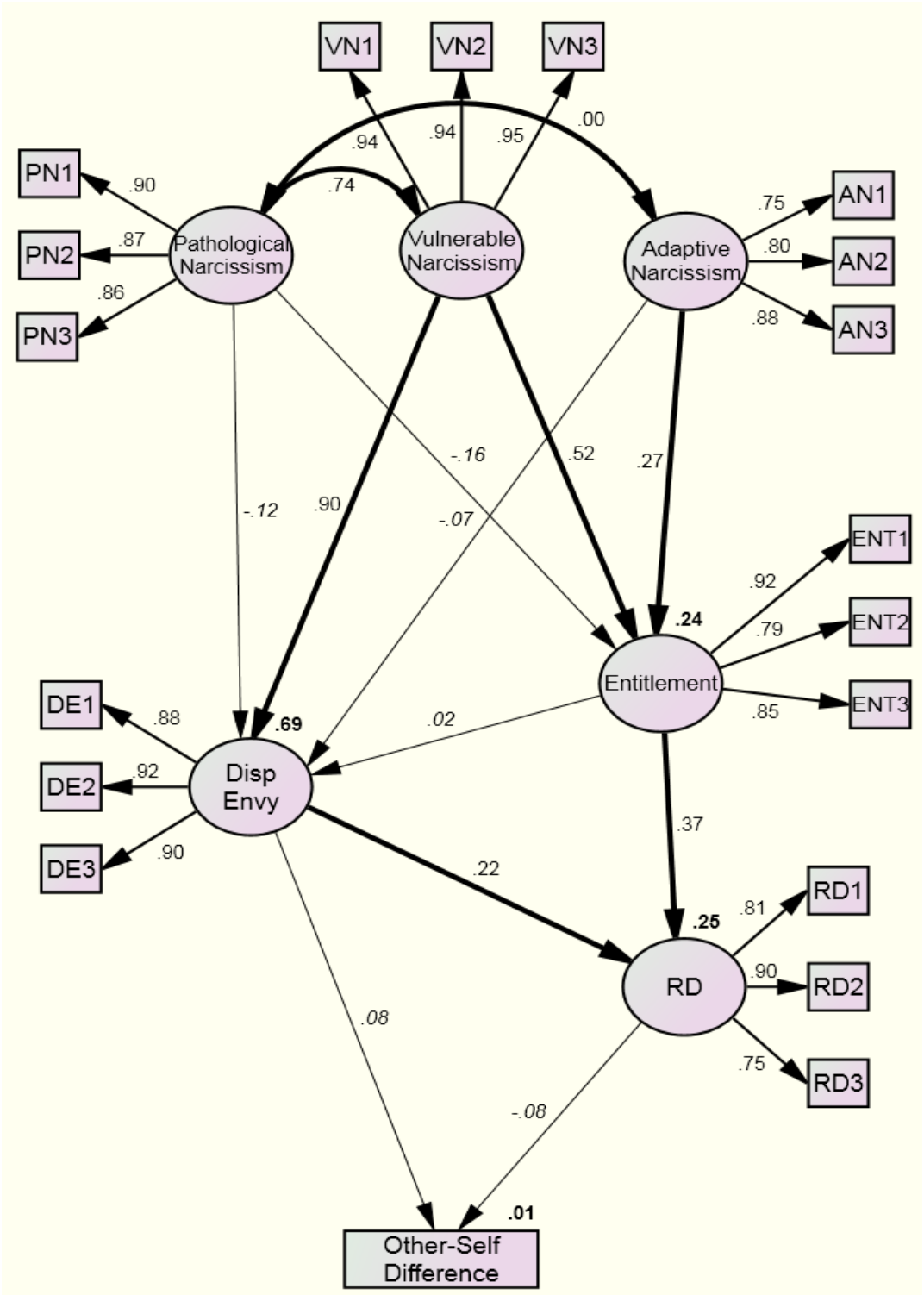

Figure 4. Hypothesized model predicting other-self difference ratings (Model A), $\chi^2_{(141)}$=198.30, p<.001, χ^2/df=1.41, CFI=.980, RMSEA=.045 (.029-.059 with 90% confidence), SRMR=.051, R^2=.01. Statistically significant paths are indicated with bolded arrows. Non-significant paths are indicated with thin arrows and italicized path coefficients. Variance explained (R^2) for each endogenous variable is bolded.

Hypothesized covariances. Standardized covariances and regression weight estimates were examined next to test the study hypotheses. Covariances will be discussed first, followed by path coefficients. As the models differ only in respect to the final endogenous variable (self-reported/indirect/behavioural episodic envy), paths common to all models will not be discussed in duplicate.

Hypotheses 1-3. As anticipated, pathological and vulnerable narcissism positively covaried (r=.69, p<.001). The covariances between adaptive narcissism and pathological and vulnerable narcissism were fixed to zero as per the original hypotheses. Correlational analyses indicated that adaptive narcissism was not significantly correlated with pathological (r=.07, *ns*) or vulnerable (r=-.05, *ns*) narcissism.

Hypothesized path coefficients.

Hypothesis 1. Adaptive narcissism positively predicted entitlement (standardized path β=.27, p<.001), supporting hypothesis 1a. While a negative predictive path between adaptive narcissism and dispositional envy was anticipated, the path was in the expected direction but was not statistically significant (β=-.07, *ns*), partially confirming hypothesis 1b. Adaptive narcissism was positively correlated with relative deprivation (r=.14, p<.05), confirming hypothesis 1c, and was marginally positively correlated with self-reported episodic envy (r=.14, p<.1), partially supporting hypothesis 1d specifying no significant correlation between these constructs. Contrary to hypothesis 1e, adaptive narcissism was not correlated with burning (r=.04, *ns*). Additionally, hypothesis 1f was not supported as adaptive narcissism was negatively correlated with other-self difference ratings (r=-.20, p<.01).

Hypothesis 2. Pathological grandiose narcissism was hypothesized to positively predict entitlement (2a) and negatively predict dispositional envy (2b). While pathological narcissism

was positively correlated with entitlement (r=.23, p<.01) and dispositional envy (r=.50, p<.01), standardized path coefficients were in the opposite direction. In the model, pathological narcissism did not significantly predict entitlement (β=-.16, *ns*) and marginally negatively predicted dispositional envy (β=-.13, p<.1), rejecting hypothesis 2a and partially supporting 2b. Pathological narcissism was positively correlated with relative deprivation as proposed by hypothesis 2c, though this correlation was not significant (r=.10, *ns*). Pathological narcissism was significantly positively correlated with self-reported episodic envy (r=.16, p<.05), supporting hypothesis 2d. Contrary to hypotheses 2e and 2f, pathological narcissism was uncorrelated with burning (r=-.05, *ns*) and other-self difference ratings (r=.08, *ns*).

Hypothesis 3. Vulnerable narcissism positively predicted both entitlement (β=.52, p<.001) and dispositional envy (β=.91, p<.001), supporting hypotheses 3a and 3b. Consistent with hypotheses 3c and 3d, vulnerable narcissism was positively correlated with relative deprivation (r=.29, p<.01) and episodic envy (r=.40, p<.01). However, vulnerable narcissism was uncorrelated with burning (r=.06, *ns*) and other-self difference ratings (r=.05, *ns*), contrary to hypotheses 3e and 3f.

Hypothesis 4. Surprisingly, despite a significant positive correlation (r=.29, p<.01), entitlement did not predict dispositional envy in the model (β=.02, *ns*), contrary to hypothesis 4a. However, hypotheses 4b and 4c were supported as entitlement predicted relative deprivation (β=.37, p<.001) and was positively correlated with self-reported episodic envy (r=.27, p<.01). Like all 3 narcissistic subtypes, entitlement was uncorrelated with burning (r=.08, *ns*) and other-self difference ratings (r=-.09, *ns*), disconfirming hypotheses 4d and 4e.

Hypothesis 5. Dispositional envy predicted relative deprivation (β=.23, p<.01) and self-reported episodic envy (β=.23, p<.001), confirming hypotheses 5a and 5b. However,

dispositional envy was not significantly positively correlated with burning (r=.11, *ns*) or other-self difference ratings (r=.05, *ns*), in contrast to hypotheses 5c and 5d.

Hypothesis 6. Relative deprivation positively predicted self-reported envy (β=.54, p<.001) and burning (β=.18, p<.05), consistent with hypotheses 6a and 6b. However, hypothesis 6c was rejected as relative deprivation did not predict other-self difference ratings (β=-.09, *ns*).

Model modification, alternative models, and equivalent models

While the overall models demonstrated satisfactory fit and the model predicting self-reported envy explained adequate variance, model re-specification is frequently a necessary step in model evaluation to identify and compare models that remove weak or insignificant paths and/or examine possible additional paths that improve model fit. Adding structural paths post-hoc is among the most controversial in SEM analysis as they are driven solely by data considerations (similar to stepwise multiple regression) and may propose nonsensical paths or covariances. While helpful, this process should be undertaken carefully.

Model misspecification can be identified by both standardized residuals and modification indices (Byrne, 2010). Standardized residuals are an estimate of the discrepancy between observed residuals and the zero residuals expressed in standard deviation units that would exist in a perfectly-fitting model. Values of 2.58 or higher have been considered large, indicating a significant discrepancy with the covariance between two variables (Jöreskog & Sörbom, 1993; cited in Byrne, 2010). No values >2.58 were observed in the residual matrix for the models predicting self-reported or other-self difference ratings. One significant residual (3.52) emerged in the model predicting burning between the second dispositional envy parcel (DE2) and burning. Only two values fell between 2 and 2.58 and most residuals were <1.

Modification indices indicate the drop in overall model χ^2 that would result from allowing a regression weight or covariance to be non-zero (i.e., adding a covariance or path that doesn't exist in the current model). "Large" modification indices (MIs) are relative and at the discretion of the experimenter; the rationale for adding paths is more important than the magnitude of the improved fit (Garson, 2007). Parameter change statistics are calculated alongside MIs, referring to the estimated change in value of a parameter when allowed to be freely estimated. Lei and Wu (2007) comment that a high MI paired with a high parameter change (Par Change) statistic is less likely to be due to chance. As the 3 models differ only in the final endogenous variable, most MIs and Par Change statistics are common to all models.

No MIs exceeded 10 and only three parameter change statistics exceeded abs (+/-1). Considering covariances first, most proposed covarying two error terms that had no theoretical merit (e.g., allowing AN parcel 1 to covary with DE parcel 2). Covariances were also proposed between adaptive narcissism and pathological narcissism (MI=4.982, Par Change=.151) and adaptive and vulnerable narcissism (MI=4.504, Par Change=-.207). While either path achieved statistical significance when allowed to covary alone ($p<.05$), with AN-PN covarying positively and AN-VN covarying negatively, these covariances suppressed one another so that their mutual inclusion rendered both paths non-significant. Both of these paths are consistent with theoretical predictions; while hypothesized to be non-significant in the model, adaptive and pathological narcissism reside on the grandiose narcissism spectrum and would be expected to share some common variance, while vulnerable narcissism holds no self-protective benefits and manifests uniquely compared to adaptive narcissism. The AN-PN path was added because it had the larger MI, thereby improving the model fit more substantially than the AN-VN path. No sensible regression paths were proposed and no MIs exceeded 8.6 across any of the three models.

Model comparison was performed first for the model predicting self-reported envy. Direct model comparison of the original proposed model (Model A) and a modified model allowing adaptive and pathological narcissism to covary (Model B) favours Model B, $\chi^2_{difference}(1)=5.141$, $p=.023$. As there are theoretical and statistical grounds to incorporate this covariance, Model B was accepted and was compared to models developed in the next section.

Additional models were examined by removing nonsignificant paths (model trimming) that were hypothesized to be significant in the original proposed model. Three non-significant paths were common to all models: Entitlement-Dispositional Envy (ENT-DE; $\beta=.02$, $p=.709$), Adaptive Narcissism-Dispositional Envy (AN-DE; $\beta=-.06$, $p=.181$), and Pathological Narcissism-Entitlement (PN-ENT; $\beta=-.17$, $p=.148$). The first two paths were in the expected direction, while the third was contrary to hypotheses. To permit nested model comparisons, models were constructed by fixing one additional path to zero for each model beginning with the weakest path. In Model C, the ENT-DE path was fixed to 0 (in addition to the AN-VN covariance). For Model D, the AN-DE path was similarly constrained in addition to the ENT-DE; Model E added PN-ENT as a fixed zero path.

Model comparison indicated that the constraints imposed by Models C-E did not result in significantly worse model fit than Model B (Model C: $\chi^2_{difference}(1)=.134$, $p=.704$; Model D: $\chi^2_{difference}(2)=1.237$, $p=.539$; Model E: $\chi^2_{difference}(3)=3.666$, $p=.300$). Additionally, Models D and E did not fit worse than Model C (Model D: $\chi^2_{difference}(1)=1.102$, $p=.294$; Model E: $\chi^2_{difference}(2)=3.531$, $p=.171$) and Model E fit marginally worse than Model D ($\chi^2_{difference}(1)=2.429$, $p=.119$). While Model E had slightly worse overall model fit than Model D, the PN-ENT remained non-significant in Model D ($\beta=-.18$, $p=.117$) and should not be included in the final model. Following this analysis, Model E was accepted as the most economically balanced model

as it removes three non-significant paths (see Fig. 5). Model E demonstrated adequate fit, $\chi^2_{(179)}$=256.75, p<.001, χ^2/df=1.43, CFI=.977, RMSEA=.046 (.033-.058 with 90% confidence), SRMR=.054, R^2=.44.

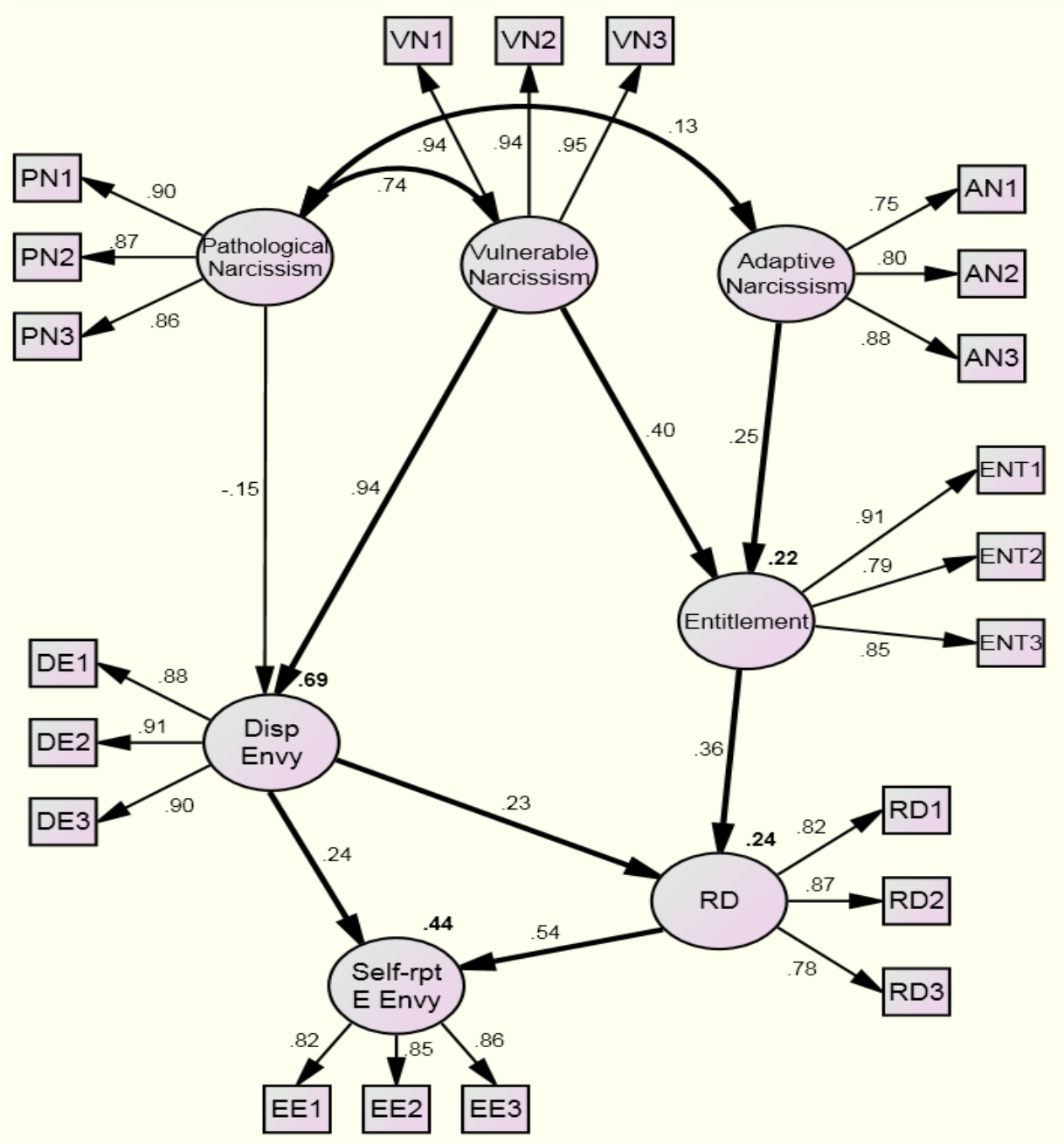

Figure 5. Self-reported episodic envy Model E, $\chi^2_{(179)}$=256.75, p<.001, χ^2/df=1.43, CFI=.977, RMSEA=.046 (.033-.058 with 90% confidence), SRMR=.054, R^2=.44. Statistically significant paths are indicated with bolded arrows. Non-significant paths have been omitted from this diagram. Variance explained (R^2) for each endogenous variable is bolded.

Finally, direct paths from each narcissistic subtype to relative deprivation and self-reported envy were examined. Non-significant paths indicate that any direct relationship is mediated by other variables in the model. All six paths were entered simultaneously and the weakest path was removed in turn; of these, the path between vulnerable narcissism and self-reported episodic envy (VN-EE) remained statistically significant ($p<.05$). The inclusion of the VN-EE path in Model F was further justified by a model comparison suggested that Model E fit marginally worse than Model F (Model E: $\chi^2_{difference}(1)=3.73$, $p=.053$). This additional path rendered the path coefficient from dispositional envy to episodic envy (DE-EE) non-significant ($\beta=.04$, $p>.1$) and reduced the PN-DE path to marginal significance ($\beta=-.14$, $p=.061$), necessitating further model comparison.

Model G was created by removed the DE-EE path, while Model H further constrained the model by removing the PN-DE path. Model comparison revealed that Model G did not fit worse than Model F (Model E: $\chi^2_{difference}(1)=.08$, $p=.774$), while Model H fit marginally worse than Model G (Model H: $\chi^2_{difference}(1)=3.57$, $p=.062$). On these grounds, Model G was accepted as the final model for self-reported episodic envy and demonstrated adequate fit, $\chi^2_{(179)}=253.10$, $p<.001$, $\chi^2/df=1.41$, CFI=.978, RMSEA=.045 (.031-.058 with 90% confidence), SRMR=.056, $R^2=.45$ (Fig. 6). It should be noted that this model includes one marginally significant path coefficient (PN-DE: $\beta=-.14$, $p=.061$), retained due to its theoretical importance, marginal statistical significance, and detrimental effects of its removal on model fit statistics.

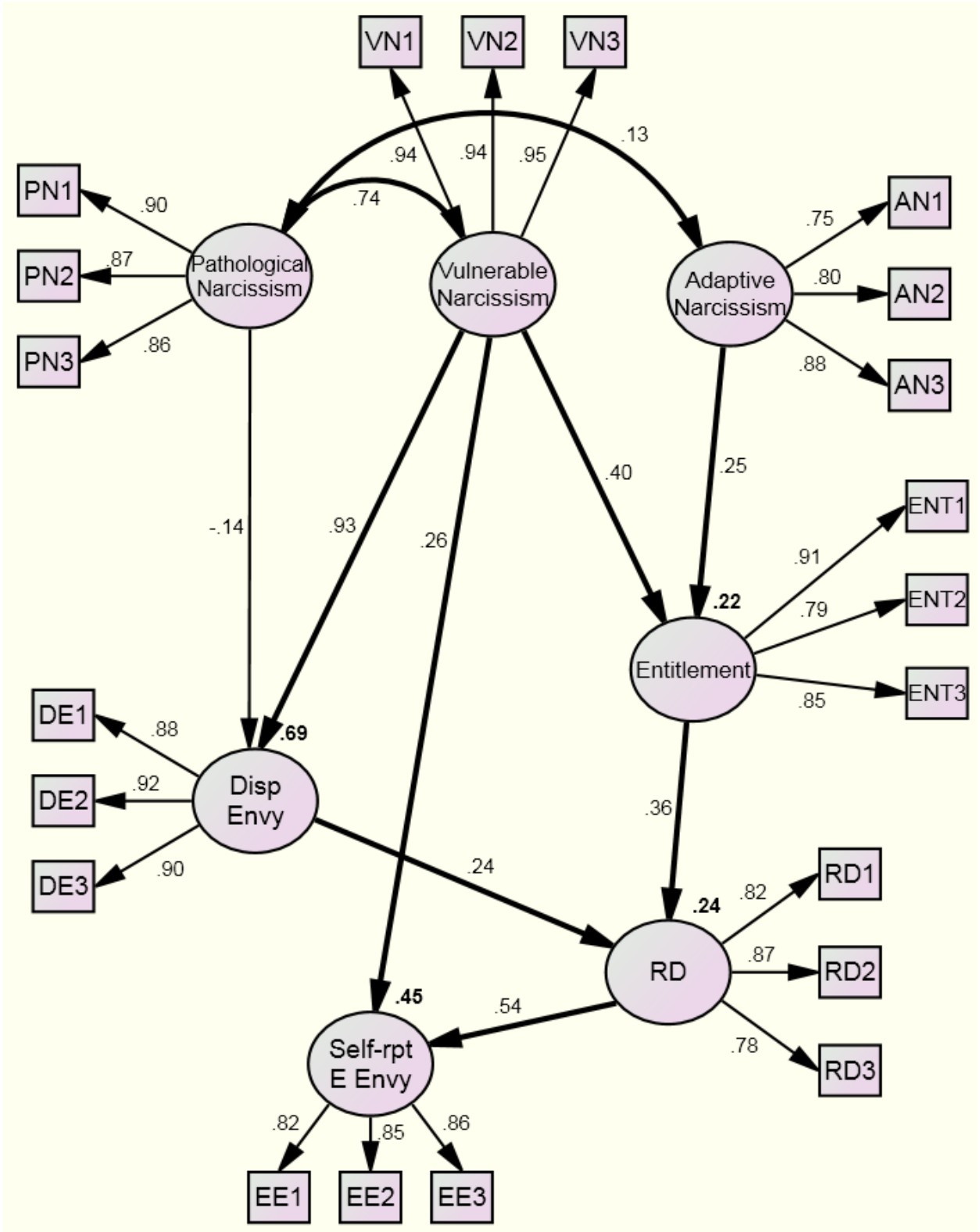

Figure 6. Self-reported episodic envy Model G, $\chi^2_{(180)}$=256.59, p<.001, χ^2/df=1.43, CFI=.977, RMSEA=.046 (.032-.058 with 90% confidence), SRMR=.058, R^2=.45. Non-significant paths have been omitted from this diagram. Marginally significant paths are indicated by thinner arrows. Variance explained (R^2) for each endogenous variable is bolded.

For the model predicting burning, the Model E framework of allowing adaptive and pathological narcissism to covary and fixing the ENT-DE, AN-DE, and PN-ENT paths to zero was examined as a default model. One additional path was non-significant in this model: dispositional envy failed to predict behavioural envy scores. Model F added this constraint and demonstrated adequate fit, $\chi^2_{(144)}$=184.75, p=.012, χ^2/df=1.28, CFI=.986, RMSEA=.037 (.018-.052 with 90% confidence), SRMR=.050, R^2=.04 (Fig. 7). Model comparison indicated that Model F fit no worse than Model E ($\chi^2_{\text{difference}}(1)$=.411, p=.522) and had preferable model fit statistics (SRMR, χ^2/df, RMSEA).

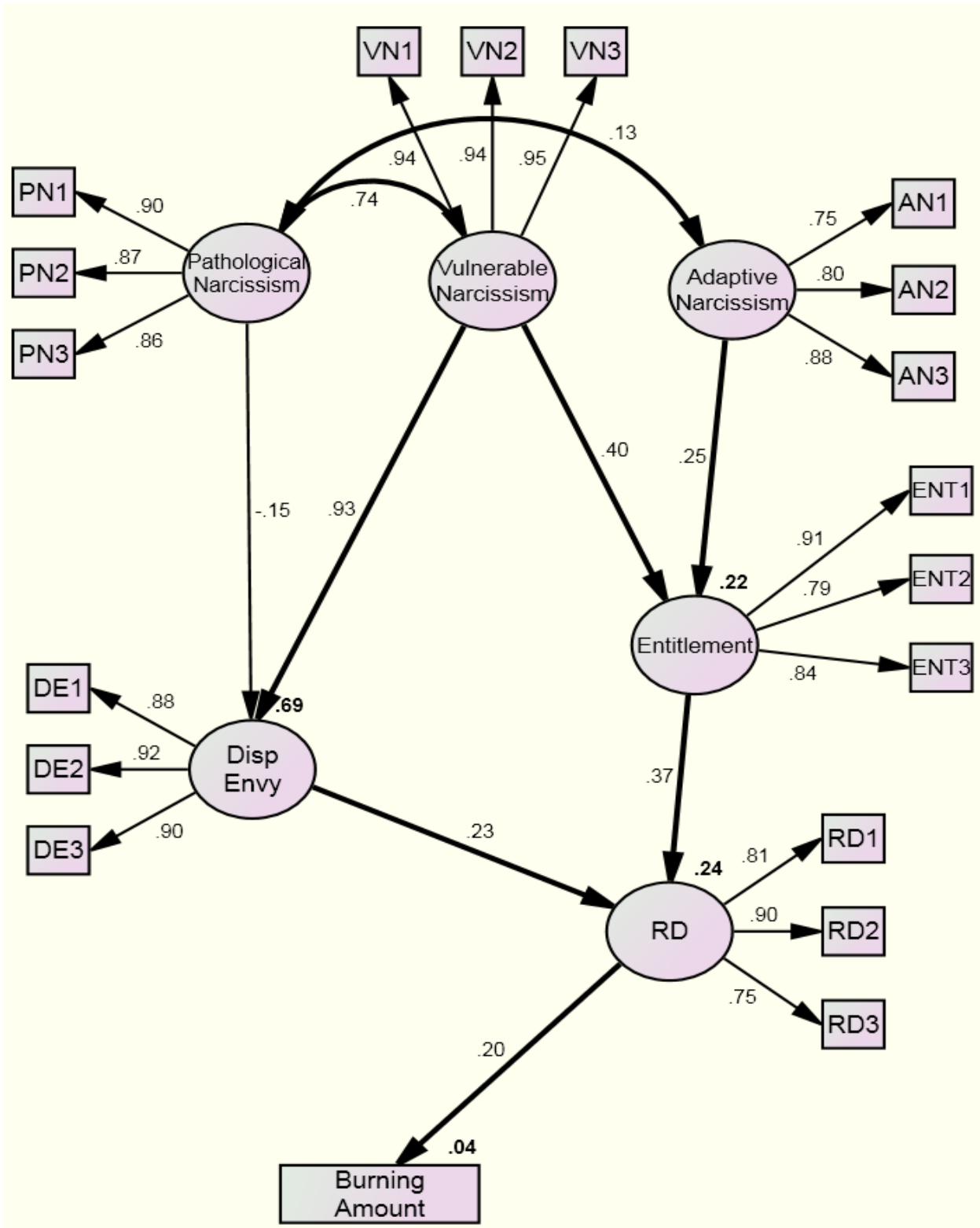

Figure 7. Burning Model F, $\chi^2_{(144)}$=184.75, p=.012, χ^2/df=1.28, CFI=.986, RMSEA=.037 (.018-.052 with 90% confidence), SRMR=.050, R^2=.04. Non-significant paths have been omitted from this diagram. Marginally significant path coefficients are indicated by thinner arrows. Variance explained (R^2) for each endogenous variable is bolded.

Next, direct paths from each narcissistic subtype to relative deprivation and burning were examined. All six paths were entered simultaneously and the weakest path was removed in turn. While a statistically significant negative path coefficient emerged between pathological narcissism and relative deprivation (PN-RD; β=-.18, p=.046), this only remained significant if a weaker positive path coefficient between adaptive narcissism and relative deprivation (AN-RD) was permitted (β=.13, p=.079). Model G included both direct paths. Model comparison indicated that Model F fit marginally worse than Model G ($\chi^2_{difference}(2)=5.96$, p=.051). Despite the inclusion of two marginally significant paths (AN-RD and PN-DE), this model was selected as the best representation of the data and demonstrated adequate model fit, $\chi^2_{(142)}=178.79$, p=.02, χ^2/df=1.26, CFI=.987, RMSEA=.036 (.015-.051 with 90% confidence), SRMR=.044, R^2=.04 (Fig. 8). The low variance explained for burning behaviour indicates that, despite acceptable model fit statistics, the model variables poorly account for participants' burning decisions.

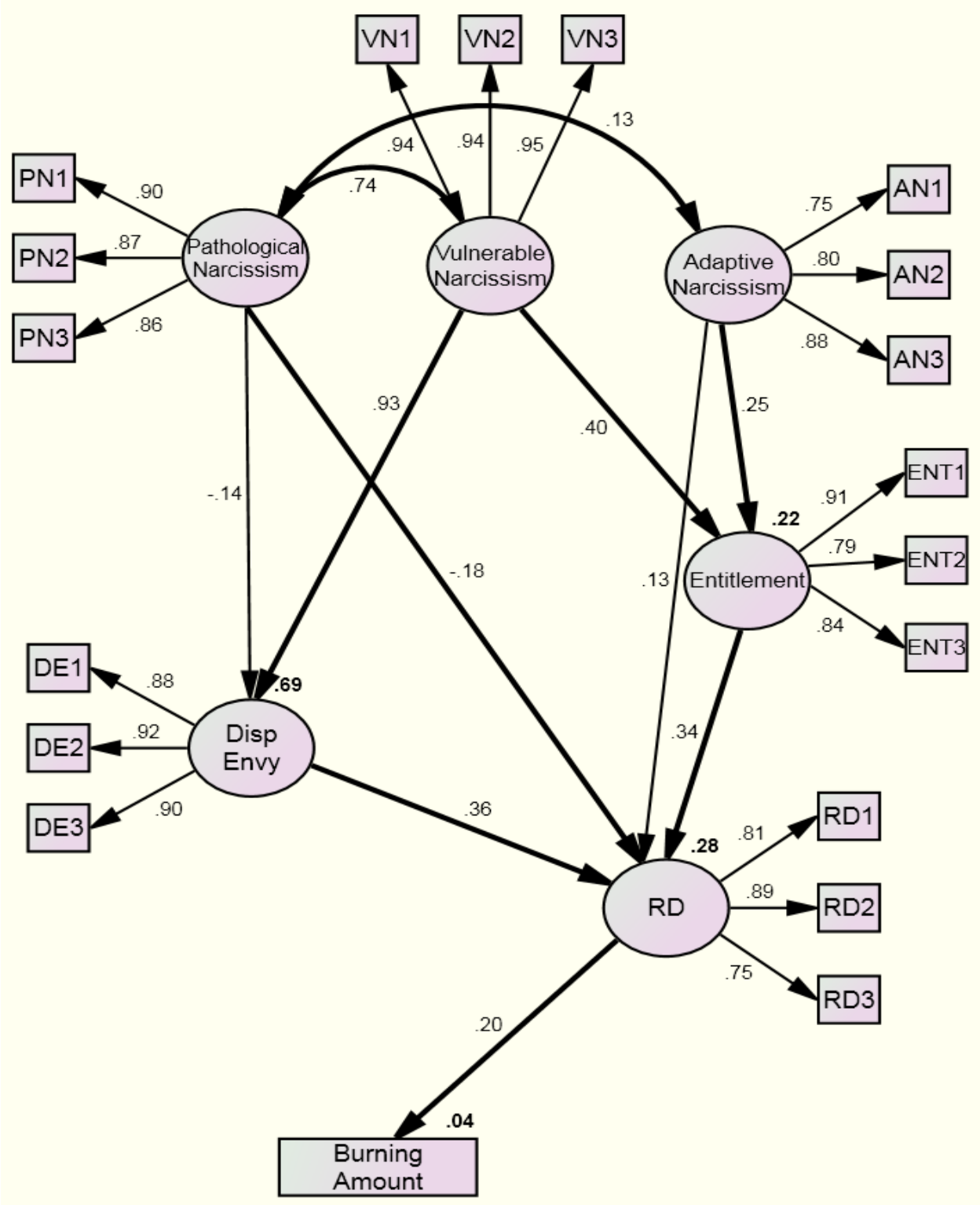

Figure 8. Burning Model G, $\chi^2_{(142)}$=178.79, p=.02, χ^2/df=1.26, CFI=.987, RMSEA=.036 (.015-.051 with 90% confidence), SRMR=.044, R^2=.04. Non-significant paths have been omitted from this diagram. Marginally significant path coefficients are indicated by thinner arrows. Variance explained (R^2) for each endogenous variable is bolded.

The model predicting other-self difference ratings was examined to see whether removing one of the non-significant direct paths to other-self ratings (from dispositional envy or relative deprivation) would improve the strength of the other coefficient. Model F removed the path coefficient between dispositional envy and other-self difference (DE-IND), Model G removed the path between relative deprivation and other-self difference (RD-IND), and Model H removed both paths. For both potential models, removing one path weakened the remaining path coefficient (Model E is shown in Fig. 9).

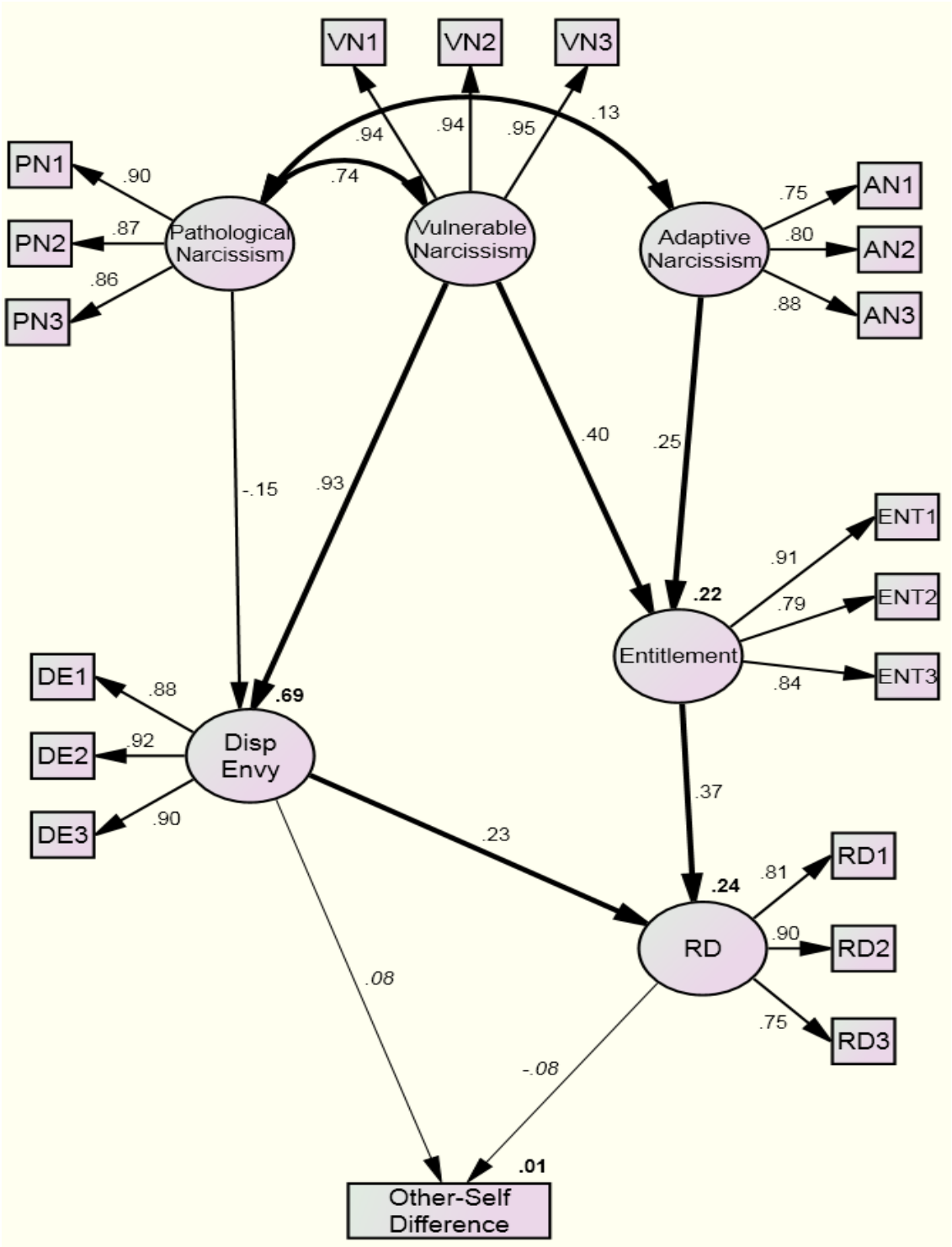

Figure 9. Other-self difference Model E, $\chi^2_{(143)}$=197.00, p<.001, χ^2/df=1.38, CFI=.981, RMSEA=.043 (.027-.057 with 90% confidence), SRMR=.055, R^2=.01). Statistically significant paths are indicated with bolded arrows. Marginally significant paths are indicated with medium-thickness arrows. Non-significant paths are indicated with thin arrows and italicized path coefficients. Variance explained (R^2) for each endogenous variable is bolded.

Direct paths between narcissistic subtypes to relative deprivation and other-self difference scores were added. Only one direct path (VN-RD) was not marginally significant and was removed. The remaining paths were marginally significant or stronger (all *p*s <.08). All five paths were inserted into Model I. This revised model demonstrated adequate model fit, $\chi^2_{(140)}$=182.20, *p*=.01, χ^2/df=1.30, CFI=.986, RMSEA=.039 (.020-.053 with 90% confidence), SRMR=.044, R^2=.06 (Fig. 10). While these additions explained an additional 5% of variance in other-self difference ratings, the total variance explained statistic (6%) is very small, indicating even this revised model poorly explains variation among these difference ratings.

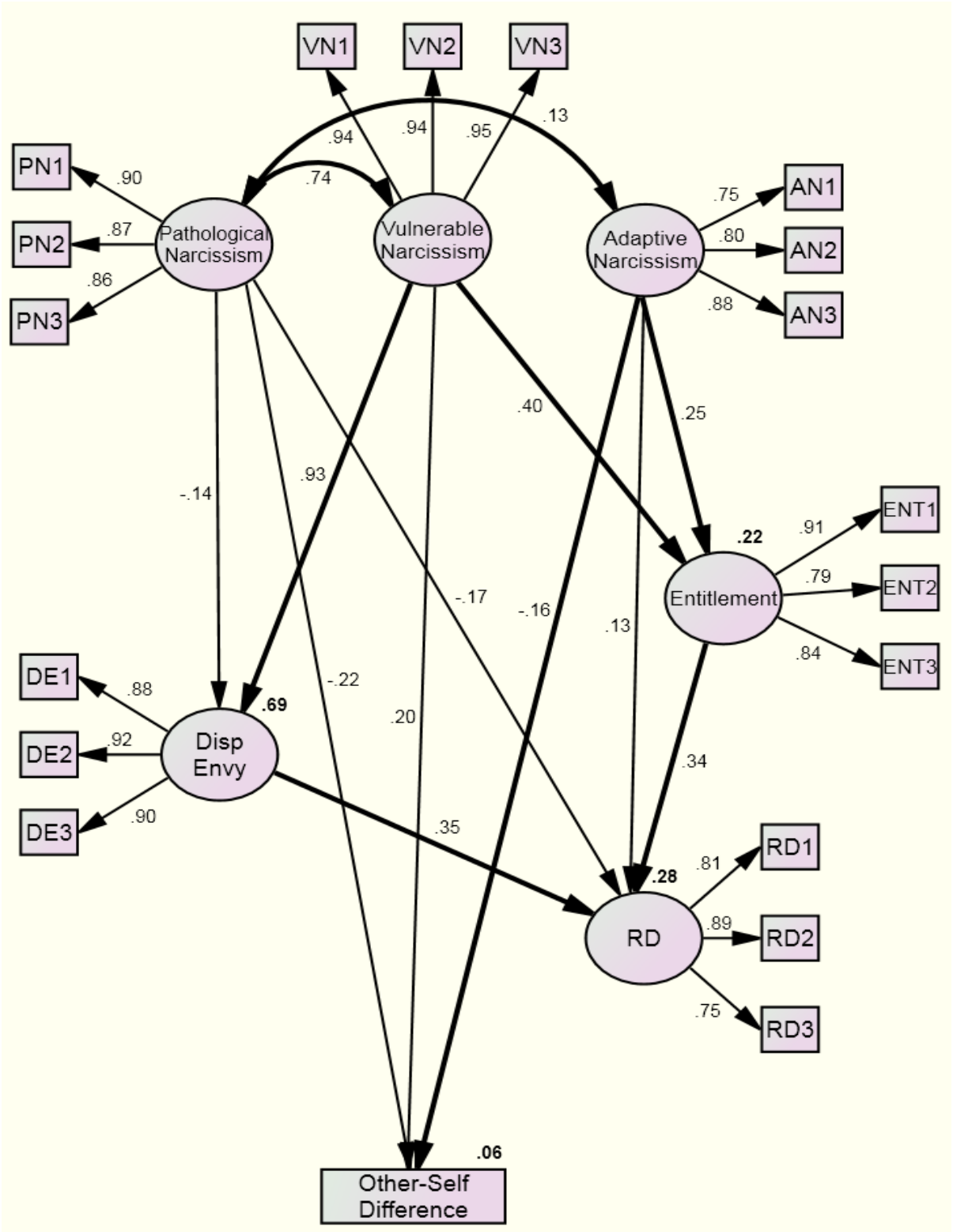

Figure 10. Other-self difference Model I, $\chi^2_{(140)}$=182.20, p=.01, χ^2/df=1.30, CFI=.986, RMSEA=.039 (.020-.053 with 90% confidence), SRMR=.044, R^2=.06. Non-significant paths have been omitted from this diagram. Marginally significant path coefficients are indicated by thinner arrows. Variance explained (R^2) for each endogenous variable is bolded.

Why was burning poorly predicted by the model and what does burning represent?

The self-reported envy model appears to be well-predicted by the hypothesized variables in the model with 44% of variance explained, while the behavioural envy model using the same predictor variables explains only 4% of variance. This contrast may suggest that burning may be an unreliable measure of behavioral envy and/or it may measure a construct other than envy. The primary motives underlying burning are not well explained or measured in the proposed model. The following section examines what elimination amounts might represent, if not envy.

An additional model was briefly examined with self-reported episodic envy predicting behavioural episodic envy. If self-reported envy predicted the eliminated amount, this may suggest that the latter construct measures envy. As shown earlier, the zero-order correlation between these constructs is non-significant (r=.07, *ns*). When the model was examined with self-reported envy and relative deprivation predicting behavioural envy (the latter was included because it was a significant predictor in the behavioural envy model), the path coefficient was nearly zero (β=-.07, *ns*). When the path coefficient between relative deprivation and behavioural envy was removed, the self-reported envy - behavioural envy path coefficient became positive, though non-significant (β=.10, *ns*). This finding suggests that self-reported envy and amount spent in the elimination round are not related, either as a zero-order correlation or as a path coefficient within the model. Moreover, any positive relationship between these constructs is negated or even reversed when feelings of relative deprivation are controlled.

Consistent with previous research (Zizzo & Oswald, 2001), participants eliminated their opponents' earnings hierarchically, burning the most advantaged opponent (player X) most, followed by the second-most advantaged opponent, followed by the third-most advantaged opponent (almost always the same-room opponent). On average, participants chose to eliminate

223.43 doblons from player X (*N*=207), 143.4 doblons from their other advantaged opposite-room opponent (*N*=131), and 51.22 doblons from their same-room opponent (*N*=174). This pattern could suggest burning is motivated by envy (as the most-advantaged rivals are targeted most severely) or concerns for fairness, competing explanations that Zizzo and Oswald (2001) did not disentangle in their study.

Next, self-reported episodic envy and burning were compared head-to-head in correlational analyses with several exploratory variables in the study (Table 3) as well as individual items from the Additional Reactions, Post-Choice and Post-Elimination measures among participants who chose to burn (N=133; Table 4 presents correlations with scale totals only). If burning is indicative of envy, it should display a similar pattern of correlations as self-reported episodic envy; if not, the divergent pattern of correlates may suggest alternate reasons for burning.

Table 3

Comparing self-reported and behavioural envy with exploratory variables

Variable	Self-reported episodic envy	Burning amount
Dispositional envy	.36**	.11
Optimism	.18*	.08
Score after 5 rounds	.08	.20**
Position after 5 rounds	-.08	.39**
Total amount bet	.07	.20**
Relative deprivation	.56**	.18*
Other-self difference rating	.06	.15*
Self-reported episodic envy	1	.07
Burning amount	.07	1
% of own earnings	-.01	.72**
% of player X's earnings	.06	.92**
% of other opposite room opponent's earnings (N=130)	.11	.87**
% of same-room opponent (N=172)	.03	.70**
Chose to burn?	.05	.75**
Additional reactions scale	.72**	.19**
Post-choice reactions	.41**	.65**
Post-choice mood rating	-.02	-.24**
Mood change post-choice	.11	-.15*
Post-elimination scale	.54**	.37**
Schadenfreude	.41**	.30**
Mood change post-elimination results	.02	.09

Note. Chose to burn? = Dummy coded "1" [yes] or "0" [no]; Mood change post-choice = Difference score computed by subtracting mood rating after making elimination round choices from mood rating after learning final scores after betting round; Mood change post-elimination results = Difference score computed by subtracting mood rating after learning final post-elimination payouts from mood rating after indicating elimination round choices.
^{m} $p<.1$. * $p<.05$. ** $p<.01$.

Table 4

Comparing self-reported and behavioural envy with exploratory variables

Variable	Self-reported episodic envy	Burning amount
Additional reactions scale	.70**	.19*
Post-choice reactions	.57**	.29**
Post-elimination scale	.58**	.14
Schadenfreude	.48**	.07

Note. Sample restricted to participants who chose to burn (N=133).
^{m} $p<.1$. * $p<.05$. ** $p<.01$.

Envious participants were characterized by optimistic expectations towards their outcome prior to the betting round, experienced strong deprivation and other negative emotions upon learning the final scores, appeared to take moderate pleasure in burning others' earnings and experienced somewhat enhanced mood following their choices (though this was not statistically significant). However, on the whole, this group was not more likely to burn nor spend more money towards burning. Envious individuals who chose to burn (N=133) reported being strongly bothered by player X's anticipated payout and felt they ought to have been the top player. They endorsed unfairness, desire to win, and their rivals' deservingness as reasons for burning and reported that eliminating others' earnings felt good, wished they could see their opponent's face as their money was eliminated, and were less likely to experience guilt regarding their burning choices. Finally, upon viewing the final payouts, envious burners endorsed resentfulness towards their rival for his/her high score and experienced moderately strong feelings of *Schadenfreude* (e.g., smiling and expressing relief towards X's outcome).

In contrast, participants who later burned more of their opponents' earnings tended to have made higher wagers and performed well during the betting rounds, achieving a higher score and rank-ordered position within their group. They experienced mildly elevated relative

deprivation and tended to rate themselves as more able than their main rival (player X) and endorsed mild negative reactions upon learning the results of the final betting round. In addition, participants who spent more towards burning their opponents endorsed lower mood ratings; moreover, their mood worsened between learning the post-betting round scores and spending their earnings to modify the final payouts. Among the subset of participants who chose to burn (N=133), those who burned higher amounts felt they should have been the top player, attributed X's success to luck and did not endorse feelings of unfairness or being bothered by X's outcome. Their justification for burning appeared to be entirely based on competitiveness and a desire to win, as they did not endorse unfairness or pleasure as motives. Finally, upon learning the final payouts these individuals did not report elevated feelings of *Schadenfreude*; instead, they endorsed that it was justified for them to want others to fail in this situation.[10]

Improving the measurement of behavioral envy

In response to these apparent problems in assessing behavioural envy via burning, two additional approaches were considered. First, the use of a single-item behavioural measure may be problematic. Epstein (1979) has commented that "single items of behavior, no matter how carefully measured...normally have too high a component of error of measurement to permit demonstration of high degrees of stability" (p. 1121). While behavioural measures can demonstrate stability, they must be measured over a sufficient number of occurrences (Epstein, 1979). With this consideration in mind, I attempted to create a composite measure of behavioural envy combining burning amount with items from the Post-Choice and Post-Elimination measures, as these items assessed participants' affective and cognitive reactions to their burning

[10] While burning amount was strongly positively correlated with the Post-Choice scale and moderately positively correlated with *Schadenfreude* in the entire sample, these correlations were reduced to non-significance among the subsample of burners.

choices. However, burning amount[11] was uncorrelated with most Post-Choice items (only r>.3 for 2 of 10 items) and with the entire Post-Elimination scale, suggesting that a composite measure would demonstrate poor internal consistency.

Second, it is possible that participants' propensity towards risk-taking versus caution might influence the burning amount and its subsequent relations with other variables. To examine this possibility, I controlled for participants' approach to betting by regressing burning on the amount participants chose to bet and correlated the standardized residuals with the main study variables. The pattern of correlations was largely unchanged; burning (controlling for the influence of betting amount) was uncorrelated with all 3 narcissistic subtypes, entitlement, and self-reported episodic envy. However, this modified burning amount was marginally positively correlated with dispositional envy (r=.13, p=.074), slightly stronger than the correlation with the original burning amount (r=.11, p=.119). When the behavioural envy SEM analysis was re-run using this revised burning amount, the model fit statistics and variance explained (R^2=.04) were essentially unchanged and dispositional envy was still a non-significant predictor of burning amount in the model. Taken together with the near-perfect correlation between both burning amount scores (original and betting style-controlled; r=.98), controlling for betting style had little impact on burning amount scores or their relation to other variables.

Exploratory analysis

Does envy predict *Schadenfreude*? As envious burners reported enhanced mood and feelings of pleasure caused by a rival's misfortune (whereas general burners reported somewhat *worse* mood), an exploratory model with *Schadenfreude* as the dependent (predicted) variable

[11] Calculated among participants who chose to burn only (N=133), as using the entire sample would artificially inflate correlations because participants who did not burn would not endorse items on these scales (as they assess reactions to, and reasons for, their burning choices).

was examined (Fig. 11). The *Schadenfreude* items from the Post-Elimination form were parcelled with path coefficients from dispositional envy, relative deprivation, and self-reported envy. Previous research has positively linked envy with *Schadenfreude* (Smith et al., 1996), though the role of episodic deprivation and envy have not been examined. The model fit the data adequately, $\chi^2_{(236)}$=336.01, p<.001, χ^2/df=1.40, CFI=.975, RMSEA=.044 (.033-.055 with 90% confidence), SRMR=.055, R^2=.32. *Schadenfreude* was positively predicted by self-reported episodic envy (β=.37, p<.001) and relative deprivation (β=.25, p<.01), although dispositional envy was not a significant predictor and was removed from the model. Hence, pleasure in another's misfortune appears to be a product of (primarily) envious and deprived feelings.

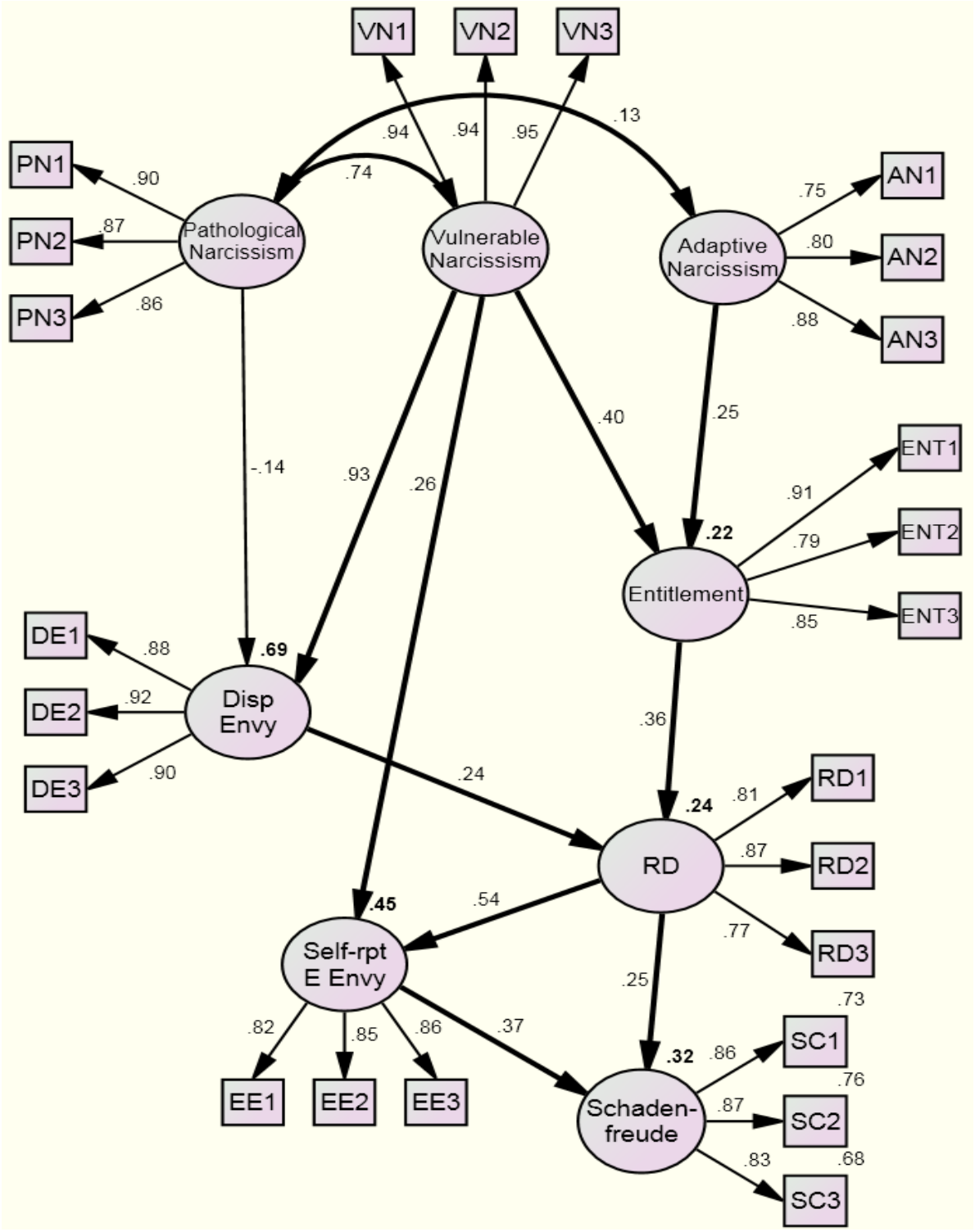

Figure 11. Exploratory model with *Schadenfreude* as the dependent variable. Both self-reported episodic envy and relative deprivation were significant predictors. $\chi^2_{(236)}$=339.70, p<.001, χ^2/df=1.42, CFI=.974, RMSEA=.045 (.034-.056 with 90% confidence), SRMR=.0541, R^2=.32. Non-significant paths have been omitted from this diagram. Marginally significant path coefficients are indicated by thinner arrows. Variance explained (R^2) for each endogenous variable is bolded.

Alternative directionality. Despite the causal structure suggested by the structural equation models, the analysis rests on analysis of covariance between latent variables and cannot determine causality. The variables could be arranged in a variety of permutations. While I believe the present model is the most sensible arrangement and driven by theory and prior research, I cannot conclude this arrangement is the correct one. However, if an alternate arrangement of variables produces an unsatisfactory fit, this may suggest that the proposed arrangement is preferable and lend some credibility to the proposed model. Most variables are ordered by a temporal sequence - phase 1 variables were collected prior to phase 2 variables, so the order of these paths cannot be reversed. Additionally, entitlement has been described as one prominent "symptom" of narcissistic personality, so reversing this path would be illogical. The most logical comparison model would place dispositional envy as the endogenous variable and have it predict the three narcissistic subtypes, as this is also a broad personality trait.

This theoretically alternative model was examined for self-reported envy. All non-significant paths were removed (DE-ENT, DE-AN, DE-EE, and PN-ENT) and the AN error term was permitted to covary with both VN and PN error terms (Fig. 12). The overall model fit was acceptable, $\chi^2_{(179)}=253.99$, $p<.001$, $\chi^2/df=1.42$, CFI=.978, RMSEA=.045 (.032-.058 with 90% confidence), SRMR=.056, $R^2=.45$. Thus, from a statistical perspective the proposed model does not fit the data uniquely, but makes more sense from a theoretical perspective.

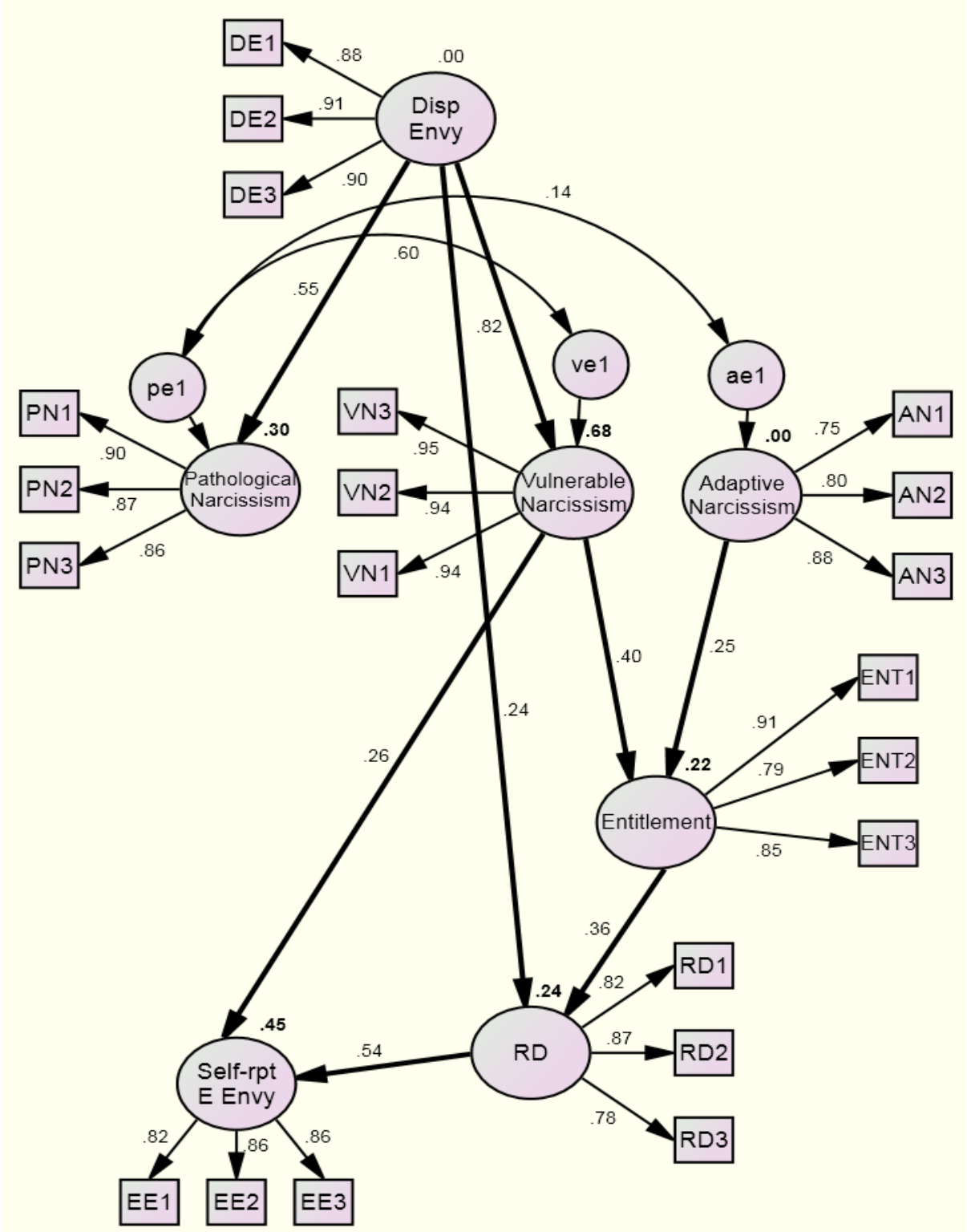

Figure 12. Exploratory model with Dispositional Envy as the exogenous predictor variable. $\chi^2_{(179)}$=253.99 , p<.001, χ^2/df=1.42, CFI=.978, RMSEA=.045 (.032-.058 with 90% confidence), SRMR=.056, R^2=.45. Non-significant paths have been omitted from this diagram. Variance explained (R^2) for each endogenous variable is bolded.

Discussion

The primary aims of this study were to examine how three different subtypes of narcissism (adaptive, pathological, and vulnerable) relate to dispositional and episodic envy (self-reported, behavioural, and indirect) and the influence of intermediary variables (entitlement, relative deprivation) on these relationships.

Two routes to envy

A central finding in the present study was strong support for two independent routes that may lead narcissistic individuals to endorse self-reported episodic envy. In the "trait" route, some individuals may experience chronic (dispositional) envy - a predisposition to experience frequent and intense bouts of envy with little situational provocation. In the second, "triggered state" route, entitled individuals who are not otherwise envious may experience this emotion when primed by discrete experiences of relative deprivation.

Which route is relevant depends on the narcissistic subtype under consideration. Vulnerable narcissism appears to be the answer to the question posed by the study's title, "Who is the most envious of them all?," relative to adaptive and pathological narcissism. Individuals with elevated vulnerable traits were both chronically envious (and thus predisposed to feel envy during the betting simulation) and "triggered" to experience stronger envy in response to feelings of relative deprivation. In fact, vulnerable narcissism and dispositional envy shared a high proportion of variance, suggesting this subtype may be characteristically prone to frequent and intense envy experiences and display awareness of this tendency. When both variables' predictive influence were compared simultaneously, the inclusion of a direct path from vulnerable narcissism reduced the path from dispositional envy to statistical non-significance. Thus, chronic envy appears to be a defining feature for vulnerable narcissists.

Adaptive narcissists reported feeling envious of Player X but, in contrast, were not predisposed to experience envy. Rather, adaptive narcissism may only lead to envy when a situational precondition is met: feelings of relative deprivation. This contingent relationship expresses an "if...then" signature described by Mischel and colleagues (Mischel, Shoda, & Mendoza-Denton, 2002) where *if* relative deprivation occurs, *then* envy may follow. This relationship appears to arise due to the entitled attitudes held by adaptive narcissists - when frustrated, these attitudes may result in feelings of relative deprivation and, in turn, envy.

These results illuminate prior research findings on the narcissism-envy relationship. They replicate both Luglio's (2002) finding that vulnerable narcissism was positively correlated with dispositional envy, as well as Gold's (1996) report of no significant correlations between the total NPI or its factors and dispositional envy. However, the present study has gone further in suggesting and then observing that adaptive narcissists experience elevated *episodic* envy that is triggered by contextual feelings of relative deprivation. This interesting finding may shed light on descriptions of adaptive narcissists in the literature (i.e. NPI-assessed narcissism) as keenly aware of negative social comparisons and willing to respond aggressively following ego threats (e.g., Bushman & Baumeister, 1998).

Pathological narcissism also displayed a unique pattern of relationships to model variables. At an absolute level (considering "pure" relationships between pathological narcissism and envy variables without the effects of other variables in the model), individuals with elevated PN traits are prone to self-reported episodic envy via both routes: chronic envy and deprivation-triggered. While less pronounced, this parallels the relationship between VN and dispositional and episodic envy. As pathological and vulnerable narcissism are maladaptive subtypes of narcissism, it is unsurprising that they share variance in the model. Once this shared aspect is

accounted for, pathological narcissism behaves very differently in the model: individuals with PN traits were *less* likely to report experiencing chronic envy and did not possess entitled attitudes.

The interpretation of this finding is somewhat ambiguous: does it suggest that vulnerable and pathological narcissism ought to be combined into one maladaptive subtype? Indeed, creating one combined maladaptive subtype yields structural relationships similar to vulnerable narcissism with positive paths predicting both entitlement and dispositional envy, with the second being the more substantial path. However, because removal of shared variance between pathological and vulnerable narcissism did not render both paths non-significant (the PN-DE path became negatively predictive), these results indicate that whatever narcissistic elements are unique to pathological narcissism render these individuals unlikely to report chronic envy. The considerable shared variance between pathological and vulnerable narcissism may highlight some fragility underlying a grandiose self-presentation in the former subtype. Moreover, pathological narcissism does not appear to be a mixture of adaptive and vulnerable narcissism as this subtype displays a different pattern of relationships than adaptive narcissism - rather than endorsing entitlement, individuals with elevated PN traits minimize their self-reported chronic envy and entitled attitudes once shared variance with vulnerable narcissism is removed. This might suggest that these individuals struggle to integrate their grandiose self-presentation and fantasies with a reality that does not endorse these as readily, or at all. Hence, pathological narcissists may possess a maladaptive personality orientation that is primarily grandiose, but also contains important vulnerable characteristics. However, based on the structural model I can only speculate as to whether this "pure" pathological element is maladaptive or not, and whether it serves a defensive function of bolstering self-esteem (as suggested by Ronningstam, 2009).

While the pathological narcissism subtype most closely resembles Narcissistic Personality Disorder (NPD), of which envy is a characteristic symptom (APA, 2000), the results indicate that this subtype is not the most envious. This finding also contrasts clinical predictions (e.g., Ronningstam, 2005; Pincus & Lukowitsky, 2010) that envy is a central problem for pathological narcissists, while only a secondary problem for vulnerable narcissists behind feelings of shame. Envy implies inferiority feelings and painful upward comparisons (Cohen-Charash, 2009; Smith & Kim, 2008) and, over time, can lead to a host of undesirable social, psychological, and physiological consequences (Smith, Combs, & Thielke, 2008). This may partially account for the worst life trajectories observed among "hypersensitive" narcissistic women from college to midlife in Wink's (1992) longitudinal study, relative to the two other subtypes.

One surprising finding emerged concerning endogenous model variables: entitlement was hypothesized to predict dispositional envy as had been observed in pilot research (Neufeld & Johnson, 2010). Past research has demonstrated that narcissistic individuals are highly sensitive to interpersonal comparisons: they take advantage of opportunities for self-promotion (e.g., Morf & Rhodewalt, 2001), report more frequent interpersonal slights from others (McCullough, Emmons, Kilpatrick, & Mooney, 2003), and react aggressively when their self-esteem is threatened by others (Bushman & Baumeister, 1998) or anticipate similar outcomes (Reidy, Foster, & Zeichner, 2010). As entitlement casts focus on anticipated desirable outcomes for the self that cannot always be satisfied, combining this fact with narcissistic tendencies to focus on social comparison with others suggests that narcissists may be prone to chronic envy due to their entitled attitudes. Instead, the current study found that entitlement did not predict dispositional envy in the model and the two routes to envy operated independently. This appears to be due to

the influence of vulnerable narcissism: when this subtype was excluded from the model, entitlement predicted dispositional envy; when included, this relationship disappeared. Thus, shared variance between entitlement and dispositional envy is already captured in the relationship between vulnerable narcissism and dispositional envy.

Recent addition to the research literature

As noted in the introduction, the narcissism-envy relationship has been examined in only two empirical research studies. However, a recent article by Krizan and Johar published in October 2012 incorporated dispositional and episodic measures of envy, grandiose and vulnerable narcissistic subtypes, and assessed entitlement and *Schadenfreude* in relation to these constructs. Introducing this landmark study and its findings at this point in the thesis will provide an excellent opportunity to compare the results and draw conclusions from the present study.

In the first of a series of three well-designed experiments, Krizan and Johar (2012) observed a strong positive correlation between vulnerable narcissism (HSNS) and dispositional envy (DES; r=.52, p<.01), whereas grandiose narcissism (NPI) was uncorrelated (r=-.10, *ns*). Next, these authors factor-analyzed the HSNS, PNI, PES, and State-Trait Grandiosity Scale (STGS) onto two factors (labelled *Vulnerability* and *Grandiosity*). The Vulnerability factor contained the HSNS scale as well as four PNI factors (Contingent Self-Esteem, Devaluing, Entitlement Rage, and Hiding the Self), whereas the Grandiosity factor contained the NPI, STGS and the PNI Exploitativeness factor. Entitlement and the PNI Grandiose Fantasy factor loaded moderately on both factors. These Vulnerability and Grandiosity composite factors were then correlated with the Dispositional Envy Scale and a measure of *Schadenfreude* developed by the authors. While Vulnerability was strongly correlated with scores on the DES (r=.69, p<.01) and

Schadenfreude (r=.56, p<.01), Grandiosity was negatively correlated with DES (r=-.16, p<.01) and positively with *Schadenfreude* (r=.29, p<.01) scores.

While the composition of these Vulnerable and Grandiose factors are somewhat different from my vulnerable and grandiose pathological factors (e.g., the Hiding the Self factor loaded on the Grandiose Factor in my analysis), as well as the obvious difference in number of grandiose narcissistic subtypes, the composition of the vulnerable factors are largely similar across both studies. Furthermore, both studies noted an exceptionally large positive correlation between the composite Vulnerable factor and dispositional envy (r=.69 and r=.77, both ps<.01).

In their second study, participants completed dispositional measures of grandiose narcissism (NPI), vulnerable narcissism (HSNS), entitlement (PES), envy (DES), and self-esteem (Rosenberg Self-Esteem Scale; RES). In addition, a knowledgeable informant completed each measure as it related to the participant (except for the RES). Participants were then instructed to recall and describe an envy-inducing event and answered a series of questions to assess 5 domains of episodic envy (Inferiority feelings, Depressive feelings, Subjective injustice, Hostile feelings, and Ill will). Results indicated that self-rated Grandiose narcissism was positively correlated with entitlement but was uncorrelated with vulnerable narcissism, dispositional envy and all aspects of episodic envy except ill will. In stark contrast, self-rated vulnerable narcissism was positively correlated with entitlement, dispositional envy, and all aspects of episodic envy except ill will. The strong relationship between vulnerable narcissism and dispositional envy held even after self-esteem was controlled. Informants who rated their friend high on grandiose narcissistic traits did not rate them higher on dispositional envy (r=.02, p<.01), whereas friends rated high on vulnerable traits were believed to be highly envious (r=.52, p<.01).

In their third study, Krizan and Johar (2012) induced feelings of envy by having students read a fictitious interview with a high-status (envy) or low-status (control) student. Following exposure to this article, students rated their emotional reactions. Embedded within this measure were items that assessed envy and related emotions, loading on five indexes: Envy, Hostility, Dejection, Resentment, and Admiration. Exposure to the high-status (but not low-status) target induced feelings of envy. Furthermore, vulnerable (HSNS) and grandiose (NPI-16) narcissism displayed unique relations to envy in the high-status condition. Whereas vulnerable narcissism was positively associated with Envy, Hostility, Dejection and Resentment indexes and higher levels of vulnerable narcissism augmented the intensity of envy feelings, grandiose narcissism was unrelated to all emotional reactions. Vulnerable narcissism also moderated the degree to which participants experienced *Schadenfreude* upon learning that the high-status student had suffered a major setback (expulsion from university).

Krizan and Johar's (2012) findings largely reinforce the results obtained in the present study. Their central finding that vulnerable narcissism is characterized by pervasive envy (evident in dispositional/episodic self-report, informant-report) and important consequences of envy (*Schadenfreude*) was observed in the present study. Notably, the authors exclaim that vulnerable narcissism predicted episodic envy as strongly as dispositional envy (p.1442)! This surprising result was also observed in the present study, as including a direct predictive path from VN to self-reported episodic envy (EE) nullified the positive DE-EE path (see Figure 11). Additionally, they provide evidence to rule out potentially confounding variables. Vulnerable narcissism remained a significant predictor of dispositional envy even after controlling for the influence of neuroticism, self-deception, impression management, and shame (Study 1) and low self-esteem (Study 2). They suggest that vulnerable narcissists may be particularly susceptible to

envy due to a "perfect storm" (p. 1441) of personality characteristics: 1) self-absorption and a tendency to make frequent, unflattering social comparisons; 2) entitled expectations; and 3) neuroticism and low self-esteem. Interestingly, this description implicates both the trait and triggered routes that led to envy in the present study.

In contrast, these authors noted that narcissistic grandiosity did not lead to envy at a dispositional or episodic level; in fact, grandiose narcissism appears to have made dispositional envy *less* likely. Krizan and Johar (2012) also obtained some evidence that the lack of a positive relationship between grandiose narcissism and envy is unlikely due to defensive reactions that may transmute or project feelings of envy so as to avoid conscious experiences of envy. If grandiose narcissists experience envy but defend against these feelings, one might expect that knowledgeable informants would describe these individuals as envious. In addition, their self-reported experiences when exposed to an envy-inducing circumstance would likely endorse increased hostility and subjective injustice (reactions that may be indicative of envy), although neither outcome was observed.

The most important difference between these studies is their conceptualization of grandiose narcissism. Whereas Krizan and Johar (2012) utilized a single grandiose subtype (assessed using the NPI in most comparisons), the present study attempted to distinguish between adaptive and pathological grandiose narcissism subtypes. As noted earlier, this distinction is premised upon prior research and clinical writings (Wink, 1992; Ronningstam, 2009; Russ et al., 2008). The findings in the present study suggest that these subtypes may possess important differences in regards to envy: while both adaptive and pathological grandiose narcissists endorsed somewhat *lower* levels dispositional envy (once the shared variance between PN and VN was removed), adaptive grandiose narcissists appear to be prone to report stronger

feelings of episodic envy whereas pathological grandiose narcissists do not. I suspect that Krizan and Johar (2012) observed no relationship between grandiose narcissism and envy because their measure of grandiose narcissism (the NPI in most cases) conflates adaptive and maladaptive grandiose elements. As a result, adaptive grandiose narcissists' apparent proclivity towards envy when primed by situational deprivation may have been muted by the assessment of pathological grandiose narcissism, which was unrelated to self-reported episodic envy (see Fig. 6).

One final point of interest relating to Krizan and Johar's (2012) study is the role of entitlement and expressions of episodic envy. As these authors noted, entitlement was an important predictor of envy, though not to the same powerful extent as vulnerable narcissism. As the present paper observed, an elevated sense of personal entitlement (common to all three narcissistic subtypes) promoted intensified feelings of relative deprivation and subsequent episodic envy via the triggered route. The substantial overlap between the triggered route proposed by this study and Krizan and Johar's (2012) findings are apparent in the following quotation. Noting the positive correlation between entitlement and dispositional envy, as well as entitlement's positive relations with subjective injustice, hostility and dejection, Krizan and Johan (2012) conclude, "this suggests that entitled expectations promote a sense of experiencing inferior outcomes, which likely adds to the bitterness and hostility entitled individuals feel toward others, perhaps even fueling their aggressive behavior" (p. 1446). They further note that entitlement may account for the often-observed relationship between grandiose narcissism and hostility, as the latter does not appear to stem from enviousness as has been previously suggested (e.g., Kernberg, 1984). Finally, while the present study did not observe a relation between any narcissistic subtypes and elevated aggressive behaviour (burning), this is probably due to the problems associated with the burning measure, as discussed in the next section.

Burning probably did not indicate behavioural envy

Contrary to expectations, the amount of money students spent towards sabotaging their opponents during the elimination round was unrelated to all primary model variables except relative deprivation. This discovery prompted efforts to determine whether this variable adequately captured envy or a different, perhaps related, emotion. After examining its relations to several additional exploratory variables, the evidence suggests elimination amount probably did not adequately measure behavioural envy since there is compelling supportive evidence.

Elimination amount was not correlated with self-reported envy, nor was it predicted by dispositional or self-reported envy when in the structural model. Additionally, envious burners (i.e., participants who endorsed elevated self-reported envy and chose to eliminate others' earnings) differed from general burners (i.e., students who eliminated others' earnings but were not necessarily envious) in several important respects.

First, general burners took risks (made higher wagers) and these risks generally paid off with higher earnings, but they believed their opposite-room opponents performed even better than themselves. Thus, participants who eliminated did so from a position of excess (compared to the average student) and appear to have eliminated others' earnings to rectify an unfair situation and restore balance. Self-reportedly envious students who chose to burn had initially expected better outcomes, possibly reflecting entitled attitudes. They did not differ from the overall sample with respect to betting amount or score after 5 rounds of betting.

Second, general burners appeared to be primarily motivated by competitiveness and a desire to not see others beat them. In contrast, envious burners were motivated by the unfairness of the situation (subjective unfairness is an important consideration in envy; Smith et al., 1999),

believed that their opponents deserved this misfortune, and took apparent pleasure in how their burning affected their rivals.

Finally, these participants experienced different patterns of mood changes and emotional reactions following their elimination choices. General burners did not experience enhanced mood after making their elimination choices; in fact, their mood worsened. They also believed they were less nice to their opponents than their opponents than their opponents were towards them and did not take pleasure in their opponents' misfortune (*Schadenfreude*) after viewing their opponents' reduced scores when final payouts were announced. Envious burners felt better after indicating their elimination choices and experienced elevated *Schadenfreude* when viewing the consequences of their choices on their opponents' scores.

This behavioural envy paradigm was modeled on Zizzo & Oswald's (2001) study of negative interdependent preferences. Similar to their study, the majority of students chose to spend some of their earnings during the elimination round and followed rank-order egalitarianism in their burning choices. As the authors commented, the motive underlying elimination choices appeared to be envy and/or concern for fairness - no additional measures were administered to determine the precise motivational influences of participants or assess self-reported envy or deprivation. Like Smith and Kim (2007), I thought this study presented a fascinating paradigm to measure behavioural manifestations of envy that, unlike self-reported envy, may be resistant to impression management biases (an important consideration for grandiose narcissists). Participants who are willing to sacrifice potential earnings to sabotage a stranger's earnings must be sufficiently motivated to do so, likely reflecting hostility towards other players and inferiority feelings directed towards the self (central components of envy), as the action carries important consequences for the self in terms of financial cost. Unfortunately

for the present study, this motivator does not appear to be envy. Some envious participants chose to eliminate, but they did so for different reasons than most who chose to eliminate. This suggests a concern for fairness (perhaps coupled with competitiveness) may be a driving influence for many participants who chose to eliminate, rather than envy.

Other-self difference ratings

Ratings of liking for, and ability of, Player X versus oneself were collected following the 5 betting rounds. While not directly measuring envy, positive ratings (indicating higher liking and/or ability ratings towards Player X than the self) may indicate feelings of inferiority - a key tenet underlying envy - relative to an advantaged other. In contrast, negative scores may suggest self-enhancement and/or other-derogation strategies typically used by narcissistic individuals to maintain a grandiose self-image (Farwell & Wohlwend-Lloyd, 1998; Horvath & Morf, 2010). While all 3 narcissistic subtypes were anticipated to negatively correlate with this variable, indicating self-bolstering and perhaps feelings of hostility, this was only observed for adaptive narcissism. Additionally, other-self ratings not predicted by either dispositional envy or relative deprivation, leading to the abandonment of the structural model. Why was indirect envy so poorly associated with model variables?

The lack of relationships with other variables may be due, in part, to differences between the liking and ability difference ratings. While these two difference ratings were positively correlated, their relationship was not particularly strong (r=.26, p<.01). Additionally, combining these two ratings obscured several significant relationships between model variables and one difference rating (but not the other) and distinguished between each of the three narcissistic subtypes. Despite having objectively less money than an a rival, participants with elevated adaptive narcissism traits engaged in self-enhancement and rated themselves higher on both

liking and ability relative to a rival. Entitlement and relative deprivation were also associated with higher self-rated ability relative to an advantaged rival. As adaptive narcissists appear to be "triggered" (rather than predisposed) to experience envy via frustrated entitlement, it appears these same processes may underlie their elevated assessments of their own ability despite lower monetary earnings than Player X.

Conversely, vulnerable narcissism was positively associated with other-self difference ratings for liking (but not ability), indicating greater liking for Player X than for oneself. This contrast may indicate that these individuals experienced feelings of personal insecurity and inferiority in response to the outcome of the betting simulation, important aspects of envy. Furthering this suggestion, elevated other-self liking difference scores were associated with both chronic and episodic self-reported envy. These findings are consistent with other research documenting vulnerable narcissists' negative self-views and personality profiles that emphasize negative emotionality rather than personal grandiosity (e.g., Hibbard, 1992; Miller & Maples, 2011). Pathological narcissism was not associated with significant tendencies on either dimension. While the indirect envy model was not retained in the final analysis, these patterns of associations provide some insight into how the three narcissistic subtypes differ in their response to threat.

Limitations

A primary limitation of this study is that causal relationships between variable models cannot be conclusively determined, only suggested. Structural equation modeling, a statistical method based on analysis of covariance structure, was used to evaluated model fit and relationships between model parameters. As noted earlier in the results section, one important implication of this methodology is the possibility of alternative theoretical models that may

reverse the direction of paths or rearrange the structural model. In fact, an analysis of the next-most plausible model that specifies dispositional envy as the endogenous variable produced comparable model fit statistics.

However, the present theoretical model was specified a priori based on clinical theory and research findings and received empirical support in pilot testing. The recent findings of Krizan and Johar (2012) also appear to provide some critical support for the elements within the structural model and the direction of the predictive paths. Modification indices were carefully considered and only one novel path was added to the model (allowing adaptive and pathological narcissism to covary), a path that has theoretical merit considering that both subtypes have been classified under grandiose narcissism. Additionally, some model variables cannot be reversed due to temporal concerns (e.g., phase 2 measures were administered one week *after* phase 1 measures) or practical concerns (e.g., as narcissism is a complex trait of which entitlement is a characteristic symptom, it is unlikely that this structural path would be reversed). Although the structural model could be re-ordered due to the nature of the analysis, few permutations are plausible.

Secondly, although this study controls many potential sources of error, the self-reported nature of data collection is vulnerable to social desirability and impression management biases. In general, people are reluctant to admit to feeling envy or undesirable personality traits, such as narcissism; these emotions elicit little sympathy with others (e.g., Smith et al., 1999). Narcissists are particularly motivated to deny or distort such experiences as they threaten one's inflated views of the self and undermine their self-aggrandized presentation to others (particularly for grandiose narcissists). These threats have been minimized in the study design by anonymous

responding, assessing participant honesty (no participants were identified as being dishonest), and including a behavioural measure of episodic envy (elimination).

The smaller-than-ideal sample size is another limitation. The final sample of 204 participants satisfies Garver and Metzner's "critical sample size" requirement (Hoe, 2008), though it falls short of the 5:1 participants per parameter minimum rule suggested by several authors (e.g., Bentler & Chou, 1987). Considering the 73 parameters in the final self-reported envy model, this would prescribe a sample size of 365 or more should be obtained to test a model of this complexity. However, the model fit statistics indicate that the self-reported envy model explained the data well despite having fewer-than-ideal participants. This was observed even among the model fit indices that penalize small sample sizes (CFI) or complex models (χ^2/df; Levine, Petrides, Davis, Jackson, & Howell, n.d.).

A final important concern regards the nature of the participant sample. While the present study has conceptualized narcissistic subtypes as continuous personality traits, the sample is comprised of undergraduate students and is not a clinical sample. As the descriptive statistics illustrate, the range of scores on each measure were generally broad, although the general constellation of scores at the low end of the scale and positive skewness in the distribution reveal that high scores on study variables were the exception, not the rule. However, the research literature provides a compelling portrait of the costs (and, in some cases, benefits) associated with narcissism among undergraduate samples of whom the majority would presumably have lower standing on these traits than a clinical sample (e.g., Holtzman, Vazire, & Mehl, 2010; Miller & Campbell, 2011).

Implications and future directions

Clinical interventions. The findings that narcissistic individuals may be prone to envy via a "trait" or "triggered" route, and that narcissistic subtypes are prone to envy for different reasons, carry potentially important clinical implications. Vulnerable narcissists, in particular, are at elevated risk to experience episodic envy due to chronic experiences of envy. As chronic envy appears to be pervasive and accessible for vulnerable narcissists, these individuals may benefit from examination and challenging of their core beliefs. Zeigler-Hill and colleagues (2008) comment that vulnerable narcissists appear to possess globally contingent self-esteem. They seek others' approval and validation across a breadth of domains, strategies which undermine their efforts to maintain a positive self-image and make them more susceptible to negative experiences when others don't provide the support they desire. Thus, relying on others in one's environment is unlikely to lead to effective outcomes; it is likely to make envy more unbearable and increasingly likely.

As a contrast to engaging in this maladaptive self-regulation strategy, vulnerable narcissists could be encouraged to dissect this strategy and underlying core beliefs. Downward arrow questioning (i.e., "If this is true, what does it mean about you?") may be helpful in identifying automatic thoughts (e.g., "Because X outperformed me, I must be a worthless person") and core schema (e.g., "I'm inferior to others") underlying failure attributions. Consistent with a CBT approach, vulnerable narcissists could be encouraged to subject their automatic thoughts to reality testing and substitute these cognitions with more reasonable self-appraisals (Beck, 1979). Exline and Zell (2008) advocate for a similar envy-reducing approach, encouraging envious individuals to test the accuracy of their beliefs by looking for flaws in logic and evaluate evidence that supports or contradicts the beliefs. Self-reflection that places their specific social comparison concerns into broader life perspective may encourage modification of

goal-related beliefs from those based on past injuries or fears to goals that are intrinsically motivating, potentially reducing the impact of envy reactions (Exline & Zell, 2008).

Pincus and colleagues (2009) report that vulnerable narcissistic pathology is positively associated with treatment utilization; these individuals have more contact with crisis services and miss fewer therapy appointments. Thus, they may be highly amenable to psychological interventions and may benefit from selective interventions that target core beliefs that lead to frequent and intense envy reactions.

Narcissistic individuals who are not chronically envious but may be "triggered" to experience envy when faced with situational deprivation, most notably adaptive narcissists, are better suited to an alternative approach. Despite being at high risk to experience episodic envy when their entitlements are frustrated, they do not recognize this tendency and don't report elevated chronic envy. Rather than examining and challenging their global self-perceptions, these individuals may be better served by examining what kind of situations lead to feelings of relative deprivation and subsequent envy and learn to appraise them differently.

The most likely candidate situations appear to be those that are competitive and/or evaluative in nature (Zeigler-Hill, Clark, & Pickard, 2008; Morf & Rhodewalt, 1993). The present study attempted to induce competitive motives by including a status-oriented prize ("Master of the Bets" poster), financial incentive, and broadcasting current scores to all participants throughout the second phase of the experiment. In therapy, these scenarios could be primed by recalling real-life failure experiences, imagining hypothetical scenarios, or exploring aspects of process (versus content) in the therapy relationship. Kernberg (2007) has commented that pathological narcissists may harbour intense envy toward the therapist, alternatively idealizing or devaluing him/her.

Developing insight into what characterizes these precipitant situations may allow these individuals to approach similar situations forewarned and forearmed. Exline and Zell (2008) suggest that envious individuals may reduce these feelings by reappraising their belief that their comparison target is a rival and potential threat. Additionally, "triggered" individuals may benefit from reducing self-focused attention on inferiority feelings, as these often lead to depressive affect (Smith, Parrott, Ozer, & Moniz, 1994). Indeed, other authors have commented that benign (hostility-free) envy can be motivational and lead to improved effort and performance (e.g., van de Ven, Zeelenberg, & Pieters, 2011). Reducing feelings of invidious ill will and inferiority may render envy feelings not only tolerable, but adaptive.

Clinical recommendations for pathological narcissists are more difficult to infer. The shared maladaptive component with vulnerable narcissism suggests that these individuals may possess some insight into their chronic feelings of envy and be further "triggered" following situational deprivation. A key consideration may be timing of the intervention. While pathological narcissism is conceptualized as a grandiose subtype of narcissism, these results show a strong shared component with vulnerable narcissism. This may suggest that pathological narcissists, while predominantly grandiose in presentation, oscillate between expressions of grandiosity and vulnerability (Cain, Pincus, & Ansell, 2008; Pincus et al., 2009). Interventions administered during vulnerable self-states are likely to be more effective as these individuals are most likely to attend therapy, may possess greater insight into their envy, and may be less defensive towards clinicians (Pincus et al., 2009).

Self-affirmation and self-compassion are two possible interventions that may help narcissistic individuals when envious feelings are triggered. Considering self-affirmation, Salovey and Rodin (1988; cited in Smith & Kim, 2007) commented that that self-bolstering

strategies, while not effective in reducing envy, were helpful in reducing feelings of depression and anger among individuals who already experienced envy according to participant self-reports. Thomaes and colleagues (Thomaes, Bushman, Orobio de Castro, Cohen, & Denissen, 2009; cited in Thomaes & Bushman, 2011) found that narcissistic adolescents[12] who completed 15-minute self-affirmation writing exercise about their most important trait were no more aggressive than others in the weeks that followed even when they experienced heightened ego threat, according to peer nominations. In contrast, narcissistic adolescents who wrote about their least important trait (control group) were more aggressive than others when experiencing high ego threat.

This finding is somewhat surprising given that self-affirmation - dwelling on one's positive attributes - might be expected to heighten entitled attitudes and expectations and consequently promote stronger episodic feelings of envy via the second, "triggered" route. However, it suggests that self-affirmation may help reduce envy and/or the discomfort caused by envy feelings among narcissistic individuals and operate through different mechanisms, depending on the narcissistic subtype. Vulnerable narcissists may experience reduced envy due to decreased inferiority feelings and resulting negative internal emotional states - the "comparison" component of envy, while for adaptive and pathological grandiose narcissists this may be attributed to curbed hostility and resentment toward the envied target - the "feeling" component of envy (Cohen-Charash, 2009).

Kristin Neff (2003a) has described self-compassion as a healthy approach towards oneself when experiencing suffering or personal failure. This attitude encompasses self-kindness

[12] Assessed using the Childhood Narcissism Scale, an adapted version of the NPI for children and adolescents.

("extending kindness and understanding to oneself rather than harsh judgment and self-criticism"), common humanity ("seeing one's experiences as part of the larger human experience rather than seeing them as separating and isolating") and mindfulness ("holding one's painful thoughts and feelings in a balanced awareness rather than over-identifying with them") (Neff, 2003a, p. 89).

In contrast to a narcissistic focus on egocentrism, self-evaluative judgments and efforts to maintain a positive self-image (i.e., self-esteem striving; Wallace, 2011), self-compassion may directly counteract narcissistic tendencies (Neff, 2003a), offering similar benefits to self-esteem but fewer negative consequences (Neff, 2011). Self-compassion is associated with less depression and anxiety and greater feelings of social connectedness (Neff & McGehee, 2010) and with more non-contingent and stable feelings of self-worth than self-esteem (Neff & Vonk, 2009).

Most importantly for the present purposes, self-compassion appears to reduce the impact of ego threatening events - a central concern for narcissistic individuals. Specifically, Leary and colleagues (2007) found that dispositional self-compassion reduced the impact of unflattering feedback and reduced defensive responding. Self-compassionate participants had weaker differential reactions between positive feedback and neutral/unflattering feedback and were more likely to assume responsibility for the unflattering feedback, in contrast to individuals with lower levels of the trait.

Following from this research, Bushman and Thomaes (2011) suggest that self-compassion may curb aggressive responding following ego threat, though this premise remains untested. Grandiose narcissists display highly aggressive behaviour in response to ego threats (e.g., Bushman & Baumeister, 1998) and stand to benefit from a self-compassion intervention. A

reduction in aggressiveness would suggest a reduction in envy feelings (specifically, aspects entailing hostile feelings directed towards an envy target). Additionally, vulnerable narcissists may experience lessened inferiority feelings and subsequent envy because self-compassion appears to reduce the emotional impact of negative events (current or retrospective),.

Accurately assessing behavioural envy. The behavioural envy measure - a major component of the present study - was included primarily to assess whether pathological narcissists, while denying self-reported envy, would choose to sabotage others' earnings. Researchers and clinicians alike have suggested that pathological narcissists may deny or be unaware of chronic envy (Hotchkiss, 2005; Kernberg, 2007; Smith, Combs, & Thielke, 2008), indicating that self-report envy measures (dispositional, and perhaps episodic) may be unsuccessful at detecting envy and that a covert measure would be more appropriate. Unfortunately, as burning probably did not reflect behavioural envy, I cannot determine whether pathological narcissists are likely to act on feelings of envy or whether this tendency is stronger than the other two subtypes.

How might behavioural envy be successfully measured in future studies? Parks, Rumble and Posey (2002) ran a clever study that may provide one answer. Participants competed in a Prisoner's Dilemma scenario in which they could cooperate or defect in each of 10 rounds against a fictitious opponent. In fact, they played against a set strategy that mimicked the participant's decision from the round previous. While mutual cooperation yields high payouts, participants with elevated levels of dispositional envy were much more likely to defect across trials, severely reducing the earnings of both themselves and their opponent. In effect, envious participants were willing to sacrifice superior monetary outcomes they would have obtained

through continued cooperation in order to spite their advantaged opponent, demonstrating malicious envy.

Integrating findings from the present study, their design appears to have induced envy via both routes: chronically envious participants were less cooperative, but some participants were likely "triggered" to experience envy when their entitled attitudes were frustrated by situational deprivation (inferior payouts). A replication of this study that assessed other model elements (narcissistic subtypes, entitlement, and self-reported deprivation and envy) would permit a comparison of how envious each narcissistic subtype is generally, how envious they report feeling in-the-moment, and the extent to which they engage in behaviours that are indicative of envy. In addition, it could provide an opportunity to evaluate the efficacy of an envy-reducing intervention in reducing non-cooperation, such as self-compassion or self-affirmation.

In summary, the present study appears to support the contention that narcissists are envious. Moreover, it begins to answer informative questions concerning which subtypes of narcissism (vulnerable, pathological, adaptive), predict what type of envy (dispositional, episodic [self-reported, behavioural, indirect]), and the characteristic route(s) to episodic envy characteristic of each subtype (trait, "triggered"). Further research on this topic is encouraged; specifically, examining relations between narcissistic subtypes and behavioural envy and how the characteristic routes are similar/dissimilar to self-reported envy, testing the efficacy of envy-reducing clinical interventions premised upon these characteristic routes to envy (most notably self-compassion and self-affirmation interventions), and elaboration on the nature of pathological narcissism, its overlap with vulnerable narcissism, and their relative contributions to enviousness.

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Appendix A

Phase 1 measures

Narcissistic Personality Inventory (Raskin & Hall, 1979)

Instructions: In each of the following pairs of attitudes, choose the one that you MOST AGREE WITH. Mark your answer by circling either statement A or statement B. Only select ONE ANSWER for each attitude pair, and please DO NOT skip any items.

1. A *I have a natural talent for influencing people.*

   B I am not good at influencing people.

2. A *Modesty doesn't become me.*

   B I am essentially a modest person.

3. A *I would do almost anything on a dare.*

   B I tend to be a fairly cautious person.

4. A When people compliment me I sometimes feel embarrassed.

   B *I know that I am good because everyone keeps telling me so*

5. A The thought of ruling the world frightens the hell out of me.

   B *If I ruled the world it would be a better place.*

6. A I *can usually talk my way out of anything.*

   B I try to accept the consequences of my behaviour.

7. A I prefer to blend in with the crowd.

   B *I like to be the center of attention.*

8. A *I will be a success.*

   B I am not too concerned about success.

9. A I am no better or no worse than most people.

   B *I think I am a special person.*

10. A I am not sure if I would make a good leader.

    B *I see myself as a good leader.*

11. A *I am assertive.*

    B I wish I were more assertive.

12. A *I like having authority over other people.*

    B I don't mind following orders.

13. A *I find it easy to manipulate people.*

    B I don't like it when I find myself manipulating people.

14. A *I insist upon getting the respect that is due me.*

    B I usually get the respect I deserve.

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

    B *I like to show off my body*.

16. A *I can read people like a book.*

    B People are sometimes hard to understand.

17. A If I feel competent I am willing to take responsibility for making a decision.

    B *I like to take responsibility for making decisions.*

18. A I just want to be reasonably happy.

    B *I want to amount to something in the eyes of the world.*

19. A My body is nothing special.

    B *I like to look at my body.*

20. A I try not to be a show off.

    B *I will usually show off if I get the chance.*

21. A *I always know what I am doing.*

    B Sometimes I am not sure of what I am doing.

22. A I sometimes depend on people to get things done.

    B *I rarely depend on anyone else to get things done.*

23. A Sometimes I tell good stories.

    B *Everybody likes to hear my stories.*

24. A *I expect a great deal from other people.*

    B I like to do things for other people.

25. A *I will never be satisfied until I get all that I deserve.*

    B I take my satisfactions as they come.

26. A Compliments embarrass me.

    B *I like to be complimented.*

27. A *I have a strong will to power.*

    B Power for its own sake doesn't interest me.

28. A I don't care about new fads or fashions.

    B *I like to start new fads or fashions.*

29. A *I like to look at myself in the mirror.*

    B I am not particularly interested in looking at myself in the mirror.

30. A *I really like to be the center of attention.*

    B It makes me uncomfortable to be the center of attention.

31. A *I can live my life in anyway I want to.*

    B People can't always live their lives in terms of what they want.

32. A Being in authority doesn't mean that much to me.

    B *People always seem to recognize my authority.*

33. A *I would prefer to be a leader.*

    B It makes little difference to me whether I am a leader or not.

34. A *I am going to be a great person.*

    B I hope I am going to be successful.

35. A People sometimes believe what I tell them.

    B *I can make anyone believe anything I want them to.*

36. A *I am a born leader.*

    B Leadership is a quality that takes a long time to develop.

37. A *I wish someone would someday write my biography.*

    B I don't like people to pry into my life for any reason.

38. A *I get upset when people don't notice how I look when I go out in public.*

    B I don't mind blending into the crowd when I go out in public.

39. A *I am more capable than other people.*

    B There is a lot that I can learn from other people.

40. A I am much like everyone else.

    B *I am an extraordinary person.*

Note. Responses indicative of grandiose narcissism are italicized.

Hypersensitive Narcissism Scale (Hendin & Cheek, 1997)

Instructions: Please rate the following items on how characteristic they are in describing yourself.

Not Characteristic at All			Neutral			Extremely Characteristic
1	2	3	4	5	6	7

1. I can become entirely absorbed in thinking about my personal affairs, my health, my cares or my relations to others.

   1 2 3 4 5 6 7

2. My feelings are easily hurt by ridicule or by the slighting remarks of others.

   1 2 3 4 5 6 7

3. When I enter a room I often become self-conscious and feel that the eyes of others are upon me.

   1 2 3 4 5 6 7

4. I dislike sharing the credit of an achievement with others.

   1 2 3 4 5 6 7

5. I dislike being with a group unless I know that I am appreciated by at least one of those present.

   1 2 3 4 5 6 7

6. I feel that I am temperamentally different from most people.

   1 2 3 4 5 6 7

7. I often interpret the remarks of others in a personal way.

   1 2 3 4 5 6 7

8. I easily become wrapped up in my own interests and forget the existence of others.

   1 2 3 4 5 6 7

9. I feel that I have enough on my hands without worrying about other people's troubles.

   1 2 3 4 5 6 7

10. I am secretly ''put out'' when other people come to me with their troubles, asking me for my time and sympathy.

    1 2 3 4 5 6 7

Pathological Narcissism Scale ((Pincus, Ansell, Pimentel, Cain, Wright, & Levy, 2009)

Instructions: Please respond to the following statements by circling the number that best reflects your own beliefs.

Not like me at all					Very much like me	
1	2	3	4	5	6	7

1. I often fantasize about being admired and respected.

   1 2 3 4 5 6 7

2. My self-esteem fluctuates a lot.

   1 2 3 4 5 6 7

3. I sometimes feel ashamed about my expectations of others when they disappoint me.

   1 2 3 4 5 6 7

4. I can usually talk my way out of anything.

   1 2 3 4 5 6 7

5. It's hard to feel good about myself when I'm alone.

   1 2 3 4 5 6 7

6. I can make myself feel good by caring for others.

   1 2 3 4 5 6 7

7. I hate asking for help.

   1 2 3 4 5 6 7

8. When people don't notice me, I start to feel bad about myself.

   1 2 3 4 5 6 7

9. I often hide my needs for fear that others will see me as needy and dependent.

   1 2 3 4 5 6 7

10. I can make anyone believe anything I want them to.

    1 2 3 4 5 6 7

11. I get mad when people don't notice all that I do for them.

1 2 3 4 5 6 7

12. I get annoyed by people who are not interested in what I say or do.

1 2 3 4 5 6 7

13. I wouldn't disclose all my intimate thoughts and feelings to someone I didn't admire.

1 2 3 4 5 6 7

14. I often fantasize about having a huge impact on the world around me.

1 2 3 4 5 6 7

15. I find it easy to manipulate people.

1 2 3 4 5 6 7

16. When others don't notice me, I start to feel worthless.

1 2 3 4 5 6 7

17. Sometimes I avoid people because I'm concerned that they'll disappoint me.

1 2 3 4 5 6 7

18. I typically get very angry when I'm unable to get what I want from others.

1 2 3 4 5 6 7

19. I sometimes need important others in my life to reassure me of my self-worth.

1 2 3 4 5 6 7

20. When I do things for other people, I expect them to do things for me.

1 2 3 4 5 6 7

21. When others don't meet my expectations, I often feel ashamed about what I wanted.

1 2 3 4 5 6 7

22. I feel important when others rely on me.

1 2 3 4 5 6 7

23. I can read people like a book.

1 2 3 4 5 6 7

24. When others disappoint me, I often get angry at myself.

1 2 3 4 5 6 7

25. Sacrificing for others makes me the better person.

1 2 3 4 5 6 7

26. I often fantasize about accomplishing things that are probably beyond my means.

1 2 3 4 5 6 7

27. Sometimes I avoid people because I'm afraid they won't do what I want them to.

1 2 3 4 5 6 7

28. It's hard to show others the weaknesses I fell inside.

1 2 3 4 5 6 7

29. I get angry when criticized.

1 2 3 4 5 6 7

30. It's hard to feel good about myself unless I know other people admire me.

1 2 3 4 5 6 7

31. I often fantasize about being rewarded for my efforts.

1 2 3 4 5 6 7

32. I am preoccupied with thoughts and concerns that most people are not interested in me.

1 2 3 4 5 6 7

33. I like to have friends who rely on me because it makes me feel important.

1 2 3 4 5 6 7

34. Sometimes I avoid people because I'm concerned they won't acknowledge what I do for them.

1 2 3 4 5 6 7

35. Everybody likes to hear my stories.

1 2 3 4 5 6 7

36. It's hard for me to feel good about myself unless I know other people like me.

1 2 3 4 5 6 7

37. It irritates me when people don't notice how good a person I am.

1 2 3 4 5 6 7

38. I will never be satisfied until I get all that I deserve.

1 2 3 4 5 6 7

39. I try to show what a good person I am through my sacrifices.

1 2 3 4 5 6 7

40. I am disappointed when people don't notice me.

1 2 3 4 5 6 7

41. I often find myself envying others' accomplishments.

1 2 3 4 5 6 7

42. I often fantasize about performing heroic deeds.

1 2 3 4 5 6 7

43. I help others in order to prove I'm a good person.

1 2 3 4 5 6 7

44. It's important to show people I can do it on my own, even if I have some doubts inside.

1 2 3 4 5 6 7

45. I often fantasize about being recognized for my accomplishments.

1 2 3 4 5 6 7

46. I can't stand relying on other people because it makes me feel weak.

1 2 3 4 5 6 7

47. When others don't respond to me the way that I would like them to, it is hard for me to still feel ok with myself.

    1 2 3 4 5 6 7

48. I need others to acknowledge me.

    1 2 3 4 5 6 7

49. I want to amount to something in the eyes of the world.

    1 2 3 4 5 6 7

50. When others get a glimpse of my needs, I feel anxious and ashamed.

    1 2 3 4 5 6 7

51. Sometimes it's easier to be alone than to face not getting everything I want from other people.

    1 2 3 4 5 6 7

52. I can get pretty angry when others disagree with me.

    1 2 3 4 5 6 7

Psychological Entitlement Scale (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004)

Instructions: Please respond to the following statements by circling the number that best reflects your own beliefs.

Strong Disagreement			Neutral			Strong Agreement
1	2	3	4	5	6	7

1. I honestly feel I'm just more deserving than others.

   1 2 3 4 5 6 7

2. Great things should come to me.

   1 2 3 4 5 6 7

3. If I were on the Titanic, I would deserve to be in the *first* lifeboat!

   1 2 3 4 5 6 7

4. I demand the best because I'm worth it.

   1 2 3 4 5 6 7

5. I do not necessarily deserve special treatment.

   1 2 3 4 5 6 7

6. I deserve more things in my life.

   1 2 3 4 5 6 7

7. People like me deserve an extra break now and then.

   1 2 3 4 5 6 7

8. Things should go my way.

   1 2 3 4 5 6 7

9. I feel entitled to more of everything.

   1 2 3 4 5 6 7

Dispositional Envy Scale (Smith, Parrott, Diener, Hoyle, & Kim, 1999)

Instructions: Please rate your agreement with each of the following statements.

Disagree Strongly			Neutral			Agree Strongly
1	2	3	4	5	6	7

1. I feel envy every day.

   1 2 3 4 5 6 7

2. The bitter truth is that I generally feel inferior to others.

   1 2 3 4 5 6 7

3. Feelings of envy constantly torment me.

   1 2 3 4 5 6 7

4. It is so frustrating to see some people succeed so easily.

   1 2 3 4 5 6 7

5. No matter what I do, envy always plagues me.

   1 2 3 4 5 6 7

6. I am troubled by feelings of inadequacy.

   1 2 3 4 5 6 7

7. It somehow doesn't seem fair that some people seem to have all the talent.

   1 2 3 4 5 6 7

8. Frankly, the success of my neighbours makes me resent them.

   1 2 3 4 5 6 7

York Enviousness Scale (Gold, 1996)

Instructions: Please respond to the following statements by circling the number that reflects how you generally tend to feel.

Not Characteristic at All			Neutral			Extremely Characteristic
1	2	3	4	5	6	7

1. The better off someone else is the worse I feel.

1 2 3 4 5 6 7

2. It makes me feel good to “rain on someone’s parade”.

1 2 3 4 5 6 7

3. I wouldn’t want to trade places with anyone.

1 2 3 4 5 6 7

4. I feel angry when others succeed.

1 2 3 4 5 6 7

5. I think a lot about what others have that I would like.

1 2 3 4 5 6 7

6. I feel happy for the more fortunate people in society.

1 2 3 4 5 6 7

7. I like to burst other peoples’ bubbles.

1 2 3 4 5 6 7

8. I do not fantasize about getting what others’ possess.

1 2 3 4 5 6 7

9. I dislike seeing others enjoying themselves.

1 2 3 4 5 6 7

10. When my friends succeed I feel hurt.

1 2 3 4 5 6 7

11. It brings me happiness to see my friends succeed.

1 2 3 4 5 6 7

12. I'm content with what I've got.

1 2 3 4 5 6 7

13. I am happy when others succeed even when I don't.

1 2 3 4 5 6 7

14. It doesn't bother me if someone out performs me.

1 2 3 4 5 6 7

15. It pains me to think of the success of my friends.

1 2 3 4 5 6 7

16. I would rather see someone I don't know win a lottery than to see an acquaintance win.

1 2 3 4 5 6 7

17. I feel bitter when I see people doing well for themselves.

1 2 3 4 5 6 7

18. I like to see others having a good time.

1 2 3 4 5 6 7

19. I feel happy for others when they get something that I don't have.

1 2 3 4 5 6 7

20. It's nice to see a friend do well.

1 2 3 4 5 6 7

Appendix B

Phase 2 measures

Practice Betting Slip

Betting Slip
Round Number (please circle): 1 2 3 4 5
Betting amount in doblons – may be any amount between 50 and 150: _____
Seat position (please circle): A1 A2 B1 B2
Student Number: _____

Predictions about the Betting Game

Please indicate your level of agreement with each of these statements by circling the appropriate number for each question, using the scale below.

Strong Disagreement			Neutral			Strong Agreement
1	2	3	4	5	6	7

I feel confident that I will do well at this game.

1 2 3 4 5 6 7

I'll probably end up with approximately the same amount of money as my competitors.

1 2 3 4 5 6 7

I will probably wind up with the <u>least</u> amount of money, relative to my competitors.

1 2 3 4 5 6 7

I will probably get the highest score in this group.

1 2 3 4 5 6 7

I am sure I will walk away with the <u>most</u> money, relative to my competitors.

1 2 3 4 5 6 7

It's pretty important to me that I do well at this.

1 2 3 4 5 6 7

If you had to guess, how many towns in the United States are named "Fairview?"_____

Betting Slip

Betting Slip

Round Number (please circle): 1 2 3 4 5

Betting amount in doblons – may be any amount between 33 and 100: _____

Seat position (please circle): A1 A2 B1 B2

Student number: _____

Reactions to Outcome (Following each round)

Reactions to Outcome

Round Number (circle): 1 2 3 4 5

Student Number: _____

Seat Number (circle): A1 A2 B1 B2

Think about how you are feeling at this moment, after learning the outcome of this round of betting. Please make one vertical mark along the line below to represent how you feel.

Terrible I----------I Delighted

Reactions to Scores After 5 Rounds of Betting

Student Number: _____

Think about how you are feeling at this moment, after learning the outcome of the final round of betting. Please make one vertical mark along the line below to represent how you feel.

Terrible I----------I Delighted

Please rate how accurately each item describes your feelings towards the competitor (X) who has the highest score after 5 rounds of betting. If you have the highest score, answer in relation to the competitor (X) with the second-highest score. Using the scale below, please write the number representing your answer to each item to the left of the item.

Not Characteristic at All			Neutral			Extremely Characteristic
1	2	3	4	5	6	7

1. *I feel that I have been deprived of the highest score.*

   1 2 3 4 5 6 7

2. *I am angry about not receiving the highest score.*

   1 2 3 4 5 6 7

3. *I feel resentful about not receiving the highest score.*

   1 2 3 4 5 6 7

4. *I feel entitled to the highest score.*

   1 2 3 4 5 6 7

5. *I deserved to obtain the highest score.*

   1 2 3 4 5 6 7

6. *If I had another chance, I would obtain the highest score.*

   1 2 3 4 5 6 7

7. I lack some of the things X has.

   1 2 3 4 5 6 7

8. I feel bitter.

   1 2 3 4 5 6 7

9. I feel envious (of X).

   1 2 3 4 5 6 7

10. I have a grudge *(resentment, bitterness)* against X.

    1 2 3 4 5 6 7

11. I want to have what X has.

    1 2 3 4 5 6 7

12. X has things going for him/her better than I do.

    1 2 3 4 5 6 7

13. I feel gall *(irritated, annoyed)*.

    1 2 3 4 5 6 7

14. I feel some hatred toward X.

    1 2 3 4 5 6 7

15. I feel rancor *(resentment, ill will)* toward X.

    1 2 3 4 5 6 7

16. The outcome of this betting game is pretty important to me (parallel question to Predictions questionnaire)

    1 2 3 4 5 6 7

17. I really envy X's skill at this game (envy of an internal, stable attribute).

    1 2 3 4 5 6 7

18. I wish I had the same good luck as X did (external attribution for luck).

    1 2 3 4 5 6 7

19. It really bothers me when I think about how X will walk away with more money than me (degree of felt envy).

    1 2 3 4 5 6 7

20. It would have felt great if I had won the round (relative deprivation – imagining alternate, favourable outcomes).

    1 2 3 4 5 6 7

21. I ought to have been the top player (frustrated entitlement).

    1 2 3 4 5 6 7

22. I feel disappointed that I didn't win (shame, hypersensitivity).

    1 2 3 4 5 6 7

23. My losing this game was beyond my control (external attribution).

    1 2 3 4 5 6 7

24. I'd like to meet X afterwards and talk about our experiences during this betting game (indirect feelings of inferiority, willingness to confront outperformer – GN should rate highly, VN should provide low ratings).

    1 2 3 4 5 6 7

25. Knowing my skill at these things, I'm surprised I didn't win (internal attribution).

    1 2 3 4 5 6 7

26. X must be a lucky person (internal attribution).

    1 2 3 4 5 6 7

27. X only won because he/she got lucky (luck as unstable, specific, external attribution).

    1 2 3 4 5 6 7

28. Losing doesn't really bother me.*

    1 2 3 4 5 6 7

29. I think it's unfair that I have less money than X (subjective unfairness, relative deprivation).

    1 2 3 4 5 6 7

30. I blame myself for not having the highest score (GN should report a <u>lack</u> of self-blame; VN may endorse this item).

    1 2 3 4 5 6 7

Note: Italicized items assess Relative Deprivation (Olsen & Ross, 1984; Folger, 1986), underlined items assess Episodic Envy (Cohen-Charash, 2009), and the remaining items were created by the author to further assess students' reactions to this outcome, attributions, etc.

* Denotes a reverse-scored item

Other-Self Difference Ratings

At this moment, how do you feel about X?
(Please make one vertical mark along this line to indicate how you feel)

Strongly Dislike I----------I Strongly Like

At this moment, how do you feel about yourself?

Strongly Dislike I----------I Strongly Like

At this moment, how would you rate X's betting abilities as compared to an average person?
(Please make one vertical mark along this line to indicate how you feel)

Inferior I----------I Superior

At this moment, how would you rate your betting abilities as compared to an average person?

Inferior I----------I Superior

Note: The preceding four visual analog scales assess indirect envy.

Elimination Form

Elimination Form

In the elimination round, you may choose to eliminate any portion of any opponent's earnings. You may eliminate a portion of the earnings for more than one player. In the current score, write in the amount of money each player holds at the end of the betting rounds. In the elimination amounts, indicate what amount of doblons you would like to spend towards eliminating the earnings of each opponent. Multiply that number by 6 to see how that burning will affect your opponent. In the revised scores, update the current scores in light of these eliminations. Subtract any amount you have spent on eliminations from your score and mark your new total. Subtract any eliminated amounts from your opponents' scores and mark their new totals.

Current score (please circle which player you are):

Player A1 _____ Player B1 _____

Player A2 _____ Player B2 _____

Elimination amounts (in doblons):

	$ Spent on eliminating	x 6	$ of opponent eliminated
Player A1	_____	x 6	_____
Player A2	_____	x 6	_____
Player B1	_____	x 6	_____
Player B2	_____	x 6	_____
Total:	_____	x 6	_____

Revised scores:

Player A1 _____ Player B1 _____

Player A2 _____ Player B2 _____

Elimination Form 1A (seen by A1 and A2)

In the elimination round, you may choose to eliminate any portion of any opponent's earnings. You may eliminate a portion of the earnings for more than one player. In the current score, write in the amount of money each player holds at the end of the betting rounds. In the elimination amounts, indicate what amount of doblons you would like to spend towards eliminating the earnings of each opponent. Multiply that number by 6 to see how that burning will affect your opponent. In the revised scores, update the current scores in light of these eliminations. Subtract any amount you have spent on eliminations from your score and mark your new total. Subtract any eliminated amounts from your opponents' scores and mark their new totals.

Current score (please circle which player you are):

Player A1 _____460_____ Player B1 ____880_____

Player A2 _____500_____ Player B2 ____1100____

Elimination amounts (in doblons):

	$ Spent on eliminating	x 6	$ of opponent eliminated
~~Player A1~~	~~_____~~	~~x 6~~	~~_____~~
Player A2	__0___	x 6	___0____
Player B1	__0__	x 6	___0___
Player B2	__100_	x 6	__600___
Total:	***__100_***	***x 6***	***__600___***

Revised scores:

Player A1 _____360_____ Player B1 _____880_____

Player A2 _____500_____ Player B2 _____500_____

Elimination Form 1B (seen by B1 and B2)

In the elimination round, you may choose to eliminate any portion of any opponent's earnings. You may eliminate a portion of the earnings for more than one player. In the current score, write in the amount of money each player holds at the end of the betting rounds. In the elimination amounts, indicate what amount of doblons you would like to spend towards eliminating the earnings of each opponent. Multiply that number by 6 to see how that burning will affect your opponent. In the revised scores, update the current scores in light of these eliminations. Subtract any amount you have spent on eliminations from your score and mark your new total. Subtract any eliminated amounts from your opponents' scores and mark their new totals.

Current score (please circle which player you are):

Player B1 ___460_____ Player A1 ____880_____

Player B2 ___500_____ Player A2 ___1100_____

Elimination amounts (in doblons):

	$ Spent on eliminating	x 6	$ of opponent eliminated
~~Player B1~~	~~_____~~	~~x 6~~	~~_____~~
Player B2	__0___	x 6	___0____
Player A1	__0___	x 6	___0___
Player A2	_100__	x 6	__600___
Total:	***_100__***	***x 6***	***__600___***

Revised scores:

Player B1 _____360_____ Player A1 _____880_____

Player B2 _____500_____ Player A2 _____500_____

Elimination Form 2A (seen by A1 and A2)

In the elimination round, you may choose to eliminate any portion of any opponent's earnings. You may eliminate a portion of the earnings for more than one player. In the current score, write in the amount of money each player holds at the end of the betting rounds. In the elimination amounts, indicate what amount of doblons you would like to spend towards eliminating the earnings of each opponent. Multiply that number by 6 to see how that burning will affect your opponent. In the revised scores, update the current scores in light of these eliminations. Subtract any amount you have spent on eliminations from your score and mark your new total. Subtract any eliminated amounts from your opponents' scores and mark their new totals.

Current score (please circle which player you are):

Player A1 _____460_____ Player B1 ____880_____

Player A2 _____500_____ Player B2 ____1100____

Elimination amounts (in doblons):

	$ Spent on eliminating	x 6	$ of opponent eliminated
~~Player A1~~	~~_____~~	~~x 6~~	~~_____~~
Player A2	__40__	x 6	__240___
Player B1	__50__	x 6	__300___
Player B2	__70__	x 6	__420___
Total:	***__160_***	***x 6***	***__960___***

Revised scores:

Player A1 _____300_____ Player B1 ____580_____

Player A2 _____260_____ Player B2 ____680_____

Elimination Form 2B (seen by B1 and B2)

In the elimination round, you may choose to eliminate any portion of any opponent's earnings. You may eliminate a portion of the earnings for more than one player. In the current score, write in the amount of money each player holds at the end of the betting rounds. In the elimination amounts, indicate what amount of doblons you would like to spend towards eliminating the earnings of each opponent. Multiply that number by 6 to see how that burning will affect your opponent. In the revised scores, update the current scores in light of these eliminations. Subtract any amount you have spent on eliminations from your score and mark your new total. Subtract any eliminated amounts from your opponents' scores and mark their new totals.

Current score (please circle which player you are):

Player B1 ___460_____ Player A1 ____880_____

Player B2 ___500_____ Player A2 ____1100____

Elimination amounts (in doblons):

	$ Spent on eliminating	x 6	$ of opponent eliminated
~~Player B1~~	~~_____~~	~~x 6~~	~~_____~~
Player B2	__40__	x 6	__240___
Player A1	__50__	x 6	__300___
Player A2	__70__	x 6	__480___
Total:	***_160__***	***x 6***	***__960____***

Revised scores:

Player B1 ____300_____ Player A1 _____580_____

Player B2 ____260_____ Player A2 _____680_____

Elimination Form 3A (seen by A1 and A2)

In the elimination round, you may choose to eliminate any portion of any opponent's earnings. You may eliminate a portion of the earnings for more than one player. In the current score, write in the amount of money each player holds at the end of the betting rounds. In the elimination amounts, indicate what amount of doblons you would like to spend towards eliminating the earnings of each opponent. Multiply that number by 6 to see how that burning will affect your opponent. In the revised scores, update the current scores in light of these eliminations. Subtract any amount you have spent on eliminations from your score and mark your new total. Subtract any eliminated amounts from your opponents' scores and mark their new totals.

Current score (please circle which player you are):

Player A1 _____460_____ Player B1 ____880_____

Player A2 _____500_____ Player B2 ____1100____

Elimination amounts (in doblons):

	$ Spent on eliminating	x 6	$ of opponent eliminated
~~Player A1~~	~~_____~~	~~x 6~~	~~_____~~
Player A2	__70__	x 6	___420__
Player B1	_130__	x 6	___780__
Player B2	_170__	x 6	__1020___
Total:	***_370__***	***x 6***	***__2220___***

Revised scores:

Player A1 _____90_____ Player B1 _____80_____

Player A2 _____80_____ Player B2 _____80_____

Elimination Form 3B (seen by B1 and B2)

In the elimination round, you may choose to eliminate any portion of any opponent's earnings. You may eliminate a portion of the earnings for more than one player. In the current score, write in the amount of money each player holds at the end of the betting rounds. In the elimination amounts, indicate what amount of doblons you would like to spend towards eliminating the earnings of each opponent. Multiply that number by 6 to see how that burning will affect your opponent. In the revised scores, update the current scores in light of these eliminations. Subtract any amount you have spent on eliminations from your score and mark your new total. Subtract any eliminated amounts from your opponents' scores and mark their new totals.

Current score (please circle which player you are):

Player B1 ____460___ Player A1 ____880_____

Player B2 ____500____ Player A2 ____1100____

Elimination amounts (in doblons):

	$ Spent on eliminating	x 6	$ of opponent eliminated
~~Player B1~~	~~_____~~	~~x 6~~	~~_____~~
Player B2	__70__	x 6	___420__
Player A1	__130_	x 6	___780__
Player A2	__170_	x 6	__1020__
Total:	***__370_***	***x 6***	***__2220__***

Revised scores:

Player B1 _____90_____ Player A1 _____80_____

Player B2 _____80_____ Player A2 _____80_____

Reactions Following Completing the Elimination Form:

Student Number: _____

Think about how you are feeling at this moment, after completing the elimination form. Please make one vertical mark along the line below to represent how you feel.

Terrible I----------I Delighted

Reflecting on your decisions during the elimination round, please indicate your level of agreement with the following statements.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

1. I chose to eliminate because it was unfair that others had more money than I (rationalizing; perceived unfairness)

   1 2 3 4 5 6 7

2. I felt bad about taking away someone else's earnings* (lack of remorse)

   1 2 3 4 5 6 7

3. I'd rather eliminate someone's earnings than have them beat me. (malicious envy)

   1 2 3 4 5 6 7

4. I eliminated because I wanted to win. (competitiveness)

   1 2 3 4 5 6 7

5. I feel pretty good right now (SE regulation)

   1 2 3 4 5 6 7

6. I'm sure I was nicer to my competitors than they were to me (assumption of meritorious contribution).

   1 2 3 4 5 6 7

7. I would be very upset to see a competitor win the round and have his/her initials on the Wall of Fame

   1 2 3 4 5 6 7

8. I felt it was important to beat others in this game (competitiveness).

   1 2 3 4 5 6 7

9. I only eliminated some earnings of people who really deserved it (rationalization)

   1 2 3 4 5 6 7

10. I wouldn't really mind if I finished in last place after this betting game* (threatened inferiority).

    1 2 3 4 5 6 7

11. I would be a pretty weak person if the results of this game bothered me (assumptions about affect).

    1 2 3 4 5 6 7

12. I regret my elimination choices (guilt, or lack thereof)

    1 2 3 4 5 6 7

13. If I did this betting game over again and won top prize, that wouldn't surprise me much (arrogance).

    1 2 3 4 5 6 7

14. It felt good to eliminate others' winnings.

    1 2 3 4 5 6 7

15. I enjoyed eliminating others' winnings even more than winning my own money.

    1 2 3 4 5 6 7

16. I wish I could see the look on their face(s) when their money was eliminated (*Schadenfreude,* malicious envy*)*

    1 2 3 4 5 6 7

17. I would be pretty happy if I was on the Wall of Fame (status-seeking, reinforcement strategy).

1 2 3 4 5 6 7

*Denotes a reverse-scored item.

Post-Elimination Form

Student Number: _____

Think about how you are feeling at this moment, after learning the outcomes of the elimination round. Please make one vertical mark along the line below to represent how you feel.

Terrible I----------I Delighted

Reflecting on how you feel after hearing the results of the elimination round, please indicate your level of agreement with the following statements in relation to the competitor with the highest score (X) after the betting rounds. If you had the highest score following the betting rounds, respond to these questions in regards to the competitor with the next-highest score (X) after the betting rounds.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

1. I felt relieved knowing that X had been 'brought down a level'.

   1 2 3 4 5 6 7

2. I resented X for his/her high score.

   1 2 3 4 5 6 7

3. I thought I would have more money at the end of the game.

   1 2 3 4 5 6 7

4. I am upset with my outcome.

   1 2 3 4 5 6 7

5. I smiled a little, knowing that at least some of X's money was eliminated.

   1 2 3 4 5 6 7

6. I secretly hoped that X would experience a small failure.

   1 2 3 4 5 6 7

7. I feel a bit sorry for X, after seeing these results.*

   1 2 3 4 5 6 7

8. Given the situation, it's justified to want others to fail.

   1 2 3 4 5 6 7

* Denotes a reverse-scored item

Appendix C

Experiment Script (Note: nonverbal directions are italicized).

”Hello, and welcome. This is the (insert study name here) study on Personality Types and Betting Behaviour. My name is Darren Neufeld, and I am a University of Manitoba student completing this research as part of my MA thesis. My research supervisor is Dr. Ed Johnson, Assistant Professor of Psychology.

In this portion of the experiment, you will participate in a betting simulation. You will each receive a certain amount of “doblons,” a fictional currency which you use to make bets in each of 5 betting rounds. At the end of the game, you can trade your doblons in for money; each “doblon” is worth $0.01.

You make your bets by filling out this paper (Practice Betting Slip; *hold up in front of students*). The paper asks for the round #, the amount of doblons you would like to bet, and your student number. Once all bets are collected, I will roll a die to determine the payout. If a 1 or a 2 are rolled, you keep your betted amount and receive double the amount you bet. That means that if you bet 150 doblons, you would receive 450 doblons – in effect, you triple your money. However, if a 3, 4, 5, or 6 are rolled, you lose the amount you bet.

This betting game has a competitive aspect as well. The top player in each group will receive the unofficial title of “Master of the Bets” and can submit his or her initials (or any other 3-letter combination) for our Wall of Fame. While there is no monetary prize associated with the Wall of Fame, it will be seen by every group that follows and is our way of honouring each round’s top player.

As you can see on the card, you must make at least a minimum bet in each round, but you can bet any amount between the minimum and maximum bet in each round. There will be 5 rounds

in total. Remember: any amount of doblons you have remaining at the end of the game can be traded in for real money that you can keep. We guarantee that you will not leave the study empty-handed, so don't be afraid to make bets in each round.

Now let's practice the betting. When we do it for real, two of you will be in a separate room. For now, I want to teach you all how to do this at the same time. *Pass out practice betting slip.* Fill out the betting slip and then leave it on the table in front of you. Don't worry about seat position yet; I will explain that later. Once you have all made your bets, I will roll the die in front of you."

[If a 1 or 2 is rolled] "You would have all won on this roll. Any amount of money you bet you would have returned back to you, and you would win double that amount. In effect, you tripled your money.

Player A1, you bet _____, so you would win _____ doblons on that bet... (etc.)."

[If a 3, 4, 5, or 6 is rolled] "You would not have won on this roll, and would lose only the amount you bet.

I will be keeping a tally of scores for each player posted on the white/chalk-board, and will be updating them after each round of betting. (You will also know your current earnings by the number of chips in front of you). You will be identified by your seat position: A1, A2, B1, or B2. No one will see what amount you bet in each round, but the total score for each player will be visible to all players.

Do you have any questions about the betting procedure or any part of this simulation thus far? Before we begin, please respond to the following questions."

Pass out Predictions About the Betting Game form.

On the basis of the last question (how many US towns are named "Fairview"), put the students who guessed the two lowest numbers in room B, and those with the highest guesses can remain in room A.

(To B1 and B2): "You can both come with me, and you will complete the simulation in a different room."

Seat them at their spots with a divider in the middle of the shared table. Ideally, this study can be conducted in the lab space, as the rooms are very tiny.

"Your responses were the furthest from the correct answer, so you have been moved to room B. Students in room B receive 500 doblons, so I will add this to your score totals (mark on board; *provide appropriate betting chips*). You (B1) are sitting in position B1, and you (B2) are sitting in position B2. The other 2 students in room A who guessed closer to the correct answer are given 1000 doblons to begin the game (mark this on board).

We are going to have our first betting round now. You will be allowed to bet up to 100 doblons per round, while students in room A will be allowed to bet up to 150 doblons. You must bet at least 30 doblons per round, but may bet any amount between 30 and 100 doblons."

Distribute Betting Forms

Collect bet slips (and chips), roll die, and update board accordingly. Distribute Reactions slip for students to complete while experimenter is away.

"Now I will go over to room A so they can make their bets. While I am away, please complete this form (Reactions); <u>do not</u> talk while I am away."

Walk to room A.

"Thanks for waiting. Your responses were the furthest from the correct answer, so you were not moved to room B. Students in room A receive 500 doblons, so I will add this to your score totals

(mark on board; *provide appropriate betting chips*). You (A1) are sitting in position A1, and you (A2) are sitting in position A2. The other 2 students in room B who guessed closer to the correct answer are given 1000 doblons to begin the game (mark this on board).

We are going to have our first betting round now. You will be allowed to bet up to 100 doblons per round, while students in room B will be allowed to bet up to 150 doblons. You must bet at least 33 doblons per round, but may bet any amount between 33 and 100 doblons."

Distribute Betting Forms

Collect bet slips, roll die, update board accordingly – do so for all 4 students, as room B students have already bet. Distribute Reactions to Outcome form for them to complete while you are in room A.

"Now I am going back to room B so they can make their second bet. While I am away, please complete this form (Reactions); <u>do not</u> talk while I am away."

Return to room B and mark updated scores. Remember, the scores for students from the alternate room are always inflated by 500 doblons. If A1 bet 100 doblons unsuccessfully, he/she would have a score of 400 in room A, but a score of 900 in room B.

Repeat this procedure for 5 rounds of betting.

Once finished, address students in room B first:

"Now we have finished all 5 betting rounds. Before we continue, we have a few more questions about how you are feeling right now, in this moment. Please complete this page; I will return in a minute." *Distribute Reactions to Scores After 5 Rounds of Betting form.*

"Before we pay you out, we are going to have one elimination round. This is an opportunity to reduce the scores of your opponents. The way this round works is that you can choose to spend some of your doblons to eliminate your opponents' doblons. If you spend 10 doblons, you can

eliminate 60 doblons of another player. You can eliminate as much or as little as you like – there is no limit. You may also eliminate doblons for as many players as you would like – you may choose more than one person. Because your opponents in the other room are advantaged, they will not be permitted to make any eliminations.

I want to assure you that any eliminating you choose to do will be anonymous – you will write your choices on the form provided but will not indicate your choice with chips, as was done previously. Your opponents will learn the extent of their eliminated earnings before the end of the game, but will not know how much each player chose to eliminate. Thus, your individual decisions will remain anonymous to all other competitors. The final scores will only be posted once all players have finished the elimination round, which will reflect any elimination activity. Any amount of doblons remaining after the elimination round is yours to keep and will be converted to dollars."

Pass around Elimination form and examples.

"Think carefully about your decision. To help you fill out the forms, here are three examples. They help to illustrate the effects of different choices and strategies. I am going to give you a few minutes to think about this and make a decision. When you are finished with the form, let me know and I will collect it."

Return to room A and explain this procedure. Return to room B and collect forms.

"Now you can work on this form."

Distribute Reactions Following Completing the Elimination form. Return to room A and collect forms; distribute this form. Thus, students will report their feelings <u>before</u> viewing the outcome of their actions.

Return to room B. Collect forms, then tabulate new scores for each participant, remembering to inflate for opponents in the opposite room. If scores are below 0, write 0 – do not use negative numbers. Do the same for room A.

"After the elimination round, the scores are as follows: B1 (A1) has _____ doblons, and B2 (A2) has ____ doblons. In the other room, A1 (B1) has _____ doblons and A2 (B2) has _____ doblons. After converting these scores back to dollars, you will be paid any earnings you have collected during this game.

We have just a few more questions and then we will conclude the study (*pass out* Post-Elimination *form*)."

Assemble all participants in the same room for debriefing.

Appendix D

Debriefing Script

"We're almost finished, and I will pay you your earnings in just a few minutes. Before I do so, I would like you to briefly write what you think this study was all about on these slips of paper. What was the purpose of this study?"

Pass around blank slips of paper; *collect slips.*

"We are now finished with this study. I want to thank you again for your participation in this study and tell you more about it. There is more to this study than I have told you so far. Before I go into specific details, I want to explain why it is necessary in some types of psychology studies to not tell people about the purpose of the study at the very beginning. For some topics, if participants know the purpose in advance they may behave differently than they would otherwise, which may affect our results and not be a good indication of how people react in ordinary situations. In some situations, if participants know the purpose of a study and what we predict about how they will respond, they might deliberately do whatever it is they think we want them to do, just to help us out. Or the reverse might happen, where participants do the exact opposite of what we expect, perhaps to show us that we can't figure them out. Either result would invalidate our findings. We are interested in finding out how people behave naturally, without being influenced by the purpose of a given study. Can you see why in some kinds of studies we can't tell people all about the whole purpose of the study at the beginning, because if we did it might influence the results and make the data invalid?

Now I would like to tell you exactly what we were trying to investigate in this study. We were looking at whether narcissism is related to experiences of envy. Narcissism can be understood as a personality trait that is characterized by a strong focus or emphasis on oneself.

To some degree, we are all narcissistic. And this is not always a bad thing – some parts of narcissism are quite healthy and adaptive, and include such things as high self-esteem, confidence, and the motivation to work hard and achieve personally important life goals. However, there are other aspects of narcissism that are unhealthy, such as arrogance. We are interested in whether these adaptive and maladaptive aspects of narcissism are related to envy. Envy is the painful emotion that we all experience from time to time when we lack something that another person has. Because we lack what this person has, we might feel angry at the person who has what we lack, and we might feel bad about ourselves because we don't have it. Envy is a difficult thing to study; although it is extremely common, people don't like to say that they are feeling envy. So we had to take a less direct approach, looking at envy in a variety of ways. The first way was that, when you did the online questionnaires, we asked you a number of questions about how often you feel envious, how strong these feelings are, etc. Some individuals experience envy more often than others, and the envy they do experience may be more intense – we call this dispositional envy.

We also looked at envy in today's betting simulation. Do you remember when I asked you how many U.S. towns were named Fairview, and I separated you into two different rooms based on your response? (There are 66, by the way). That was kind of a strange question. The reason I asked it is because I needed to separate you into different rooms for the experiment to work. So both groups were told that you guessed further from the correct answer, and as a result, you got less money to bet with. I needed both groups to believe that they had less money than their opponents in the next room because envy occurs most often when people feel deprived of something they think they could have had. Envy is a normal reaction to this situation, and I asked about how deprived you felt because of this situation and how envious you felt towards your

highest scoring opponent. We were afraid that if we told you exactly what we were studying, and what we thought might happen, you might simply decide to indicate that you felt a lot of envy, or no envy at all. But if that happened, you wouldn't be reacting authentically to the situation and it would be pretty artificial. That is why we tried very hard to create a situation that was unfair, that all students would believe they felt deprived of money they could have had, and that they might then feel envy towards the students in the opposite room, who they believed to have more money than they did. This situation is a lot more convincing than if I told you to pretend that you were against advantaged opponents in the other room.

We looked at envy in other ways too. Do you remember when I asked you to rate your liking for, and the ability of, yourself and your highest scoring opponent? This is not really a measure of envy, but may indicate envious feelings. We hypothesized that if this comparison is important, people might choose to rate themselves higher and rate this opponent lower, as a way of feeling better about himself or herself after losing the betting game. Most people rate themselves better than average on these measures and this may even be a good thing. We think that both the adaptive and maladaptive parts of narcissism may be related to high ratings of self, and low ratings of the other opponent. That is why I asked you to make these ratings.

Do you also remember when I told you there would be an elimination round? That was something I had never mentioned before, and I needed to keep it a secret until that moment. We thought that if you knew that there would be the opportunity to eliminate your opponents' earnings, you might not have felt envious towards them because there would be a way to eliminate these unfair earnings. So when I told you that there would be an elimination round, I was interested in seeing how much you would be willing to spend to eliminate their earnings. The choices people make during this elimination round may be a behavioural indicator of their

envious feelings. I want to mention here that, when faced with this situation in a previous study, the large majority of students choose to eliminate others' earnings, and many choose to spend a very large amount of their earnings to do so. If you chose to eliminate, and even if you chose to eliminate a large amount of money, that is not unusual and it does not necessarily mean that you are an envious person. After all, we tried very hard to create a situation that would encourage people to choose to eliminate. If nobody chose to eliminate, that would mean the situation wasn't very convincing and we haven't done our job well. We also added the "Master of the Bets" award so that people would feel motivated to eliminate others' earnings, in order to achieve the best score in the group and be on the poster.

Since this is a new procedure for us – we have not used this betting round and elimination round simulation before – we were interested about how people felt after they made their choices, as well as after hearing the final scores after their choices were calculated. Did people feel good that they were able to resolve an unfair situation? Did people feel bad and regret their decision? We did not make definite hypotheses about these responses, but these questions may help us understand how you felt while going through this simulation.

I want to sincerely apologize for the use of deception in this study. I hope that my explaining the deceptive elements of the study has helped you to better understand what we are investigating, and to see why we employed deception in our design.

Do you understand why we had to separate you into different rooms and tell you that you had less money to bet with than students in the opposite room? Do you understand why we needed to do the things we did, and tell you the things we told you?

Do you have any questions?

I want to emphasize that, although we are looking at different types of narcissism – which is a personality trait – we purposefully tried to create a very convincing situation where participants would feel unfairly deprived and feel some envy towards the students who were given more money to start with. There were no correct answers or behaviours during this study. We were looking for people's natural responses when faced with the situation we had constructed. In this study we were looking at general personality traits – in particular, adaptive and maladaptive parts of narcissism – and how these traits relate to envy across groups of individuals. So we are looking at how the average person reacts – we cannot tell anything about how one or two, or even four people, react. So we will need to combine your group's data with that of many other groups. Your individual data will be rendered anonymous; we are only interested in how *groups* of people respond.

This means it is very important that you not say anything about this study to anyone else. If you talk to someone else and tell them about this study and all the things I told you now, it would be the same as if I had told them about the purpose of the study before they participated. Their reactions wouldn't be natural, and I couldn't combine their results with that of other students, and I couldn't draw any conclusions. And all the time that we will have put into this experiment will have been wasted. You might think that it might not be a big deal if you talk to someone else, especially if they are not going to be in the study – like a girlfriend or boyfriend, or family member. But they might say something else to someone who will be. I realize that when people are in an experiment like this there is a strong tendency to want to tell others about it, but I would like you to try to resist that temptation.

I realize that the more I tell you about the experiment, the more you are able to tell someone else, so it might seem like we are taking a chance in telling you all about it. But my

experience is actually the opposite, that if I try to explain an experiment thoroughly and describe the reasons for doing the study as we did and why the procedure was the way it was, participants are more likely to cooperate and not talk about the experiment. But that is not the only reason. It is also important that students get some educational value out of a study, and if we didn't tell you what the study was really about, you wouldn't learn that much about what experiments are like. We also want all students to leave our study feeling good about themselves, about their participation in our study, and feel good about the other students in the study.

With that in mind, I ask you to please refrain from revealing anything about this experiment to others.

It is possible that in studies like this, students may be upset with other students because of decisions they made during this simulation. Some people may feel that someone was unfair in eliminating some of their earnings. Others might feel bad about eliminating others' earnings during the elimination round. But remember that you were all placed in the same position, believing that you had been given less money than two other students. You were all placed in a powerful situation designed to instil feelings of envy, and that helps to explain both the decisions you made, as well as the decisions made by other students in the study. Also, there were no good or bad decisions – this was a bogus simulation of betting ability, since this is not a real test of one's ability to bet and there is no such test. Because of the way the payouts were determined, if a person played an unlimited amount of time, it is most likely that they would end up with the same amount of money as they started with- the odds are fair. So any decision you made – to bet a lot, or a little - was a good one, and the results were all up to chance. And as for the elimination round, since most people choose to eliminate, and many eliminate a large chunk of others'

earnings even though it costs them money to do so, this decision is not strange or unusual. It is actually a very common decision.

Sometimes in studies like this, participants may experience negative feelings towards others or towards oneself can last beyond the experiment itself. Even when people are told that what a study really measures, and the procedure is explained, these feelings may endure in some individuals. I want to reassure you that this discomfort usually subsides rather quickly and I hope that you are already feeling good about yourselves, your peers, and your participation in the experiment. I am now going to pass around a list of resources that you may contact if you find that this discomfort persists beyond this study."

Pass around list of resources to all participants.

"These are all free resources, and include contact information so you can get in touch with them. You may also contact either myself or Dr. Johnson at a later date if you would like to discuss any further questions or concerns.

Do you have any questions about this study? Is anything I said unclear? Do you have any comments about your experience during this study? Any suggestions for helping the study run smoothly in future sessions?

Thanks so much for your help! I really appreciate it."