Identifying the Relationship Between the Angry Impulsive Social Anxiety Subtype and Vulnerable Narcissism Utilizing Latent Profile Analysis

Mara D'Lennys Villalongo Andino

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John A. Richey
Neil M. Hauenstein
Kasey Stanton

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ABSTRACT

Individuals with Social Anxiety Disorder (SAD) are typically perceived by others as shy, submissive, or risk-averse. However, recent work has identified an understudied subtype within SAD characterized by high levels of anger and high-risk or novelty-seeking impulsive behaviors. Interestingly, this subtype bears conceptual similarities with prior accounts of vulnerable narcissism. For example, both are associated with concerns regarding self-presentation and how they are perceived by others. The angry-impulsive subtype and vulnerable narcissism may further share similar etiologic origins and similar associations with self-reported anger, impulsivity, and anxiety-related characteristics. However, despite these key similarities no prior work has systematically evaluated the common and potentially distinguishing factors within and between these conceptually similar but diagnostically distinct groups. For example, cognitive features such as fear of negative evaluation and interpersonal rivalry could be distinguishing features of SAD and vulnerable narcissism, although the utility of these distinguishing features to clarify the differential diagnosis remains unknown. Accordingly, the purpose of this study was to utilize a person-centered analytic approach (latent profile analysis; LPA) to empirically establish whether vulnerable narcissistic traits exist within high anger, risk-prone individuals who are also socially anxious, or alternatively whether specific features of each disorder can be used to disambiguate them empirically. Results of this work supported the existence of the angry impulsive socially anxious subtype and supported a relationship between that group and vulnerable narcissistic traits. These findings have implications for treatment selection among affected individuals and may further clarify why prior work evaluating interventions for adults with SAD and angry impulsive features has been met with only limited success.

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Individuals with Social Anxiety Disorder (SAD) are typically perceived by others as shy, submissive, or risk-averse. However, recent work has identified an understudied subtype within SAD characterized by high levels of anger and high-risk or novelty-seeking impulsive behaviors. Interestingly, this subtype has conceptual similarities with descriptions of vulnerable narcissism. For example, both are associated with concerns regarding self-presentation and how they are perceived by others. The angry-impulsive subtype and vulnerable narcissism may further share similar origins and similar associations with self-reported anger, impulsivity, and anxiety-related characteristics. However, despite these key similarities no prior work has evaluated the common and potentially distinctive factors within and between these distinct groups. For example, features such as fear of negative evaluation and interpersonal rivalry could be distinguishing features of SAD and vulnerable narcissism, although the utility of these differentiating features to clarify the differential diagnosis is unknown. Accordingly, the purpose of this study was to utilize a person-centered analytic approach (latent profile analysis; LPA) to establish whether vulnerable narcissistic traits exist within high anger, risk-prone individuals who are also socially anxious, or whether specific features of each disorder can be used to differentiate them. Results of this work supported the existence of the angry impulsive socially anxious subtype and supported a relationship between that group and vulnerable narcissistic traits. These findings have implications for treatment selection among affected individuals and may further clarify why prior work evaluating interventions for adults with SAD and angry impulsive features has been met with only limited success.

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Introduction

Social Anxiety Disorder (SAD) is defined as the fear or avoidance of social situations in which the individual may be exposed to evaluation from others (Diagnostic and Statistical Manual of Mental Disorders, 5th edition). Fear of negative evaluation (FNE) is central to the DSM-5 definition of SAD, as well as prevailing theories of the etiology and maintenance of the disorder (Clark & Wells, 1995; Hofmann, 2007; Rapee & Heimberg, 1997). However, a variety of other clinical features have been observed in SAD, including diminished exploratory behavior and in certain cases, diminished positive affect (Brown et al., 1998). Overall, individuals diagnosed with social anxiety tend to be perceived by others as shy, submissive, or risk-averse (Kashdan, 2007; Kashdan et al., 2009). However, prior work has also revealed a distinct subtype within the social anxiety spectrum that is not encompassed by those more traditional descriptors and is instead characterized by engagement in high levels of anger and novelty-seeking impulsive behaviors. This subtype has been replicated across different studies in various samples, both clinical and non-clinical (Erwin, et al., 2003; Hofmann et al., 2004; Kachin, et al., 2001; Kashdan, 2007; Kashdan, et al., 2008; Kashdan & Hofmann, 2008; Kashdan et al., 2009). Although there has been a growing body of research focusing on the putative high-anger, impulsive subtype of SAD, there remains a significant gap regarding the underlying factors and mechanisms that give rise to this particular manifestation of social anxiety. Without such information, the development and implementation of effective intervention efforts targeting this meaningful subset of adults with SAD is unlikely. Accordingly, the purpose of the current study is to systematically evaluate potential underlying factors associated with the angry-impulsive presentation of SAD. In particular, we seek to characterize the role of core personality variables, most notably narcissism (and specifically vulnerable narcissism), within the putative angry-impulsive and risk-taking subtype of SAD as compared to the more commonly observed SAD presentation centered around fear of negative evaluation and behavioral avoidance. We specifically hypothesize that narcissistic personality factors will account for the processes that give rise to this subset of individuals with social anxiety.

Although angry-impulsive traits have been observed in the context of social anxiety for some time now, Erwin and colleagues (2003) were among the first to evaluate the role of anger among adults with social anxiety symptoms. Results of this work suggested that higher levels of anger and impulsivity among adults with SAD were associated with lower levels of treatment completion, and poorer outcomes among those who do. Kashdan and colleagues (2009) later reported supportive evidence for the existence of a meaningful subgroup of socially anxious individuals with angry-impulsive traits and further found that this subgroup may account for up to 21% of individuals with SAD. At that point in time, the theorized function for angry-impulsive symptoms within SAD was couched in terms of self-regulation for personal distress as a result of social fears (Kashdan et al., 2009; Leary & Jongman-Sereno, 2014). In other words, anger and risky or impulsive behaviors were posited to play a role in mitigating the emotional distress resulting from perceived negative evaluation by others. Findings further suggested that this subtype was more likely to engage in sexual impulsivity and substance use, and also reported greater functional impairment and more psychiatric comorbidity. More recent work on the angry-impulsive symptoms of SAD has focused on how those factors can affect the trajectory of the disorder or have particular associations with its functional outcomes. For example, Versella et al., (2016) assessed anger profiles in SAD and their associations specifically with impairment and distress. Similar to previous studies, there was significant heterogeneity within the presentation of SAD in relation to self-reported characteristics of anger. More specifically, a high-anger group with little ability to control their anger was identified, similar to the previously identified high-anger, impulsive, and socially anxious subset reported by Kashdan and colleagues (2009). Individuals in this group reported reactive anger at a higher intensity than other SAD subgroups and have greater associations to problematic outcomes such as greater global impairment, higher self-reported depressive symptoms, greater feelings of inferiority and worthlessness, and higher levels of vindictiveness. Dixon and colleagues (2017) similarly reported associations among impulse control problems, social anxiety, and aggression. Findings, in this case, supported a positive association between social anxiety symptoms, emotion-driven impulse control difficulties, anger, and hostility. Most importantly, this research further reinforces the existence of a subgroup of individuals with social anxiety that are more prone to aggression

and directly assessed the role of emotion-driven impulse control difficulties in the relationship between social anxiety and aggression. More recently, Van Zalk and colleagues (2020) extended this line of research into the adolescent period, focusing specifically on the relationship between social anxiety and impulsivity, as well as their relationship to emotional adjustment in adolescents over time-examined using a latent transition analysis (LTA; Collins & Lanza, 2010). LTA allowed characterization of subgroups as well as changes in subgroup membership over time. This approach further facilitated a detailed description of how changes in membership may have relationships with later clinically relevant outcomes (Collins & Lanza, 2010; Nylund, 2007). Results of LTA in this context indicated that the angry-impulsive and risk-taking subtype of SAD was found to be more stable in girls over time (i.e., more likely to remain in that class across a four-year period), whereas boys were more likely to transition out of the high-impulsivity high-anxiety group across the four-year measurement period. Additionally, the angry-impulsive and risk-taking subtype was associated with greater internalizing problems, regardless of gender.

Although it is increasingly acknowledged that the angry-impulsive subtype of SAD not only exists but also comprises a meaningful proportion of individuals within the diagnostic category, surprisingly little research has probed its potential underlying factors. As a starting point, personality research may provide a tractable framework for understanding the details of conceptually relevant individual difference variables such as anger and impulsivity among non-socially anxious individuals in order to eventually understand their potential relevance to social anxiety. Specifically, these factors bear some conceptual overlap with prior descriptions of *vulnerable narcissism*, which is characterized by high introversion, low extraversion, and low self-esteem (Hendin & Cheek, 1997; Krizan & Herlache, 2018; Miller & Campbell, 2008; Miller et al., 2010; Vazire & Funder, 2006). Narcissism as a whole can be segregated into two distinct dimensions of (a) vulnerable and (b) grandiose narcissism, with the latter corresponding to more traditional descriptors of narcissistic traits such as perceptions of entitlement and self-importance (Krizan & Herlache, 2018). Narcissistic grandiosity has been further described as a constellation of traits including exploitative behaviors, an exaggerated sense of entitlement, reactivity to criticism, and use of maladaptive self-

enhancement strategies (Ackerman et al., 2017; Besser & Priel, 2010). Conversely, vulnerable narcissistic features center around a depleted sense of self (e.g., feelings of emptiness, lack of self-assurance), emotional dysregulation, and interpersonal hypersensitivity (Gore & Widiger, 2016; Kernberg, 1975; Miller & Campbell, 2008; Pincus et al., 2009; Pincus & Lukowitsky, 2010; Pincus et al., 2014; Roberts & Huprich, 2012). The broad construct of narcissism has been further characterized in terms of overt and covert narcissistic behaviors (Akhtar & Thomson, 1982; Cooper, 1981). For example, overt narcissistic expressions encompass public behaviors and voiced attitudes or feelings that may be more observable to others (Pincus & Lukowitsky, 2010). Overt narcissistic expressions are more strongly associated with grandiose narcissism, as they include behaviors like boastfulness, exhibitionism, and self-indulgence (Pincus & Lukowitsky, 2010; Stanton et al., 2018; Wink, 1991). Covert expressions, on the other hand, refer to privately held feelings, motives, and needs, and they tend to be associated with vulnerable narcissism, as they include feelings of inadequacy, helplessness, shame, social avoidance, or low self-esteem (Pincus, 2012; Wink, 1991). Moreover, the covert expression of narcissism is associated with the experience of negative emotional reactivity, hypersensitivity to criticism, and expected rumination (e.g., continuing to ruminate on performance and feedback even after the situation is resolved; Atlas & Them, 2008). The distinction between the two subtypes of narcissism (e.g., grandiose/vulnerable and covert/overt) is particularly relevant to the purpose of the current study, inasmuch as it provides a starting point for disambiguating the conceptually similar (but perhaps empirically distinguishable) concepts of interest here: (1) SAD with angry-impulsive features from (2) vulnerable narcissism with covert traits.

Discrimination of these conceptually similar states is further complicated by research describing their potentially similar etiologic pathways. For example, A variety of theories have been proposed to explain the etiology of narcissism, with certain early versions centered around parenting patterns (Kernberg, 1975; Kohut, 1977; Rothstein, 1979). Parenting features such as permissiveness, overindulgence, and overvaluation all have a positive relationship with narcissism (Capron, 2004; Otway & Vignoles, 2006; Watson et al., 1992). Conversely, parental monitoring has a negative correlation with narcissism (Horton

et al., 2006; Miller & Campbell, 2008). Most notably, vulnerable narcissism has been associated with parental control particularly when it is related to emotional control, parental coldness, or when it is inconsistent or excessive in nature (Barry et al., 2007; Capron, 2004; Horton et al., 2006; Ramsey et al., 1996). Also worth noting, parental coldness remains associated with the development of vulnerable narcissism even without excessive or inconsistent parental control (Watson et al., 1992). Interestingly, these etiologic parenting behaviors believed to play a role in the emergence of narcissism are similar to parenting behaviors that promote the development of social anxiety. In a brief integrative review of parenting behaviors and their influence on social anxiety, Garcia and colleagues (2021) identified parental control and parental coldness as key factors contributing to the development of social anxiety. Parental overcontrol has been linked to anxiety previously, particularly regarding maternal overcontrol as a component in the development of social anxiety (Becker & Ginsburg, 2011; Bynion et al., 2017; Festa & Ginsburg, 2011; Lieb et al., 2000; Möller et al., 2016; Ollendick & Horsch, 2007; Ollendick & Benoit, 2012; Rapee, 1997; Wood et al., 2003). Parental coldness or low parental warmth has also been associated with the development of social anxiety and with effects in later life stages. More specifically, it has poor implications for children with SAD or at risk for SAD and it can predispose them to having increases in SAD symptoms later in life (Spokas & Heimberg, 2009).

In regard to treatment for narcissistic traits, cognitive-behavioral approaches have been relied upon heavily in prior work and have received consistent, albeit modest support (Cukrowicz, et al., 2011). Patients with Narcissistic Personality Disorder (NPD) often present for treatment with concerns related to depressive symptoms, adjustment, or difficulty in relationships (Beck et al., 2001). CBT techniques in this context focus on modifying the patient's dysfunctional self-schemas (e.g., "others don't recognize my importance; "I am overqualified for this job") and increasing empathy for others (Millon & Grossman, 2005; Turkat & Maisto, 1985). For example, in studies by Turkat and Maisto (1985), Cognitive Behavioral Therapy (CBT) was found to improve mood, decrease anxiety, impulse control, and therapy compliance in individuals with NPD, and individuals with personality disorders. Additionally, Dialectical Behavior Therapy (DBT) has

not been empirically tested for individuals with NPD, however, due to similarities between the disorders in negative emotionality and anxiety symptoms, experts in the field theorize DBT may also be effective for NPD (Reed-Knight & Fischer, 2011). Although randomized controlled trials for NPD remain scarce, the available evidence suggests that CBT for narcissistic traits leads to improvements in interpersonal relationships and symptoms of co-occurring affective disorders such as depression (Cukrowicz, & Joiner, 2005). Given that these treatment approaches directly target problematic beliefs and behaviors related to narcissism, they could help inform more appropriate ways to address problematic behaviors in the angry-impulsive subtype of SAD, if this subgroup is found to have a high level of narcissistic traits.

Mechanistic research focusing specifically on narcissistic vulnerability has documented a relationship between vulnerable narcissism, anxiety, anger, and impulsivity (Krizan & Herlache, 2018; Miller & Campbell, 2008; Miller et al., 2010; Vazire & Funder, 2006). It has been theorized elsewhere that this relationship arises due to the general inability to meet personal needs for admiration and success (Krizan & Herlache, 2018), as well as concerns about how one is perceived by others (Zeigler-Hill et al., 2008). Further work by Besser and Priel (2010) compared grandiose narcissism to vulnerable narcissism and how individuals within each class reacted to different threat conditions (e.g., achievement failure and interpersonal rejection). Results indicate that grandiose narcissists are more susceptible to achievement threats (e.g., failing to obtain a promotion) while vulnerable narcissists were more vulnerable to interpersonal threats (e.g., a cheating partner). Most importantly, both domains of narcissism were associated with higher levels of negative affect and anger when they encountered threatening situations. Further research probing the linkage between anger and narcissism has yielded fairly consistent results, whereas research regarding the question of whether impulsivity is involved in narcissism has met with some controversy. The meta-analytic review by Vazire and Funder (2006) found a significant positive relationship between narcissism and impulsivity, as an underlying factor motivating self-defeating behaviors narcissists tend to display, such as aggression in response to ego threats. However subsequent studies, like that of Miller and colleagues (2009) did not find that impulsivity accounts for the mechanisms

underlying self-defeating behaviors in narcissism. This particular study focused on understanding the relationship between narcissism and impulsivity, and whether impulsivity can account for the tendency for narcissists to engage in self-defeating behaviors. They found that while impulsivity does not account for the underlying mechanisms for self-defeating behaviors in narcissism, attentional impulsivity does have a significant relationship with narcissism. In sum, vulnerable narcissism has notable conceptual similarities in regard to anxiety, anger, and impulsivity, with the subtype of SAD. These similarities make it that much more important to understand the boundaries of similarities and differences between the angry-impulsive presentation of SAD and vulnerable narcissism.

In light of the evidence outlined here, anger and impulsivity in the context of vulnerable narcissism bear a certain degree of conceptual overlap with the angry-impulsive presentation of SAD. For example, an instrumental part of SAD is centered around concerns on self-presentation, worries regarding how they are perceived by others, which typically results in a fear of negative evaluation (Leary, & Jongman-Sereno, 2014; Diagnostic and Statistical Manual of Mental Disorders, 5th edition). As a striking parallel example, in the case of vulnerable narcissism, Besser and Priel (2010) as noted above, found that vulnerable narcissists tend to report disproportionate sensitivity to slights in the interpersonal (rather than personal achievement) domain. Additionally, narcissism has been found to be related to self-presentation in unique ways, depending on the grandiose/vulnerable distinction of the disorder. Grandiose narcissism has been theorized to reflect indifference to the perception of others, given their already high perceptions of themselves (Foster & Trimm, 2008). Individuals high in grandiose narcissistic traits seek feedback opportunities but do not experience negative emotionality in response to negative feedback (Atlas & Them, 2008). Conversely, vulnerable narcissism is theorized to correspond to hypersensitivity to the evaluation of others. Moreover, Arble (2008) found a significant correlation between the hypersensitive narcissism scale (HSNS; Hendin & Cheek, 1997), related to vulnerable narcissism, and a fear of negative evaluation (Watson & Friend, 1969).

Despite the emergent conceptual overlap between the domains of vulnerable narcissism and the putative angry-impulsive subtype of SAD, no prior work has empirically evaluated the common and potentially unique factors within and between these ostensibly similar but diagnostically distinct groups. Accordingly, the purpose of the research outlined here is to utilize latent profile analysis (LPA) to determine whether vulnerable narcissistic traits exist within high anger, risk-prone individuals who are also socially anxious. LPA is a data-driven approach focused on the identification of distinct as well as potentially common factors among quantitatively distinct subgroups. The current study seeks to empirically examine the key traits concurrently present in both the angry-impulsive SAD subtype and vulnerable narcissism (e.g., Anxiety, Anger, and Impulsivity) while systematically assessing distinguishing factors (e.g., presence or absence of specific traits that have been previously linked to vulnerable narcissism such as interpersonal rivalry, devaluation, striving for supremacy and aggressiveness). These hypothesized common variables were chosen because of their relationship to the angry impulsive SAD subtype and vulnerable narcissism whereas we predict that the distinguishing factor for the profiles will be the presence of constituent traits of vulnerable narcissism (e.g., as noted above, rivalry, aggressiveness related to criticism, devaluing others, striving to feel superior to others). For the purpose of this study, anxiety will be defined as worrying often and more than other people, feelings of tension, and difficulty with stress. Anxiety and its characteristic physiological hyperarousal are pathognomonic of SAD (Brown et al., 1998) but is also associated particularly with vulnerable narcissism (Miller et al., 2010; Miller & Maples, 2011; Roche et al., 2013; Wink, 1991), whereas grandiose narcissism has been previously linked to low anxiety levels (Miller & Maples, 2011; Ronningstam, 2005). Anger will be defined as being easily reactive and having a short temper. In social anxiety, anger has been associated with fears of being rejected or negatively evaluated (Leary et al., 2006). In narcissism, anger has been previously associated with both the grandiose and vulnerable subtypes and it is believed to be an adaptive reaction to ego-threatening interactions (Kealy & Rasmussen, 2012; Morf, 2006; Pincus, 2012; Wright et al., 2010). Impulsivity will be defined as being unstable, acting without thinking, and novelty-seeking behavior. In the context of SAD, particularly in the putative angry-impulsive subtype, impulsivity has been identified as part of their reaction to stress and as a

way to cope with their emotions; it has also been used to identify their high novelty-seeking behavior subtype (Kashdan & Hofmann, 2008; Kashdan et al., 2008; Van Zalk et al., 2020). Narcissism and its relationship with impulsivity have been controversial. Some research states narcissism and impulsivity are significantly associated (Vazire & Funder, 2006), stating the underlying reasons for the relationship between narcissism and aggression is impulsivity and their inability to control their reactions. Meanwhile, others recognize a relationship between narcissism and impulsivity, particularly in regard to attentional impulsiveness, but question its significance (Miller et al., 2009). Given the literature and the theory behind this relationship, we support the associations between impulsivity and narcissism, particularly as it relates to aggression and reactions to ego-threats. The distinction between these profiles composed of similar traits (e.g., anxiety, anger, and impulsivity) will be made by the presence or absence of vulnerable narcissistic traits in the profiles uncovered. More specifically, if vulnerable narcissism is present in the angry-impulsive subtype of SAD, this profile will have a high endorsement of vulnerable narcissistic traits as measured by the Narcissistic Admiration and Rivalry Questionnaire (NARQ; Back et al., 2013). Overall, we predict the presence of multiple subgroups according to the patterns hypothesized here, with varying levels of anxiety, anger, and impulsivity, more importantly, the presence of the socially anxious subset with high levels of anger and impulsivity. Additionally, we predict that given key similarities, narcissistic personality factors will account for the processes that give rise to this subset of individuals with social anxiety. We seek to test this hypothesis in a sample of young adults utilizing Latent Profile Analysis (LPA) to distinguish the personological characteristics of interest in accordance with these hypotheses.

Methods

Study Sample and Procedures

Participants were 355 community adults between the ages of 18 and 80 years old recruited from the online survey platform Amazon Mechanical Turk (AMT). All participants were from the United States and there were no other screening or selection criteria used. All participants provided informed consent prior to participation. Our initial sample size included 385 participants, however only 375 passed all validity

checks (e.g., items asking participants to “Select 'disagree strongly' for this item.) and provided enough data to be analyzed. Additionally, 20 participants’ data did not pass LPA multivariate outlier tests (i.e., Mahalanobis distance), as such their data were not utilized in the study and the sample size was reduced to 355 participants. The average age within the final sample was 32.12 years (SD = 12.10), and 54.6% identified as male. Additionally, a majority of the sample identified as White or European American (73.5%), with others identifying as Black or African American (10.1%), Asian American (8.2%), Hispanic or Latinx (4.8%), and other identities (3.5%). In regard to education, 40.8% of the sample reported having a bachelor’s degree; 20.6% reported having some college; 14.6% reported having a high school diploma or less education; 11.8% reported having a vocational degree, an associate’s degree, and 11% reported having a master’s degree or higher. In addition, 77.5% of participants reported full-time employment, 11.5% reported part-time employment, and 11% reported being unemployed.

Measures

The following variables in the study; anxiety, anger, and impulsivity, were compiled from three different surveys. The International Personality Item Pool (IPIP -60), the HEXACO Personality Inventory (HEXACO), the Big-Five Inventory-2 (BF-2), and the Difficulties in Emotion Regulation Scale (DERS). Internal consistency values for the study measures are available in Table 1.

International Personality Item Pool (IPIP -60; Maples-Keller et al., 2019). The IPIP-60 is a 60-item self-report questionnaire. The measure assesses five domains of Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. The scale also breaks down into thirty facets, three facets of which are relevant to the current study: Anger, Anxiety, and Cautiousness. The anger facet contains two items and measures an individual’s tendency to feel angry or resentful regardless of whether they express those feelings. The anxiety facet is composed of two items and it measures a person’s anxiety and fear levels as well as how tense, jittery, or nervous they may be. The cautiousness facet assesses impulsivity via two items measuring the propensity to think before acting and taking time to make decisions. The response scale for

these items ranges from a 1 (*strongly disagree*) to a 5 (*strongly agree*). The average internal consistency reported for the domains was 0.80.

HEXACO Personality Inventory (HEXACO; Ashton & Lee, 2009). HEXACO is a 60 item self-report measure evaluating six domains of Honesty-Humility, Emotionality, eXtraversion, Agreeableness, conscientiousness, and Openness to Experience. These domains break down further into twenty-six facets. The facets relevant to the study are the anxiety, social boldness, and patience scale. The anxiety facet is composed of two items and assesses a tendency to worry in various contexts. The social boldness facet contains three items and assesses a person's comfort in social situations which were used for the anxiety scale. The patience facet was used for the anger scale, it contains two items, and it assesses a person's tendency to remain calm rather than express their anger. Participants are asked to rate items using a 5-point scale from 1 (*strongly disagree*) to 5(*Strongly agree*) where participants have to rate how much they agree or disagree with the statement. The previously reported internal consistency for the domains ranged from 0.87 to 0.90 in community samples.

Big Five inventory - 2 (BFI-2; Soto & John, 2017). The BFI-2 is a revised version of the Big Five inventory consisting of 60 self-report items. This measure assesses five general domain scales: Extraversion, Agreeableness, Conscientiousness, Negative Emotionality, and Open-Mindedness. The BFI-2 is also composed of fifteen facets, two of which are relevant to the study: anxiety and emotional volatility. The anxiety facet measures the tendency to experience anxiety and fear and is composed of 4 items. The emotional volatility facet uses 4 items to measure moodiness and instability while indirectly measuring anger and irritability and as such was used for the anger scale. Participants are asked to rate items using a 5-point scale from 1 (*strongly disagree*) to 5(*Strongly agree*) where participants have to rate how much they agree or disagree with the statement. The reported internal consistency for the anxiety facet was 0.78 and 0.84 for the emotional volatility facet.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS scale is a 36-item self-report measure with six subscales assessing emotion regulation. The subscales are lack of

emotional awareness (awareness), lack of emotional clarity (clarity), difficulty regulating behavior when distressed (impulse), difficulty engaging in goal-directed cognition and behavior when distressed (goals), unwillingness to accept certain emotional (non-acceptance), and lack of access to strategies for feeling better when distressed (strategies). For the purpose of this study and due to the exploratory factor analysis results, only the difficulty regulating behavior when distressed (impulse) scale was utilized for the impulsivity scale. The scale is rated using a 5-points scale ranging from 1 (*almost never* [0-10%]) to 5 (*almost always* [91-100%]). The reported internal consistency for DERS was 0.93.

Inventory of Depression and Anxiety Symptoms (IDAS-II; Watson et al., 2012). The IDAS-II measure is used to assess for depressive and anxious symptoms. For the purpose of the study, we focused on the Social Anxiety domain, which is composed of 5 items. The items are "I became anxious in a crowded public setting", "I was anxious about talking in public", "I found it difficult to talk with people I did not know well", "I was worried about embarrassing myself socially", and "I felt self-conscious knowing that others were watching me". Participants used a 5-point rating scale ranging from 1 (*not at all*) to 5 (*extremely*) to indicate how much they experienced each symptom over the past two weeks. The IDAS-II examines internalizing symptoms on a continuous scale, with higher scores indicating greater anxiety. The internal consistency for the Social Anxiety domain was previously calculated to be 0.86 in a community adult sample.

Narcissistic Admiration and Rivalry Questionnaire (NARQ; Back et al., 2013). The Narcissistic Admiration and Rivalry Questionnaire is an 18-item self-report measure used to assess two broad narcissistic factors. First, agentic interpersonal strategies using the 9-item Admiration scale (e.g., "manage to be the center of attention"), which corresponds to grandiose tendencies and antagonistic interpersonal strategies using the 9-item Rivalry scale (e.g., "want my rivals to fail"), which corresponds to vulnerable tendencies. The participants used a 6-point rating scale ranging from 1 (*not agree at all*) to 6 (*agree completely*). Internal consistencies for the domains have previously been calculated for both domains with Admiration having an internal consistency of 0.87 and Rivalry having an internal consistency of 0.83.

External Measures for Construct Validation

Narcissistic Vulnerability Scale (NVS; Crowe et. al., 2018) is a brief self-report measure with 11 adjectives that the participants rate the extent to which each word describes them in general (e.g., ashamed, ignored, self-absorbed). Participants rated these on a 7-point scale ranging from 1 (*not at all*) to 7 (*extremely*). The internal consistency was previously calculated in several samples and on average, the measure had an internal consistency of 0.90.

The Computerized Adaptive Test of Personality Disorder static form (CAT-PD-SF; Wright & Simms 2014) is a self-report measure consisting of 212 items that measure 33 traits derived from the full CAT-PD measure. For the purpose of this study, only the grandiosity and exhibitionism scales were included for a total of 13 items. The grandiosity scale measures arrogance and entitlement as high scorers are believed to feel superior to others, act in a condescending manner, and feel they deserve special treatment (e.g., "treat others as inferior). The exhibitionism scale measures an individual's tendency to engage in and obtain pleasure from overt attention-seeking behaviors (e.g., "love to be the center of attention"). Participants rated these on a 5-point scale ranging from 1 (*very untrue of me*) to 5 (*very true of me*). Internal consistencies for the scales have previously been calculated to be 0.83 in a community sample and 0.85 in a patient sample.

The PANAS-X (Watson & Clark, 1999) is a self-report measure consisting of 60 items used to measure positive and negative affect. Participants indicated the extent to which they have experienced each affectivity term "in general" on a 5-point scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). These ratings reflect relatively stable individual differences in tendencies to experience positive and negative mood states as noted. Additionally, scales of the PANAS-X have been demonstrated to have an excellent internal consistency ranging from 0.83 to 0.90 (Watson & Clark, 1999).

LPA Input Variable Construction

The items that were compiled into the input variables of interest for LPA were chosen due to pre-established facets that assessed theoretically relevant themes. For example, in the IPIP-60 the scales of

Anxiety, Anger and Cautiousness were used which directly relate to the variables of anxiety, anger and impulsivity. In the case of cautiousness, this is usually reverse coded to measure the tendency to remain calm rather than express anger. For the HEXACO, the anxiety, social boldness, and patience were directly related to the variables of interest here and accordingly compiled into each named input variable (general anxiety, social anxiety, and impulsivity respectively). The patience facet was used for the anger scale as it assesses a person's tendency to remain calm rather than express their anger. Lastly, For the BFI-2, the anxiety facet and emotional volatility directly measure anxiety and emotional volatility indirectly assessed anger.

Results

Exploratory Factor Analyses

First, principal component analyses (PCA) with no rotation were performed for every planned input scale (i.e., anxiety, anger, impulsivity, narcissism, social anxiety; See Table 1). For the anxiety scale, items compiled from the BFI-2, and HEXACO questionnaires were used. Initially, the scree plot for the anxiety scale suggested a two-component solution with the first component having an eigenvalue of 4.71 and explaining 52% of the variance and the second component having an eigenvalue of 1.31 and explaining 14.5% of the variance. All items loaded into component one, with component loadings ranging from 0.85 to 0.60. Using a loading cutoff of $\geq$0.30, component two only had 3 items loaded strongly and values ranged from 0.64 to 0.47. In summation, these results suggest a one- component solution was appropriate. The Cronbach's alpha for the anxiety scale was 0.88.

For the anger scale, items compiled from the BFI-2, HEXACO, and IPIP questionnaires were utilized. The PCA's scree plot leveled off at a one- component solution with an eigenvalue of 3.28 and explained a variance of 65.6%. The second component had an eigenvalue of 0.69 and explained a variance of 13.9%. Additionally, all items loaded strongly on component one with loadings ranging from 0.88 to 0.65, and the Cronbach's alpha for the anger scale was 0.86.

For the impulsivity scale, items from the BFI-2, IPIP, and DERS measures were utilized. Initially, the PCA suggested a 3- component solution, the first component had an eigenvalue of 16.4, explained 39% of the variance, and had 31 items that loaded to varying degrees ranging from 0.43 to 0.76. The second component had an eigenvalue of 4.90, explained 11.8% of the variance, and had 13 items load onto it with values ranging from 0.32 to 0.74. The third component had an eigenvalue of 2.43, explained 5.7% of the variance, and had 7 items that loaded moderately ranging from 0.33 to 0.52. Afterward, another PCA for the impulsivity scale was run using items from the BFI-2, IPIP, and only items from the difficulty regulating behavior when distressed (impulse) scale in the DERS due to its direct relationship to impulsivity. Similarly, the scree plot for this PCA initially suggested a three-component solution. The eigenvalue for component one was 5.45 and explained 49.5% of the variance while component two had an eigenvalue of 1.28 and explained 11.65% of the variance and component three had an eigenvalue of 1.18 and explained 10.7% of the variance. However, when checking component loadings for component three only two items loaded on this component and they also crossroads moderately (i.e., >0.5) on component one. Similarly, only 3 items loaded on component two, and they cross-loaded on component one more strongly (i.e., >.6). Consequently, component two and three were discarded and the internal consistency for the impulsivity scale was 0.89.

For the narcissism scales, all items were taken from the previously validated NARQ measure. In the literature, there is an established two- component solution for this measure (Back et. al., 2013). For this sample, the PCA initially suggested a four- component solution, the eigenvalue of component one was 6.19 and accounted for 34.3% of the variance, the eigenvalue of component two was 3.47 and accounted for 19.2% of the variance, component three had an eigenvalue of 1.32 and explained 7.3% of variance and component four had an eigenvalue of 1.11 and explained 6.2% of the variance. However, only two items loaded onto component four with values between 0.37 and 0.49, and those items cross-loaded onto components one and two. component three had three items with values ranging between 0.32 and 0.59 and these cross-loaded to varying degrees with components one and two. Component two had eight items that loaded strongly ranging in value from 0.32 to 0.59 and component one had 17 items that loaded onto it ranging from 0.39 to 0.76. These results suggest that a two- component solution would be appropriate. The

internal consistency for the Admiration subscale of the NARQ scale was 0.90 while the internal consistency for the Rivarly subscale was 0.86.

Lastly, for the social anxiety symptoms scale, all items were taken from the social anxiety scale on the IDAS-II. The scree plot suggested a clear one- component solution for this collection of items, with the eigenvalue for component one being 3.54, accounting for a variance of 70.7% and all items loading were between 0.87 and 0.79. The second component had an eigenvalue of 0.49 and explained 9.8% of the variance. These results suggested a one- component solution was appropriate and the social anxiety scale had an internal consistency of 0.90.

In summary, the general anxiety scale had a one- component solution with a total of 9 items, the anger scale had a one-component solution with a total of 5 items, and the impulsivity scale had a one-component solution with a total of 11 items. The NARQ scale had a two-component solution with a total of 18 items and the social anxiety scale had a one-component solution with a total of 5 items. Internal consistency was in the acceptable range for all scales, spanning 0.80 to 0.90.

Latent Profile Analysis

Input scales; Psychometric Properties. All LPA assumptions were tested, and all input scales as described above were assessed for skewness, kurtosis, multicollinearity, and multivariate outliers (See Table 2). Regarding skewness, all variables had skew indices > 3 and for kurtosis, all variables had absolute kurtosis indices > 10, both of which were within the acceptable levels and were therefore unlikely to impact means, variance, or covariance in the LPA model (Byrne, 2012; Kline, 2011). Multicollinearity was evaluated utilizing the Variance Inflation Factor (VIF), which measures the severity of any multicollinearity issues, and all values were >10, which is within the acceptable range and indicates the variables were not redundant (Kline, 2011). Lastly, the Mahalanobis distance statistic was utilized to assess for multivariate outliers and 20 cases had a low p-value indicating the case was different from the population of interest, and as such these cases were removed from the analyses leaving a total sample size of 355. All of these values fall within the appropriate ranges for LPA (Byrne, 2012; Kline, 2011).

LPA; Identification of Optimal Profile Solution. In order to identify the optimal number of profiles recovered by LPA, a variety of model fit indices were evaluated, specifically comparing 3, 4, 5, and 6 profile models. (Lubke & Muthén, 2005; Muthén & Muthén, 2017; Pastor et al., 2007). The models were computed and subsequently compared using relative fit information criteria such as Sample size Adjusted Bayesian Information Criterion (SABIC), Akaike Information Criterion (AIC), and entropy (See Table 3; Akaike, 1987; Celeux & Soromenho, 1996; Sclove, 1987). Typically, a lower value on AIC and SABIC suggests a better model fit whereas a higher value on entropy suggests a better model fit. The AIC and SABIC fit information criterion consistently decreased as the models had a larger number of profiles which is consistent with the typical tradeoff between model fit and parsimony, and as such were ambiguous indicators of fit in this case. Entropy provides a summary of accuracy (specifically accuracy of assigning cases to profiles) and although it does not facilitate model selection, higher values indicate greater precision in case wise assignment. On the other hand, entropy values were clearer in indicating model fit, although typically entropy alone cannot be utilized for final model selection (Collins & Lanza, 2010; Henson et al., 2007; Spurk et al., 2020).

Within the results presented here, observed entropy values began at the low-end with 0.84 observed in the 3-profile model and continued to increase until the 5-profile model with a value of 0.88. Afterward, the entropy value decreased for the 6-profile model which had a 0.84 entropy value, this indicated that according to entropy, the 5-profile model may be the model with the best profile heterogeneity and accuracy. However, additional LPA models were also run for models with 4 to 6 profiles with additional model fit indicators such as the Lo, Mendel, and Rubin test (LMR) which assesses the likelihood ratio of one model (k) and compares it to a more parsimonious simpler model with fewer profiles (k-1). This statistical test, if significant, indicates that the simpler model with fewer profiles represents the data more accurately than a more complicated model with more profiles. For the 5-profile model, this test was not significant ($p = 0.12$) indicating that a simpler model (i.e., a 4-profile model) with fewer profiles did not assign cases more accurately. This test was also evaluated for the 6-profile model, and it was also not significant ($p = 0.35$) suggesting that a simpler model (i.e., a 5-profile model) with fewer profiles was not

necessarily more accurate than a more complex model. These results, along with the entropy of the 5-profile model suggesting that model was more accurate then prompted consideration of the Mahalanobis distance as a function of the effect size of each model. The Mahalanobis distance for the 5-profile model was 0.64 and for the 6-profile model 0.69. Overall, the Mahalanobis distance tended to increase according to number of profiles within the model (e.g., 3-profile model 0.44, 4-profile model 0.56). However, the rate of increase dropped significantly between the 5 and 6 profile models. This suggests that the differences between profiles in the 6-profile model are not appreciably different than differences in profiles within the 5-profile model, suggesting that a more parsimonious solution is preferable here. Both models were plotted graphically, indicating that the 6-profile model had several profiles that overlapped in input scores for several variables (see figures 1 and 2 and supplemental figures 1 and 2). In total, the comparative fit indices and overall model fit indicators generally favored a five-profile solution.

Five Profile Model: Within-profile correlations, profile identities and distinguishing features

Once the best fitting (5-profile) model was selected for follow up analysis, profiles within this model were further examined on the basis of the indicators that distinguished each profile from others as well as the internal correlations of indicators within profiles (i.e., discriminant and convergent features of each profile). For detailed information on profile means on each variable see table 4 and for information regarding profile distribution see figure 3. The five profile LPA model had 5 distinct profiles that differed from each other in mean scores on variables. For detailed information on profile correlations see table 5.

Profile one (P1) had the highest levels of clinical social anxiety symptoms. It also had the second-highest levels of anger, impulsivity, and vulnerable narcissism and the lowest levels of grandiose narcissism. The within-profile correlations among input indicators for this profile revealed that social anxiety symptoms were significantly positively correlated with vulnerable narcissism (i.e., NARQ rivalry scale). Grandiose narcissism was also significantly negatively correlated with the general anxiety scale. Consistent with our initial hypotheses, this appears to be the main profile of interest reflecting interrelated social anxiety and narcissistic traits and as such, was named the *Angry-Impulsive subtype of SAD with vulnerable narcissistic traits.*

P5 had similar characteristics, but with several notable differences. This profile had the highest levels of anger, impulsivity, grandiose narcissism, and vulnerable narcissism and had high subclinical levels of SAD, M = 17.4, and clinical levels of social anxiety symptoms begin at a score of 18.5. However, when considering the correlations for this profile social anxiety symptoms were not significantly correlated with any of the variables of interest. On the other hand, Narcissistic admiration (i.e., grandiosity) and narcissistic rivalry (i.e., vulnerability) correlated significantly with each other. Additionally, narcissistic admiration was negatively correlated with the anxiety scale and the anger scale was positively correlated with the anxiety and impulsivity scales. Overall, due to its mean scores on the narcissism scales and the correlations with both of these scales, this profile was named the *narcissistic traits group.*

P2 had subclinical levels of social anxiety symptoms but was the profile with the 2nd highest levels of anxiety. This profile also had the second-lowest levels of anger, impulsivity, vulnerable narcissism, and grandiose narcissism. The correlations for this profile revealed that social anxiety symptoms and vulnerable narcissism were not significantly correlated with any of the main study variables. On the other hand, narcissistic admiration was negatively correlated with the anxiety scale. Lastly, the anger scale was positively correlated with impulsivity. Overall, due to its mean scores and significant social anxiety symptom correlations, this profile was labeled as the subclinical social anxiety symptoms group.

P3 had the lowest levels of social anxiety symptoms, anxiety, anger, impulsivity, and vulnerable narcissism but had the second-highest levels of grandiose narcissism. This profile did not have clinical levels of social anxiety symptoms, albeit, social anxiety symptoms were still positively correlated with the anxiety and impulsivity scales. As mentioned, this profile had the 2nd highest levels of grandiose narcissism out of all the profiles and the NARQ Admiration scale was significantly correlated with vulnerable narcissism (i.e., NARQ Rivalry scale), and the vulnerable narcissism scale was significantly correlated with impulsivity. The anxiety scale was also positively correlated with the anger and impulsivity scales and negatively correlated with the NARQ Admiration scale. Lastly, the anger scale was also positively correlated with the impulsivity scale. Due to these factors, this profile was named the *comparator group with mild grandiose narcissistic traits.*

P4 was the second lowest in levels of social anxiety symptoms and the third in levels of anxiety, anger, impulsivity, and grandiose narcissism. However, this profile had the second-highest scores of vulnerable narcissism. This profile had one significant and positive correlation between social anxiety symptoms and the anxiety scale. Vulnerable narcissism was positively correlated with grandiose narcissism (i.e., NARQ Admiration scale) and both vulnerable and grandiose narcissism were negatively correlated with the anxiety scale. Additionally, the grandiose narcissism scale was negatively correlated with the anger scale and the anger scale was positively correlated with the impulsivity scale. Given the scores on our variables of interests and the correlations detailed above this profile was named the *comparator group with mild vulnerable narcissistic traits.*

Construct validation: Correlations between profile members and external measures of interest.

In order to obtain further information about the characteristics of each profile, correlations were examined between individual scores on input variables and external constructs available in the dataset (i.e., positive and negative affect measures, grandiose narcissism, and narcissistic vulnerability scales; see Table 5). The correlations for P1, the *Angry-Impulsive subtype of SAD with vulnerable narcissistic trait* revealed that for these profile members, social anxiety symptoms were positively correlated with external measures of vulnerable narcissism (i.e., NVS measure), and negative affect (i.e., PANAS-X measure) while vulnerable narcissism in profile members was also positively correlated with external measures of grandiose and vulnerable narcissism (i.e., CAT-PD grandiose scale and NVS). Grandiose narcissism in P1 members was positively correlated with the exhibitionism scale from the CAT-PD and also with positive affect. The anxiety scale was negatively correlated to exhibitionism measured by the CAT-PD exhibitionism scale, while anger was positively correlated to grandiose narcissism measured by the CAT-PD grandiosity scale.

For the *narcissistic traits group* (P5) correlations revealed social anxiety symptoms were only positively correlated with negative affect (i.e., PANAS-X measure). Narcissistic admiration (i.e., grandiosity) and narcissistic rivalry (i.e., vulnerability) correlated significantly with other measures of grandiose narcissism (i.e., CAT-PD grandiosity and exhibitionism scales). Additionally, Narcissistic admiration was positively correlated with positive affect (i.e., PANAS-X measure scale). The anxiety scale

was negatively correlated to the exhibitionism scale and positive affect scales. Lastly, the impulsivity scale was positively correlated to the negative affect scale.

In the *subclinical SAD group* (P2), social anxiety symptoms were significantly correlated with negative affect and another measure of vulnerable narcissism (i.e., NVS) while vulnerable narcissism was positively correlated with another measure of grandiose narcissism (i.e., CAT-PD grandiosity) and other measures of vulnerable narcissism (i.e., NVS). Grandiose narcissism was also positively correlated with positive affect and with the CAT-PD grandiosity and exhibitionism scales and negatively correlated with the NVS measure. The anxiety scale was positively correlated with the NVS measure and negative affect and negatively correlated with positive affect and the CAT-PD grandiosity and exhibitionism scales. The anger and impulsivity scales were both positively correlated with the NVS measure while the impulsivity scale was also positively correlated with other measures of grandiose narcissism (i.e., CAT-PD grandiosity) and with negative affect.

As noted earlier, the *comparator group with mild grandiose narcissistic traits* (P3) did not have clinical levels of social anxiety symptoms, however, social anxiety symptoms were positively correlated with NVS and negative affect. The Narcissistic rivalry scale was positively correlated with other measures of vulnerable narcissism (i.e., NVS) and with several other measures of grandiose narcissism (i.e., CAT-PD grandiosity and exhibitionism scales). Narcissistic admiration was positively correlated with the grandiose narcissism and exhibitionism scales of the CAT-PD and with positive affect. The anxiety, anger, and impulsivity scales were all positively correlated with the NVS measure and with negative affect. The anxiety scale was also negatively correlated with positive affect and the CAT-PD exhibitionism scale. Lastly, the anger scale was negatively correlated with positive affect.

Lastly in P4, *the comparator group with mild vulnerable narcissistic traits,* vulnerable narcissism was positively correlated with other grandiose and vulnerable narcissism measures (i.e., NVS and CAT-PD grandiosity and exhibitionism scales). Grandiose narcissism was also positively correlated with the CAT-PD grandiosity and exhibitionism scales and positive affect. The anxiety scale was positively correlated with NVS, another measure of vulnerable narcissism, and with negative affect. This scale was also

negatively correlated with the CAT-PD grandiosity and exhibitionism scales and positive affect. Lastly, the impulsivity scale was positively correlated with the NVS measure.

In sum, LPA results revealed the presence of multiple distinguishable profiles with varying levels of anxiety, anger, and impulsivity and varying levels of narcissistic traits and social anxiety symptoms levels. Most importantly, the socially anxious subset with high levels of anger and impulsivity was identified in P1 or as it was labeled the Angry-Impulsive subtype of SAD with vulnerable narcissistic traits. This profile demonstrated support for a distinct profile in the broader SAD phenotype within which vulnerable narcissism personality factors and angry impulsive features are related to SAD symptoms.

Discussion

The purpose of this study was to utilize LPA to determine whether vulnerable narcissistic traits exist within high anger, risk-prone individuals who are also socially anxious. As hypothesized, LPA revealed multiple distinct profiles with varying levels of anxiety, anger, and impulsivity and varying levels of narcissistic traits and social anxiety symptoms. Further consistent with initial hypotheses, the socially anxious profile with high levels of anger and impulsivity was distinguishable from other profiles in P1, also labeled the Angry-Impulsive subtype of SAD with vulnerable narcissistic traits. This profile had the highest levels in the model of clinical SAD, M = 25.13 and it had increased levels of overall anxiety, anger, impulsivity, and vulnerable narcissism. Additionally, this profile demonstrated significant correlations between social anxiety symptoms and vulnerable narcissism. Collectively, these findings demonstrate support for the presence of vulnerable narcissism personality factors within the angry impulsive subtype of SAD. Overall, LPA allowed for the systematic evaluation of the variables (i.e., anger, anxiety, impulsivity, vulnerable narcissism, grandiose narcissism, and social anxiety symptoms) by identifying both distinct and common factors between distinct subgroups.

The results of this study highlight the utility of LPA and follow-up construct validation tactics as well as assessment of correlations among indicators internally within profiles. Initially, both P1 (Angry Impulsive subtype with vulnerable narcissistic traits) and P5 (Narcissistic traits group) were identified as having high levels of both social anxiety symptoms and NARQ-R (i.e., Vulnerable narcissism traits). If

using solely the absolute mean scores on input indicators for cases in that profile, the P5 group had higher levels of vulnerable narcissism than P1, and P1 had higher levels of social anxiety symptoms than P5. This would suggest that although P5 had sub-clinical levels of anxiety this would have been selected as the profile of interest and would have led to wrongly labeling this profile as the Angry Impulsive subtype with vulnerable narcissistic traits group. However, when examining the correlation matrix with internal and external measures P1 had significant positive correlations with social anxiety symptoms, vulnerable narcissism, and other markers for SAD such as negative affect. While P5 had no significant correlations for social anxiety symptoms at all and NARQ-R only had correlations to other narcissism measures. If results of LPA had been interpreted solely based on the absolute means of input indicators within each profile, then substantive interpretation or naming of each profile would proceed on the basis of the effect sizes that distinguished profiles from one another, and concurrently a measure of heterogeneity for the profile solution, rather than an interpretable indicator of how these variables are substantively related within profiles. The latter is perhaps a more desirable approach, and in combination with follow-up construct validation may provide a more substantively meaningful interpretation of the content that characterizes profile members and may ultimately facilitate more accurate naming of the five profiles revealed here.

In terms of initial hypotheses, P1 or the Angry Impulsive subtype with vulnerable narcissistic traits profile appears to reflect the anticipated socially anxious subset with high levels of anger and impulsivity. As highlighted before, this profile did not have the highest absolute scores of vulnerable narcissism but yet these scores were correlated significantly with social anxiety symptom severity. The proportions of this profile are similar to the estimated proportions of SAD in the general population. SAD is theorized to affect 7.1% of the population (National Comorbidity Survey, 2017) which is remarkably similar to the proportion of individuals that had clinical levels of SAD in this model (i.e., 6% of the sample). It is also important to note that this 5-profile model did not reveal a high SAD low vulnerable narcissism group or even a clinical non-angry impulsive subtype of SAD. The absence of this group could be due to the nature of our input variables and items and their inability to capture this group.

It is also important to note that to date, prior work has not revealed this association, in which narcissism is contextually distinguishable in persons with and without social anxiety. The limited available research tends to center around narcissistic individuals' more general anxiety symptoms and how such symptoms may relate to social media usage or around how narcissism or social anxiety can separately predict social media usage (Brailovskaia et al., 2020; Fegan & Bland, 2021; Lyvers et al., 2022). Accordingly, the findings from the current study may highlight a previously unexplored relationship between narcissism and social anxiety. The LPA approach, which is a person-centered statistical technique, likely allowed novel identification of cases falling into profiles, which then facilitated detailed characterization via follow-up correlations between narcissistic traits (both grandiose and vulnerable) and social anxiety symptoms. Due to the patterns identified by this LPA approach and the nature of narcissism and social anxiety it is further likely that as vulnerable narcissistic traits increase and become more severe, social anxiety is also likely to increase. It is plausible then, that within this population the problematic personality traits and social interaction difficulties may serve to drive social anxiety for these individuals, although assessment of this causal relationship awaits future work. Nevertheless, individuals that present with both of these concerns may benefit from interventions that include interpersonal strategies such as Dialectic Behavioral Therapy (DBT). In summation, LPA allowed for the identification of distinct profiles based on traits, but the internal correlations allowed follow up characterization of additional traits that individuals within each profile display, and also allowed characterization of relationships among input variables that described each profile and the cases within them.

The current study findings extend the available research regarding social anxiety and vulnerable narcissism. However, the results presented here should also be evaluated in light of study limitations. First, this study participants were recruited from the online survey platform AMT and as a result we have limited data on these individuals. Additionally, we utilized mixed measures in order to build scales that represented the variables of interest. Although we completed PCA's for each scale and Cronbach's alpha to ensure the scales are consistent and measure the variables they are intended to measure future research may benefit from the inclusion of additional measures of the variables of interest. Further, although robust measures of

social anxiety (i.e., IDAS-II Social Anxiety scale) and narcissism (i.e., NARQ) were included, we did not have clinical interview measures to confirm the diagnosis of SAD or narcissism. It could be beneficial for future studies to include self-report measures, diagnostic interviews, and potentially other informants to confirm diagnoses. It could also be beneficial to assess the underlying thought processes that lead to social anxiety in this subgroup as it could reveal important information regarding the root of this anxiety and whether it stems from a fear of negative evaluation or if it stems from a sense of entitlement about how social situations should transpire. An additional limitation of this study is that although the results demonstrate evidence for a significant relationship between social anxiety and narcissism we cannot establish or infer any causality without further research. Future research may be helpful in understanding the relationship between social anxiety and narcissism.

In conclusion, the results presented here indicate support for the existence of a generally unexplored angry impulsive social anxiety subtype and demonstrate support for a relationship between vulnerable narcissistic traits and social anxiety, particularly among individuals that present as angry and impulsive. Overall, these findings illustrate an advancement in the understanding of vulnerable narcissism in the context of social anxiety. We anticipate future efforts aimed at targeting these vulnerable narcissism traits within this socially anxious population may be beneficial.

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Table 1
Principal Component Analyses by Scale

Item	Component Loading	Component	Eigenvalue	Original Measure	Cronbach's Alpha
Anxiety Scale					0.88
Is relaxed, handles stress well **(R)**	0.76	1	4.71	BFI-2	
Can be tense	0.66	1	4.71	BFI-2	
Worries a lot	0.85	1	4.71	BFI-2	
Rarely feels anxious or afraid **(R)**	0.77	1	4.71	BFI-2	
I sometimes can't help worrying about little things	0.81	1	4.71	HEXACO	
I worry a lot less than other people do **(R)**	0.79	1	4.71	HEXACO	
I rarely express my opinions in group meetings	0.63	1;2	4.71; 1.30	HEXACO	
In social situations, I'm usually the one who makes the first move.	0.60	1;2	4.71; 1.30	HEXACO	
When I'm in a group of people, I'm often the one who speaks on behalf of the group	0.59	1;2	4.71; 1.30	HEXACO	
Anger Scale					0.86
Gets temperament easily	0.78	1	3.28	BFI-2	
People think of me as someone who has a quick temper	0.85	1	3.28	HEXACO	
Most people tend to get angry more quickly than I do **(R)**	0.65	1	3.28	HEXACO	
Get angry easily	0.88	1	3.28	IPIP-60	
Lose my temper	0.87	1	3.28	IPIP-60	
Impulsivity Scale					0.90
Is moody, has up and down mood swings	0.66	1;2	5.44; 1.28	BFI-2	
Is emotionally stable, not easily upset **(R)**	0.64	1;2	5.44; 1.28	BFI-2	
Keeps their emotions under control **(R)**	0.70	1;2	5.44; 1.28	BFI-2	
Make rash decisions	0.55	1;3	5.44; 1.28	IPIP-60	
Act without thinking	0.54	1;3	5.44; 1.28	IPIP-60	
I experience my emotions as overwhelming and out of control	0.68	1	5.44	DERS	
When I'm upset, I become out of control	0.82	1	5.44	DERS	
When I'm upset, I feel out of control	0.80	1	5.44	DERS	
When I'm upset, I feel like I can remain in control of my behaviors **(R)**	0.62	1	5.44	DERS	
When I'm upset, I have difficulty controlling my behaviors	0.82	1	5.44	DERS	
When I'm upset, I lose control over my behavior	0.83	1	5.44	DERS	

Note. **(R)** = Item was reverse coded. IDAS-II = Inventory of Depression and Anxiety Symptoms

(table continues)

Table 1 (cont.)

Item	Component Loading	Component	Eigenvalue	Original Measure	Cronbach's Alpha
Narcissistic Admiration and Rivalry Questionnaire (NARQ) - Admiration Scale					0.90
I am great	0.56	1	6.18	NARQ	
I will someday be famous.	0.61	1	6.18	NARQ	
I show others how special I am.	0.76	1	6.18	NARQ	
I enjoy my successes very much.	0.39	1;3	6.18; 1.32	NARQ	
Most of the time I am able to draw people's attention to myself in conversations.	0.60	1	6.18	NARQ	
I deserve to be seen as a great personality.	0.74	1	6.18	NARQ	
Being a very special person gives me a lot of strength.	0.74	1	6.18	NARQ	
I manage to be the center of attention with my outstanding contributions.	0.75	1	6.18	NARQ	
Mostly, I am very adept at dealing with other people.	0.40	1;4	6.18; 1.11	NARQ	
Narcissistic Admiration and Rivalry Questionnaire (NARQ) - Rivalry Scale					
I react annoyed if another person steals the show from me.	0.6	1	6.18	NARQ	0.86
I secretly take pleasure in the failure of my rivals.	0.54	1;2;3	6.18; 3.47; 1.32	NARQ	
I want my rivals to fail.	0.58	1;2	6.18; 3.47	NARQ	
I enjoy it when another person is inferior to me.	0.64	1;2	6.18; 3.47	NARQ	
I often get annoyed when I am criticized.	0.23	1;2;3	6.18; 3.47; 1.31	NARQ	
I can barely stand it if another person is at the center of events.	0.63	1;2	6.18; 3.47	NARQ	
Most people won't achieve anything.	0.45	1;2;4	6.18; 3.47; 1.11	NARQ	
Other people are worth nothing.	0.52	1;2	6.18; 3.47	NARQ	
Most people are somehow losers.	0.51	1;2	6.18; 3.47	NARQ	
Social Anxiety Symptoms Measured by IDAS-II					0.89
I became anxious in a crowded public setting	0.85	1	3.54	IDAS-II	
I was anxious about talking in public	0.84	1	3.54	IDAS-II	
I found it difficult to talk with people I did not know well	0.79	1	3.54	IDAS-II	
I was worried about embarrassing myself socially	0.87	1	3.54	IDAS-II	
I felt self-conscious knowing that others were watching me	0.86	1	3.54	IDAS-II	

Note. **(R)** = Item was reverse coded. IDAS-II = Inventory of Depression and Anxiety Symptoms

Table 2

Latent Profile Analysis Psychometric Properties

	Skewness	Kurtosis	VIF
Anxiety	-0.09	-0.85	2.26
Anger	0.82	0.11	2.10
Impulsivity	0.99	0.57	2.53
NARQ-A	0.65	-0.16	1.45
NARQ-R	0.93	0.10	1.66
SAS	1.02	0.32	1.83

Note. NARQ-A = Narcissistic Admiration and Rivalry questionnaire Admiration Scale; NARQ-R = Narcissistic Admiration and Rivalry questionnaire Rivalry Scale; SAS = Social Anxiety Symptoms measured by the Inventory of Depression and Anxiety Symptoms (IDAS-II). VIF = Variance Inflation Factor

Table 3

Model Fit Indicators per Latent Profile Model varying by Profile number

	Model 3	Model 4	Model 5	Model 6
AIC	13891.79	13805.88	13721.70	13674.99
SABIC	13909.99	13828.97	13749.69	13707.87
Entropy	0.84	0.85	0.88	0.84
LMR	175.343 (p = .004)	97.544 (p = .10)	95.840 (p = .12)	59.277 (p = .35)
Mahalanobis Distance	0.44	0.56	0.64	0.69

Note. AIC = Akaike Information Criterion; SABIC = Sample size Adjusted Bayesian Information Criterion; LMR = Lo, Mendel, and Rubin test.

Table 4

Variable Means by Profile

	P1	P2	P3	P4	P5
Anxiety	48.36	40.33	25.04	38.37	38.22
Anger	14.35	9.04	7.75	13.95	16.11
Impulsivity	31.44	20.70	15.07	24.34	33.30
NARQ-A	16.68	21.31	26.41	24.24	30.21
NARQ-R	19.59	17.03	14.18	21.42	30.98
SAS	25.13	16.59	7.24	9.15	17.40
Profile Size	20.34	63.51	157.05	74.57	39.54

Note. P1 represents the Angry-Impulsive subtype of SAD with vulnerable narcissistic traits group. P2 represents the subclinical social anxiety symptoms group. P3 represents the comparator group with mild grandiose narcissistic traits. P4 represents the comparator group with mild vulnerable narcissistic traits. P5 represents the narcissistic traits group. NARQ-A = Narcissistic Admiration and Rivalry questionnaire Admiration Scale; NARQ-R = Narcissistic Admiration and Rivalry questionnaire Rivalry Scale; SAS = Social Anxiety Symptoms measured by the Inventory of Depression and Anxiety Symptoms (IDAS-II).

Table 5

Internal and External correlations of the 5-Profile model

Profile		Anxiety	Anger	Impulsivity	NARQ-A	NARQ-R	SAS	CATPD-G	CATPD-E	NVS	NegAff	PosAff
P1	Anxiety	1	-0.134	0.219	-.524*	-0.316	0.158	-0.337	-.632**	-0.147	0.175	-0.093
	Anger	-0.134	1	0.036	-0.098	0.265	0.101	.452*	0.216	0.394	0.144	-0.046
	Impulsivity	0.219	0.036	1	0.109	0.113	0.061	0.152	0.109	0.276	0.434	0.042
	NARQ-A	-.524*	-0.098	0.109	1	-0.008	-0.437	0.328	.661**	-0.155	-0.081	.597**
	NARQ-R	-0.316	0.265	0.113	-0.008	1	.486*	.596**	0.401	.535*	0.278	-0.257
	SAS	0.158	0.101	0.061	-0.437	.486*	1	-0.001	-0.192	.687**	.520*	-0.191
	CATPD-G	-0.337	.452*	0.152	0.328	.596**	-0.001	1	.573**	0.177	0.258	-0.047
	CATPD-E	-.632**	0.216	0.109	.661**	0.401	-0.192	.573**	1	0.167	0.068	0.257
	NVS	-0.147	0.394	0.276	-0.155	.535*	.687**	0.177	0.167	1	.450*	-0.303
	NegAff	0.175	0.144	0.434	-0.081	0.278	.520*	0.258	0.068	.450*	1	-0.036
	PosAff	-0.093	-0.046	0.042	.597**	-0.257	-0.191	-0.047	0.257	-0.303	-0.036	1
P2	Anxiety	1	0.121	0.045	-.498**	-0.073	0.107	-.260*	-.375**	.351**	.360**	-.302*
	Anger	0.121	1	.429**	-0.125	0.236	0.07	0.204	0.161	.269*	0.18	-0.184
	Impulsivity	0.045	.429**	1	-0.021	0.006	0.05	-0.032	.288*	.289*	.337**	-0.057
	NARQA	-.498**	-0.125	-0.021	1	0.183	0.079	.350**	.313*	-.282*	-0.186	.588**
	NARQR	-0.073	0.236	0.006	0.183	1	0.246	.694**	0.236	.313*	0.133	-0.202
	SAS	0.107	0.07	0.05	0.079	0.246	1	0.088	-0.064	.376**	.379**	-0.219
	CATPD-G	-.260*	0.204	-0.032	.350**	.694**	0.088	1	.390**	0.011	-0.105	-0.084
	CATPD-E	-.375**	0.161	.288*	.313*	0.236	-0.064	.390**	1	0.054	-0.032	0.103
	NVS	.351**	.269*	.289*	-.282*	.313*	.376**	0.011	0.054	1	.635**	-.297*
	NegAff	.360**	0.18	.337**	-0.186	0.133	.379**	-0.105	-0.032	.635**	1	-0.141
	PosAff	-.302*	-0.184	-0.057	.588**	-0.202	-0.219	-0.084	0.103	-.297*	-0.141	1

(table continues)

Table 5 (cont.)

Profile		Anxiety	Anger	Impulsivity	NARQ-A	NARQ-R	SAS	CATPD-G	CATPD-E	NVS	NegAff	PosAff
P3	Anxiety	1	.287**	.217**	-.344**	0.071	.185*	-0.084	-.285**	.334**	.355**	-.382**
	Anger	.287**	1	.339**	-0.045	0.149	0.068	0.03	0.044	.169*	.224**	-.225**
	Impulsivity	.217**	.339**	1	0.048	.170*	.176*	0.09	0.041	.285**	.321**	-0.112
	NARQ-A	-.344**	-0.045	0.048	1	.286**	0.045	.552**	.699**	0.093	-0.003	.461**
	NARQ-R	0.071	0.149	.170*	.286**	1	0.06	.564**	.287**	.433**	0.135	-0.101
	SAS	.185*	0.068	.176*	0.045	0.06	1	0.095	-0.154	.220**	.209**	-0.002
	CATPD-G	-0.084	0.03	0.09	.552**	.564**	0.095	1	.522**	.329**	0.118	0.116
	CATPD-E	-.285**	0.044	0.041	.699**	.287**	-0.154	.522**	1	0.085	0.074	.331**
	NVS	.334**	.169*	.285**	0.093	.433**	.220**	.329**	0.085	1	.586**	-.209**
	NegAff	.355**	.224**	.321**	-0.003	0.135	.209**	0.118	0.074	.586**	1	-0.133
	PosAff	-.382**	-.225**	-0.112	.461**	-0.101	-0.002	0.116	.331**	-.209**	-0.133	1
P4	Anxiety	1	0.187	0.007	-.585**	-.481**	-.259*	-.458**	-.488**	.238*	.249*	-.258*
	Anger	0.187	1	.239*	-0.086	-0.025	-0.161	0.012	-0.162	0.115	0.079	0.095
	Impulsivity	0.007	.239*	1	0.001	0.214	-0.135	0.083	-0.018	.282*	0.047	-0.194
	NARQ-A	-.585**	-0.086	0.001	1	.483**	0.048	.622**	.709**	0.002	-0.208	.410**
	NARQ-R	-.481**	-0.025	0.214	.483**	1	0.062	.601**	.378**	.277*	-0.047	0.167
	SAS	-.259*	-0.161	-0.135	0.048	0.062	1	0.077	0.126	-0.048	0.08	-0.024
	CATPD-G	-.458**	0.012	0.083	.622**	.601**	0.077	1	.648**	0.092	-0.141	.264*
	CATPD-E	-.488**	-0.162	-0.018	.709**	.378**	0.126	.648**	1	-0.046	-.232*	.354**
	NVS	.238*	0.115	.282*	0.002	.277*	-0.048	0.092	-0.046	1	.470**	0.112
	NegAff	.249*	0.079	0.047	-0.208	-0.047	0.08	-0.141	-.232*	.470**	1	0.159
	PosAff	-.258*	0.095	-0.194	.410**	0.167	-0.024	.264*	.354**	0.112	0.159	1

(table continues)

Table 5

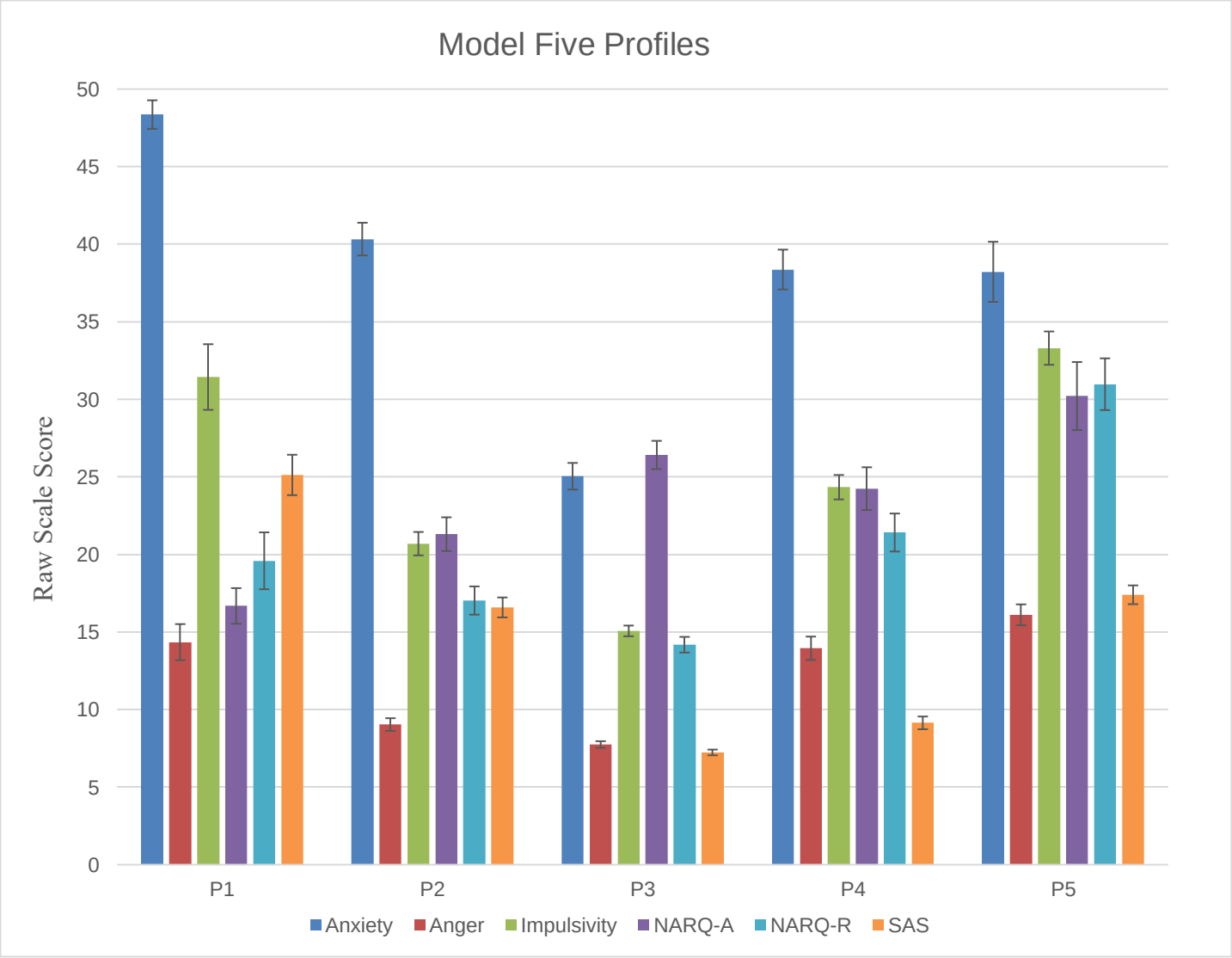
Internal and External correlations of the 5-Profile model

Profile		Anxiety	Anger	Impulsivity	NARQ-A	NARQ-R	SAS	CATPD-G	CATPD-E	NVS	NegAff	PosAff
P5	Anxiety	1	.601**	0.236	-.421**	-0.242	0.122	-0.303	-.488**	0.226	0.291	-.383*
	Anger	.601**	1	.392*	0.021	0.125	0.158	-0.072	-0.208	0.153	0.199	-0.266
	Impulsivity	0.236	.392*	1	0.065	0.029	0.01	0.205	-0.049	0.266	.424**	-0.052
	NARQ-A	-.421**	0.021	0.065	1	.328*	0.159	.560**	.754**	0.025	-0.012	.515**
	NARQ-R	-0.242	0.125	0.029	.328*	1	0.074	.492**	.423**	0.156	0.125	0.254
	SAS	0.122	0.158	0.01	0.159	0.074	1	0.108	0.148	0.219	.538**	0.154
	CATPD-G	-0.303	-0.072	0.205	.560**	.492**	0.108	1	.726**	.493**	.390*	0.198
	CATPD-E	-.488**	-0.208	-0.049	.754**	.423**	0.148	.726**	1	0.258	0.189	.455**
	NVS	0.226	0.153	0.266	0.025	0.156	0.219	.493**	0.258	1	.725**	-0.021
	NegAff	0.291	0.199	.424**	-0.012	0.125	.538**	.390*	0.189	.725**	1	0.036
	PosAff	-.383*	-0.266	-0.052	.515**	0.254	0.154	0.198	.455**	-0.021	0.036	1

Note. P5 represents the narcissistic traits group. NARQ-A = Narcissistic Admiration and Rivalry questionnaire Admiration Scale; NARQ-R = Narcissistic Admiration and Rivalry questionnaire Rivalry Scale; SAS = Social Anxiety Symptoms Scale measured by the Inventory of Depression and Anxiety Symptoms (IDAS-II); CATPD-G = The Computerized Adaptive Test of Personality Disorder static form Grandiosity Scale; CATPD-E = The Computerized Adaptive Test of Personality Disorder static form Exhibitionism Scale; NVS = Narcissistic Vulnerability Scale; NegAff = Negative Affect measured by the PANAS-X; PosAff = Positive Affect measured by the PANAS-X. * indicates significance at $p < .05$; ** indicates significance at $p < .01$; *** indicates significance at $p < .001$.

Figure 1

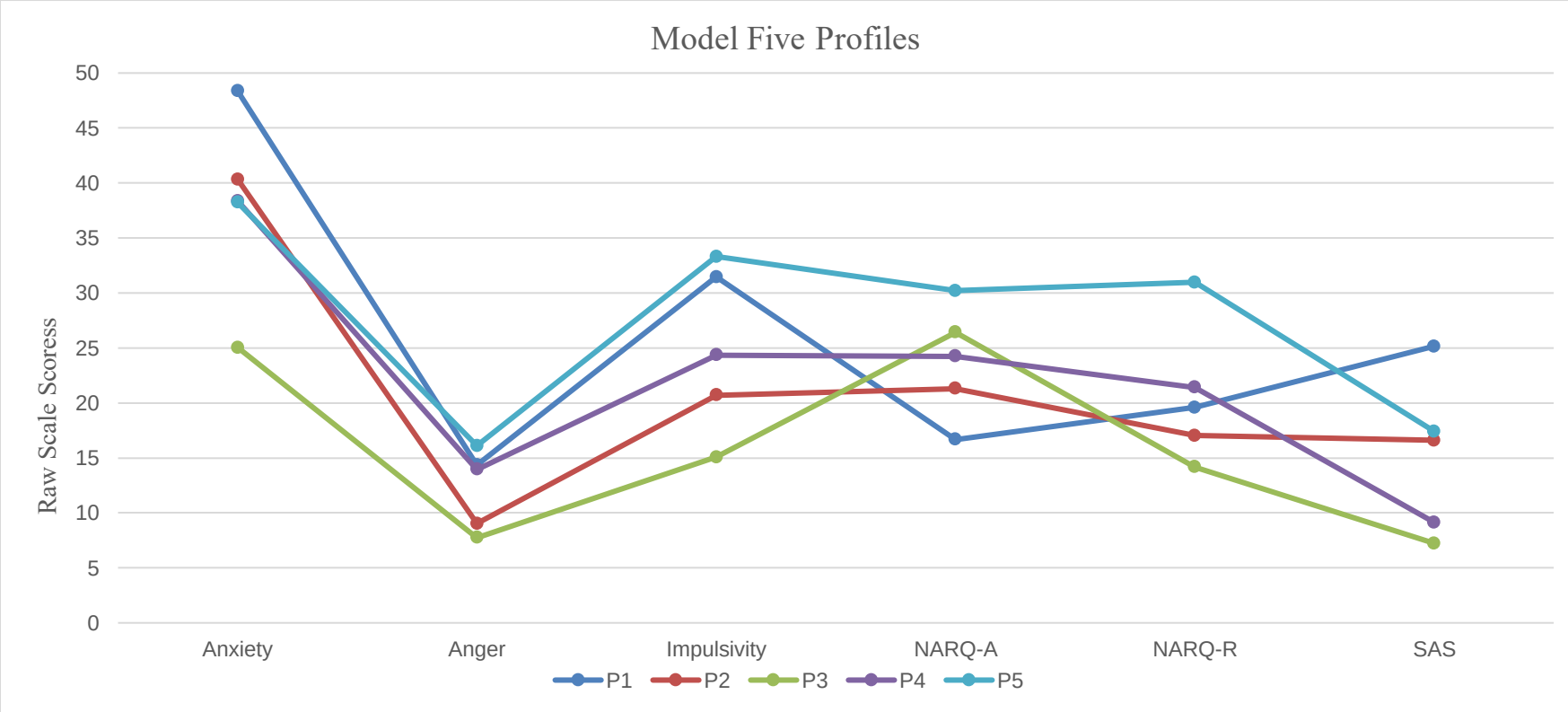
Bar Graph of Model Five Profile Mean Scores



Note. This figure illustrates the mean raw scores per variable on each profile. NARQ-A = Narcissistic Admiration and Rivalry questionnaire Admiration Scale; NARQ-R = Narcissistic Admiration and Rivalry Questionnaire Rivalry Scale; SAS = Social Anxiety Symptoms measured by the Inventory of Depression and Anxiety Symptoms (IDAS-II).

Figure 2

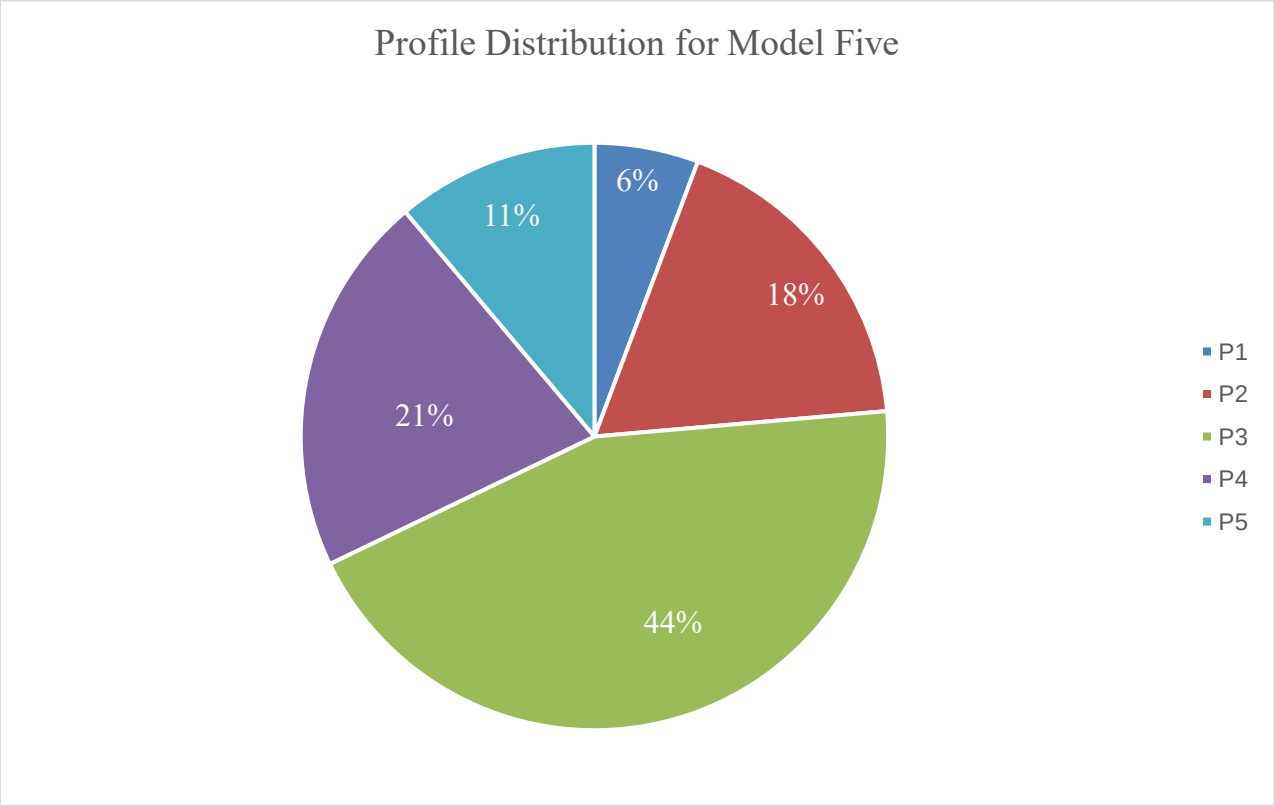
Line Graph of Model Five Profile Mean Raw Scores



Note. This figure illustrates the mean raw scores per variable on each profile. P1 represents the Angry-Impulsive subtype of SAD with vulnerable narcissistic traits group. P2 represents the subclinical social anxiety symptoms group. P3 represents the comparator group with mild grandiose narcissistic traits. P4 represents the comparator group with mild vulnerable narcissistic traits. P5 represents the narcissistic traits group. NARQ-A = Narcissistic Admiration and Rivalry questionnaire Admiration Scale; NARQ-R = Narcissistic Admiration and Rivalry questionnaire Rivalry Scale; SAS = Social Anxiety Symptoms measured by the Inventory of Depression and Anxiety Symptoms (IDAS-II).

Figure 3

Profile Distribution for Model Five



Note. This figure illustrates the percentages of participants within each profile. P1 represents the Angry-Impulsive subtype of SAD with vulnerable narcissistic traits group. P2 represents the subclinical social anxiety symptoms group. P3 represents the comparator group with mild grandiose narcissistic traits. P4 represents the comparator group with mild vulnerable narcissistic traits. P5 represents the narcissistic traits group.