NARCISSUS ONLINE: AN INVESTIGATION OF NARCISSISM AND SELF-

CONCEPT CLARITY IN RELATION TO ONLINE DATING BEHAVIORS

by

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"Out beyond ideas of wrongdoing and right doing,

there is a field,

I'll meet you there."

-Rumi

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Abstract

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Nemours studies over the years have provided extensive knowledge about the association between narcissism and romantic relationship initiation. With the increased interest in using online dating sites for finding sexual/romantic partners, it is important to examine the behavior of narcissistic individuals in online dating context. The current study systematically examined how grandiose and vulnerable narcissism (as measures of an inflated self-view), in conjunction with the level of self-concept clarity (as an additional measure of a fragile self-view) can influence a number of online dating behaviors (e.g., photographic self-presentation, inauthentic self-presentation, assertive self-presentation, self-disclosure, verbal behavior, derogatory behavior toward other daters after receiving romantic rejection, derogatory behavior toward the experiment/er after receiving romantic rejection, change in self-mate value after receiving romantic rejection, willingness to make a change in online dating profile after receiving romantic rejection.). Results and future directions are discussed.

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Chapter 1

Introduction

There is an observed rise in the levels of *narcissism* among millennials (Twenge & Foster, 2008). Moreover, there has been a recent surge in studying the role of *self-concept clarity* in courtship behaviors. These two are brought together in this study to examine how individual differences in narcissism and self-concept clarity influence a range of online dating behaviors.

Online dating refers to the practice of using online dating services as a form of computer-mediated communication (CMC) to find a "romantic and/or sexual partner" (Gibbs, Ellison, & Heino, 2006); an initial online interaction which may or may not transit into a more intimate communication channel such as telephone and face-to-face interaction (Sprecher et al., 2002). Online dating was created in the late 1980s (Whitty & Carr, 2006) and has demonstrated such enormous power to promote romantic connections that it has become commonplace and increasingly accepted by the public at large (Smith & Duggan, 2013). The number of online dating services users is increasing dramatically and a large number of people of any age are enjoying the benefits of online dating in their romantic lives (Tracy, 2006). However, the motivations behind using online dating are varied. Not all online daters are interested in long-term relationships or finding a long-term romantic partner; instead, many online dating service users seek short-term dates or one-time hookup partners (Yun, 2018).

Online dating apps allow users to create internet-based profiles, which serve as the first and most important channel to find potential romantic/sexual partners. These dating profiles provide people a great amount of strategic control over the informant they choose to convey.

Registering on dating sites requires the users to submit a significant amount of personal information representing both breadth (e.g., age, height, weight, education, occupation) and depth (e.g., personality, political attitudes, references, hobbies, religions) (Toma & Hancock, 2011). Another important element in any online dating app is photos, which can be manipulated for self-enhancement and self-presentation purposes. Besides profile photos, most online dating services provide a space for free writing about oneself in the "about me section," which enables daters to express their thoughts, emotions, desires, or even vulnerabilities to others (Bridges, 2012).

## 1.1 Theoretical Foundations: Narcissistic personality disorder

Narcissism is one of the oldest concepts in the history of psychology, with different meanings and conceptualizations across different subdisciplines (for example, see, e.g., Ellis, 1898; Freud, 1914). The term narcissism originated in clinical psychology in the writings of psychoanalysts such as Sigmund Freud, Otto Kernberg, and Heinz Kohut (Sacksteder, 1990). Psychiatrists and clinical psychologists examined narcissism as a personality disorder and in a categorical manner in which people are either diagnosed with Narcissistic Personality Disorder or not (American Psychiatric Association, 2013). However, in the field of personality and social psychology, there is a substantial empirical literature surrounding conceptualizations of narcissism in which it is viewed as a personality trait-like dimension (Foster & Campbell, 2007). In this field, an individual's level of narcissism is a matter of degree rather than the type with no specific cut-points (Miller, Lynam, & Campbell, 2016, Ackerman et al, 2017).

According to the most recent theorists of narcissism, narcissistic individuals possess abnormal self-structures (maladaptive love for the self that interferes with the ability to love

others), exhibit pathological self-esteem regulation strategies (Kernberg, 1998; Millon, 1996), and an exaggerated sense of self (Carson et al., 1988). They are grandiose and self-absorbed (Kernberg, 1975; Kohut, 1966; Millon, 1996), exhibitionistic (Kernberg, 1975; Millon, 1996), vengeful (Brown, 2004), manipulative (Raskin & Terry, 1988), entitled (Campbell, Brunell, & Finkel, 2006; Twenge & Campbell, 2009), exploitative (Schimmenti et al., 2017, Lee et al., 2014), and limited in their empathic abilities (Brunell & Campbell, 2011; Campbell, Bonacci, Shelton, Exline, & Bushman, 2004; Campbell et al., 2006).

Narcissistic individuals tend to think very highly of themselves (Bushman, and Baumeister, 1998). They truly believe they are superior individuals, more attractive, and more intelligent than others (Gabriel, Critelli, & Ee, 1994). In interpersonal relationships, they are not particularly agreeable and empathetic toward others (Campbell, 1999; Campbell & Foster, 2002). Instead, they act in a selfish and self-serving manner (Farwell & Wohlwend-Lloyd, 1998; John & Robins, 1994), believing that they deserve more and are more entitled than others (Campbell & Miller 2011).

### 1.1.1 The Conceptualization and Measurement of Narcissism

The meaning of narcissism differs somewhat depending on the conceptualization. One of the most commonly used conceptualizations refers to two subtypes of narcissism, which are labeled as grandiosity-exhibitionism (grandiose or overt narcissism) and vulnerability-sensitivity (vulnerable or covert narcissism) (Cain et al., 2008). Grandiose narcissists are charming, confident and outgoing, but are also vain, manipulative, and aggressive (Bushman & Baumeister, 1998; Emmons, 1984; Wink, 1991). Individuals high in grandiose narcissism have an inflated sense of self, viewing themselves as superior to others (Krizan & Bushman, 2011),

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overestimating their intelligence and cognitive ability (Campbell, Rudich, & Sedikides, 2002), preferring the company of powerful and popular people (Campbell & Foster, 2002) and greatly valuing the admiration of others, which often is gained by being socially charming (Rose, 2002).

In contrast, individuals who are high in vulnerable narcissism are socially inhibited, insecure, defensive, vindictive, hypersensitive, and highly neurotic (Hendin & Cheek, 1997; Wink, 1991). These narcissistic individuals tend to experience heightened negative emotional reactivity, including strong feelings of envy, shame, anxiety, depression, and low self- esteem (Besser & Priel, 2010; Freis, Brown, Carroll, & Arkin, 2015; Krizan & Johar, 2012; Rose, 2002; Wink, 1991). The vulnerable narcissistic individuals are highly sensitive to other people's feedback and opinions (Hendin & Cheek, 1997) and view themselves as reliant on others' approval (Besser & Priel, 2010; Rohmann, Neumann, Herner, & Bierhoff, 2012).

In general, vulnerable narcissism refers to the possession of a fragile self-concept and the frequent experience of emotional dysregulation. However, entitlement and grandiose expectations lie underneath all the behaviors of vulnerable narcissists as well (Dickinson & Pincus, 2003). Despite the substantial differences between the two types of narcissism, both types of narcissism appear to have an underlying core of traits that include conceit, antagonism, a sense of entitlement, low communal interest (Finkel et al., 2009), and low need for intimacy with others (Bale & Archer, 2013; Campbell, Brunell, & Finkel, 2006; Campbell & Foster, 2002).

Several models have been proposed in the literature to distinguish between grandiose and vulnerable narcissism. One of the most interesting ones (Miller, Lynam, Hyatt, &

Campbell, 2017) argues that the narcissistic subtypes can be explained via the Big Five personality traits. According to this model, the core of narcissism is low agreeableness; adding extraversion to the core creates grandiose narcissism, whereas adding neuroticism to the core creates vulnerable narcissism. Krizan and Herlache (2017) proposed another model to explain the difference between grandiose and vulnerable narcissism. They proposed that narcissism is characterized by a core of entitled self-importance, but that grandiose narcissists are bold (i.e., proactive) whereas vulnerable narcissists are reactive. According to this model, grandiose narcissists seek primarily to satisfy their self-aggrandizing goals, regardless of the social costs of their boastful and exhibitionistic behavior to others. In contrast, vulnerable narcissists are primarily concerned with identifying and combating threats to their self-image.

### 1.1.2 Narcissism and romantic relationships

Abundant research on the role of narcissism in romantic relationships has indicated that narcissistic individuals are less interested in or concerned with relational intimacy and have a lesser need for intimacy and warmth (Campbell and Foster, 2002). In romantic relationships, narcissism seems to be a positive for the self and a negative for the partner (Campbell, Foster, & Finkel, 2002; Campbell, Sedikides, Reeder, & Elliott, 2000). Narcissism in romantic relationships is related to infidelity (Campbell & Foster, 2002), a game-playing love style (Campbell, Foster, & Finkel, 2002), low commitment (e.g., Buss & Shackelford, 1997; Campbell & Foster, 2002; Campbell, Rudich, & Sedikides, 2002), low satisfaction (Campbell, Foster, & Finkel, 2002) and mate-poaching (Jonashon et al. 2010).

Classic and more contemporary theories have tried to explain the mechanisms underlying narcissistic interpersonal behavior. For instance, in an early basic model, Freud

(1914/1957) postulated that there is a limited store of love (i.e., libido) possessed by any given individual. In contrast to non-narcissists who turn this love toward others, narcissists turn this love toward the self, resulting either in the inability to love others or in their involvement in less affectionate—and more self-enhancing—interpersonal relationships.

Campbell (1999) proposed a more elaborated model called the "narcissistic self-regulatory" model, which suggest that narcissistic individuals use interpersonal relationships, especially romantic relationships, in the service of self-enhancing biases and for the purpose of bolstering their grandiose self-image (Bradlee & Emmons, 1992; Carroll, 1987; Emmons, 1984; Raskin, Novacek, & Hogan, 1991a,b; Raskin & Terry, 1988). That is why narcissistic individuals prefer "trophy partners" or partners who are high in qualities that help them attract positive attention in some way to themselves (Campbell, 1999). In other words, narcissistic individuals look at their relationship and their partners as a means of regulating their positive self-views. Similarly, the primary focus of narcissistic individuals on boosting and keeping their inflated self-view is the reason for entering and maintaining romantic relationships.

In a more recent model called the Agency Model of narcissism (Campbell et al., 2006), narcissistic personalities are assumed to be agentically oriented, meaning that they have a strong interest in dominance, power, and excitement and are less interested in communal qualities such as warmth, caring, or nurturing.

Several pieces of evidence support the predictions made by these models. For example, narcissistic individuals care primarily about their own desires and needs (Buss & Chiodo, 1991), supporting Freud's initial model of narcissism. Also, narcissistic people are high in

sensation seeking (Raskin & Terry, 1988), and are uninterested in intimacy or caring (Campbell, 1999); which are supported by the narcissistic self-regulatory" model.

### 1.1.3 Narcissism and romantic relationship initiation

The results of the previous studies have revealed that narcissistic individuals are more successful at initial interactions and are frequently perceived as charming, popular, socially confident, and entertaining (Back, Schmukle, & Egloff, 2010; Campbell et al., 2002). Narcissists are also especially adept at attracting relationship partners because, in the early stages of relationship formation, they are perceived as interesting, exciting, confident, and entertaining (Foster, Shrira, & Campbell, 2006; Oltmanns, Friedman, Fiedler, & Turkheimer, 2004). Narcissistic individuals' good first impression can be explained. First, narcissistic individuals are more likely to exhibit bold behaviors such as enhanced grooming and the advertisement of potential resources (Vazire, Naumann, Rentfrow, & Gosling, 2008). In addition, individuals high in narcissism behave in a charming, expressive, and self-assured manner and these behaviors might evoke positive initial reactions in potential mates (Dufner et al., 2013; Back, Schmukle, & Egloff, 2010). In addition, some theories (Holtzman, & Strube, 2010) suggest that narcissistic individuals are physically more attractive and that their greater physical attractiveness plays an important role in their success in initial interactions and short-term mating. The higher level of observed physical attractiveness in narcissistic individuals can also be explained by narcissists' tendency to wear fancy clothes and adornments (Holtzman & Strube, 2010; Vazire, Naumann, Rentfrow, & Gosling, 2008).

### 1.1.4 Narcissism and general online behavior

The research on narcissism and online dating is limited. However, many studies have been conducted on the link between narcissism and general online behavior. Most of these studies have examined the self-presentation behavior of individuals with narcissism. For instance, Sorokowski et al. (2015) found that more narcissistic individuals tend to post selfies and other self-presented photos, and to update their profile picture more often than less narcissistic individuals do. Narcissistic people are in general more concerned about their physical appearance and are higher in self-perceived mate-value (Vazire, Naumann, Rentfrow, & Gosling, 2008). Consistent with this idea, Fox and Rooney, (2015) found that narcissistic participants rated their Instagram profile pictures as more attractive than non-narcissistic participants. In particular, grandiose narcissism was a significant predictor of the frequency of selfie postings, frequency of profile picture updates, and higher evaluations of their profile picture on Instagram (Fox & Rooney, 2015; Ackerman et al., 2011; Carpenter, 2012). Moreover, Kim and Jang (2017) found that narcissism is related to number of photos posted on food-serving websites. In another study (Buffardi & Campbell, 2008), narcissism was related to levels of social activity and greater self-promoting themes in posted content on Facebook.

### 1.1.5 Narcissism and online dating behavior

Personality affects how and why people use online dating applications. Narcissism, as a personality trait, is especially interesting because it has been associated with a more opportunistic rather than exploitative mating style (Jonason et al., 2009). However, very few studies have linked narcissism to aspects of online dating behavior. In one recent study, Sevi (2019, 2017) found that Tinder users have higher levels of the Dark Triad personality traits (i.e., Machiavellianism, narcissism, and psychopathy), and socio-sexuality compared to non-users. In

addition, Timmermans, De Caluwe, and Alexopoulos (2018) found that higher levels of

narcissism were positively related to the sexual motivation behind using Tinder. More recently,

Duncan and March (2019) found that trait narcissism was a significant positive predictor of

antisocial-general use of Tinder. However, in another study, March et al. (2017) found that

narcissism does not predict trolling behavior (defined as communicating online with the

intention of being provocative, offensive, or menacing).

### 1.1.6 Narcissism and offline self-presentation

Self-presentation is defined as any conscious or unconscious behaviors performed to

control self-relevant images conveyed to the audience (Schlenker, 2003). Self-presentation is a

form of impression management that refers to the behaviors that are intended to create the

desired image of self. Self-presentation strategies are important for initiating interpersonal

relationships (Derlega, Winstead, Wong, & Greenspan, 1987) and are a key component of the

narcissistic personality profile (Paulhus, 1998; Campbell, Reeder, Sedikides, & Elliot, 2000;

Taylor, Lerner, Sherman, Sage, & McDowell, 2003). In fact, narcissism co-varies with a variety

of self-presentation tactics (e.g., offering excuses, self-promoting, intimidation, showing off

material goods). In particular, grandiose narcissistic individuals engage in more self-promoting

behaviors including behaviors to appear more powerful than nice (Campbell et al., 2002). Hart

et al. (2017) differentiated between grandiose narcissism, vulnerable narcissism, and self-esteem

in applying self-presentation techniques. The results indicated that grandiose narcissism was

related to greater use of assertive self-presentation (e.g. "advertising or exaggerating the value

of one's accomplishments or possessions"), whereas vulnerable narcissism was related to both

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assertive and defensive tactics ("denying responsibility for negative outcomes"). On the other hand, self-esteem was negatively related to using either type of self-presentation tactic.

<div style="text-align:center">1.1.7 Narcissism and online self-presentation</div>

Compared to offline impression management (seducing behaviors, flirtations, sexy clothing, etc.), online dating provides many opportunities for self-presentation (Ellison et al., 2006; Gibbs et al., 2006; Heino et al., 2010; Walther, Slovacek, & Tidwell, 2001; Whitty, 2008).  In any computer-mediated interaction, people can create a self-portrait that is often more strategic, controlled, and positive than is likely possible in face-to-face interaction (Burgoon & Walther, 1990; Walther & Burgoon, 1992).

Several aspects of online communications can be used for the purpose of self-presentation. The first one is presenting self in online dating profiles. An online dating user can spend a lot of time building a dating profile for purposeful self-presentation. In general, daters are motivated to construct and reveal versions of self that are attractive to potential partners. The time lag between creating the profile and posting it online allows users to construct their self-presentation carefully and thoughtfully, which is quite different from the more traditional face-to-face encounters (Walther, 2007).

One important aspect of online dating profiles is the perceived level of physical attractiveness, something that can easily be manipulated in photos. Previous studies have indicated the importance of physical attractiveness in interpersonal attraction and romantic relationship initiation (Berscheid & Walster, 974). Most people automatically feel positive emotions toward attractive people and are interested in becoming acquainted with them (Lemay et al.,2010). This relationship has been confirmed in online environments as well (Lo, 2008).

Using software such as Photoshop, it is now feasible to easily edit and improve aspects of one's physical attractiveness (e.g. beautify a portrait by removing acne, scars, and freckles, changing eye color, or even making a person appear taller and thinner). Physical attractiveness can also be enhanced in online dating profiles by uploading one's most flattering photos as well as by means of verbal descriptions of one's attractiveness (i.e., directly stating one's height and weight) (Hancock & Toma, 2009).

Narcissism has been consistently connected to photographic self-presentation on Facebook and has been shown to be one of the most powerful predictors of self-promotional behaviors via social media (Carpenter, 2012). Social media provide excellent platforms for narcissistic self-regulation because of opportunities for self-presentation and for maintaining a large social network of superficial relationships. Buffardi and Campbell, (2008) found that narcissistic individuals post more attractive photos of themselves on Facebook, have more Facebook friends and wall-posts, and share more profile pictures that are rated by judges as being more physically attractive. McCain et al. (2016) found that grandiose narcissism is associated with taking and posting more selfies, experiencing more positive effect when taking selfies, and self-reported self-presentation motives. In addition, Moon et al. (2016) found that narcissism was related to posting selfies and self-presented photos, updating profile photos more often, and spending more time on Instagram.

### 1.1.8 Narcissism and self-disclosure behavior

Self-disclosure is the process by which people reveal personal information about themselves to others (Wheeless & Grotz, 1976). Self-disclosure is a complicated behavior that is especially important during the acquaintance process because it likely determines whether

two people will continue to interact with each other and possibly develop a relationship (Derlega, Winstead, & Greene,2008). Self-disclosure is also a reciprocal process (Sprecher, 2013), such that disclosure promotes further disclosure in another person (Dindia, 2002) and increases liking and closeness (Aron, Melinat, Aron, Vallone, & Bator, 1997; Sprecher & Duck, 1994).

According to traditional interpersonal theories such as social penetration theory, mutual self-disclosure leads to intimacy and relational development (Taylor & Altman, 1987). According to incremental exchange theory (Levinger & Snoek, 1972), self-disclosure progresses in both depth and breadth across time as relationships develop. Moreover, according to Uncertainty Reduction theory, self-disclosure is a mutual act such that individuals will not only seek information to reduce uncertainty but will also reciprocate with similar amounts of information and at the same level of intimacy (Berger & Calabrese, 1975).

No study has yet investigated the self-disclosure behavior of narcissistic individuals in an online dating context. Some early studies (e.g., Emmons, 1989), showed that narcissistic traits are associated with lower self-reported rates of disclosure. Some other studies found no relationship between these two variables (e.g., Ackerman, 2012), whereas others (e.g., Wang & Stefanone, 2013) found a positive relationship between narcissism and self-disclosure.

Engaging in self-disclosure is associated with enhanced perceptions of intimacy (Laurenceau, Barrett, & Pietromonaco, 1998). Narcissistic individuals are generally uninterested in and unlikely to desire intimacy (Emmons, 1989); however, in computer-mediated communication, self-disclosure can act as a means of self-presentation and enable

narcissistic people to engage in self-disclosure to optimize selective self-presentation (Walther, 1996).

### 1.1.9 Narcissism and interpersonal rejection

Narcissistic individuals are described as people who are full of paradoxes: self-aggrandizing and self-absorbed, yet easily threatened and overly sensitive to feedback from others. Individuals high in narcissism are particularly concerned with how well they are doing and how favorably others regard them. According to the Dynamic Self-Regulatory Processing Model (Morf & Rhodewalt, 2001), narcissists' exhibitionistic and excessive behaviors are outcomes of a motivated self-construction process, which entails efforts to garner attention and affirm self-views of being interesting, unique, and popular (Buffardi & Campbell, 2008; Carlson, Vazire, & Oltmanns, 2011; Kim, Lee, Sung, & Choi, 2016; Panek et al., 2013). Indeed, narcissistic individuals have inflated perceptions about others' interest in them and in what they are doing, as well as a great desire for gaining social approval from others.

Moreover, narcissistic individuals are more aggressive in the face of rejection (Bushman & Baumeister, 1998,2002; Twenge et al., 2003). For instance, Kernis and Sun (1994) provided participants with positive or negative feedback on their social skills. Relative to non-narcissists, narcissistic participants rated positive feedback as more valid and positive evaluators as more competent. On the other hand, narcissistic participants viewed negative feedback as less valid, and the negative evaluators as less competent than did less narcissistic participants. In addition, narcissistic individuals are particularly reactive to achievement competition failure; high-scorers on the NPI responded with intense negative effect to upward comparisons with superior others (Bogart, Benotsch, & Pavlovic, 2004).

Several studies have been conducted to reveal how different dimensions of narcissism vary in their relevance to different types of threatening situations. In particular, grandiose narcissists expect others to admire them and to adopt a subservient role under them (Arkin & Lakin, 2001; Brunell, Gentry, Campbell, Hoffman, Kuhnert, & DeMarree, 2008), and they become angry and punitive if this does not happen (Bushman & Baumeister, 1998; Stucke & Sporer, 2002; Twenge & Campbell, 2003). Individuals who are higher in narcissism also tend to respond to rejection with blame and negative evaluations of the rejecter (Kelly, 2001). In addition, narcissists are more likely to display aggression when their sexual desires are rejected (Blinkhorn, Lyons, & Almond, 2015; Bushman, Bonacci, van Dijk, & Baumeister, 2003).

More generally, narcissism is also related to other-derogation, especially in the presence of ego-threat (Stucke & Sporer, 2002). For instance, people high in narcissism rated peers' personality traits more negatively than those low in narcissism if the peer exhibited superior task performance (Morf & Rhodewalt, 1993; South, Oltmanns, & Turkheimer, 2003). Similarly, after receiving negative performance feedback, participants who scored relatively high on narcissism appeared to retaliate by rating the evaluator low on competence (Kernis & Sun, 1994; Smalley & Stake, 1996).

Not only is derogation itself an aggressive act intended to damage another person (by hurting their feelings, undermining their confidence, or tainting their image in others' eyes), making the derogation a form of retaliation. For example, Pepitone and Wilpizeski (1960) showed that individuals who had been rejected subsequently rated their rejectors as less likable and as having less valid opinions than individuals who had not been rejected. Similarly, Geller, Goodstein, Silver, and Sternberg (1974) found that participants who were ignored by

confederates subsequently rated the confederates less favorably than did participants who had

not been ignored. These results have been replicated in several more recent studies (Buckley et

al. 2004; Twenge, et al. 2001).

In conclusion, the findings of these studies indicate those vulnerable narcissistic

individuals are more sensitive to interpersonal threatening situations, whereas grandiose

narcissistic individuals are more reactive to achievement-related threatening situations.

Moreover, grandiose narcissistic individuals react to ego-threat situations by aggression and

devaluation of the task or the experimenter and whereas vulnerable narcissistic individuals react

to ego-threat situations by experiencing more negative emotions.

1.2. Theoretical Foundations: Self-concept clarity

Research on self-concept clarity began with the publication of two papers: Campbell

(1990) and Baumgardner (1990). Both these papers suggested that individuals with low self-

esteem have less certain views about themselves in such a way that their self-concepts are

malleable and subject to frequent change. Self-concept clarity, as the psychological construct

that we know today, was first introduced by Campbell (1990), who observed that people who

scored low on measures of self-esteem appear to be more malleable in response to situational

influences (e.g., Barnum effect, false feedback or social influence attempts; Brockner, 1984;

Campbell & Fairey,1985). She proposed that this malleability occurs because these individuals

have lower clarity or certainty in their self-conceptions. Since the publication of this original

paper, self-concept clarity has been associated with a variety of topics in psychological research,

including but not limited to mental health and well-being (e.g., Campbell, Assanand, & Di

Paula, 2000, 2003; Campbell et al., 1996), attachment styles (Wu, 2009), and emotion regulation (Parise, et al., 2019).

1.2.1 The Conceptualization and Measurement of Self-concept clarity (SCC)

Campbell (1990) defined self-concept clarity as "the extent to which the contents of an individual's self-concept (e.g., perceived personal attributes) are clearly and confidently defined, internally consistent, and temporally stable" (Campbell et al., 1996, p. 141). There are different methods for measuring the clarity of self-concept, including latitudes of self-description (Burger & Guadagno, 2003), response latency (Boucher, 2011; Study 3), certainty (Hamid & Cheng, 1995), extremity (Landau, Greenberg, Sullivan, Routledge, & Arndt, 2009; Study 2), consistency (Boucher, 2011; Study 3), and ambivalence; DeMarree & Rios, 2014). One problem with these alternative measurement methods is that it is not yet clear whether they actually measure the *same* self-concept clarity (Lodi-Smith & DeMarree, 2018). Thus, most researchers today measure participants' levels of self-concept clarity using their self-reported responses to the 12-item Self-concept Clarity Scale (Campbell, et al., 1996).

Self-concept clarity is closely related, both conceptually and empirically, to self-esteem (see Lodi-Smith, & DeMarree, 2018). Campbell (1990) argued that the level of self-esteem as an evaluative component of the self-concept is relatively independent of the structural aspect of the self-concept that self-concept clarity is assumed to capture. Several number of studies have examined the relationship between self-esteem and self-concept clarity (e.g., Campbell et al., 1996; DeMarree & Rios, 2014; Nezlek & Plesko, 2001; Wu, Watkins, & Hattie, 2010). Some studies have examined self-esteem as an antecedent of self-concept clarity (DeMarree & Rios, 2014; Streamer & Seery, 2015; Wu et al., 2010), whereas others have examined the mediational

role of self-concept clarity in understanding the effects of self-esteem (Hohman & Hogg, 2015; Story, 2004). Moreover, reversing these hypothesized relationships, there are studies that have examined self-concept clarity as the antecedent of self-esteem (Błażek & Besta, 2012), whereas others have examined the mediational role that self-esteem might play in understanding the effects of self-concept clarity (Lewandowski et al., 2010).

To date, the current knowledge about the effect of self-concept clarity on romantic relationship functioning and, more particularly, online dating behaviors is relatively limited. Below I will review these findings.

<p align="center">1.2.2 Self-concept clarity and romantic relationships</p>

Romantic relationships affect mental representations of the self as well as group memberships and achievements (Abrams & Hogg, 1988). The initiation, development, and maintenance phases of romantic relationships are all intricately intertwined with people's self-concepts (Aron, Lewandowski, Mashek, & Aron, 2013; Mattingly, McIntyre, & Selterman, in press), with the two having bi-directional influences on each other. The clarity and coherence of self-concepts can affect romantic relationship behaviors, just as romantic relationships can affect aspects of one's self-concept.

There is prior research examining the role of self-concept clarity in romantic relationship involvement and functioning. These studies, cumulatively, indicate that self-concept clarity and romantic relationship involvement, functioning, and maintenance, are positively correlated (Lodi-Smith, & DeMarree, 2018). Individuals with higher self-concept clarity report greater commitment, satisfaction, and longer-lasting relationships (Mattingly, McIntyre, & Lewandowski, 2016; Mattingly et al., 2016). Furthermore, self-concept clarity predicts

individual differences in how much people invest in their relationships (Lodi-Smith & Roberts,

2010) and well as the level of dyadic adjustment (Gurung et al., 2001).

Moreover, individuals with higher self-concept clarity are more consistent in their

thoughts, opinions, and behaviors, such that their partners have a greater ability to accurately

predict their behaviors. (Lewandowski & Nardone, 2012). This consistency in opinions and

behaviors is a reliable predictor of relationship satisfaction and longevity (Fisher & McNulty,

2008). Lewandowski and Nardone (2012) suggested that individuals with higher self-concept

clarity may be better at initiating and developing relationships because they allow possible

romantic partners to form accurate assessments of their personalities, and expectations.

### 1.2.3 Self-concept clarity and self-presentation

Self-concept clarity has been shown to be related to self-presentation behavior. In one

study, Fullwood et al. (2016) found that adolescents with less stable self-concepts reported

engaging in more online self-presentation in order to present an idealized version of themselves.

In contrast, adolescents with more stable self-concepts reported presenting an online self that

was more consistent with their offline self-presentation. In another study (Tice, 1992) examined

the association between self-concept clarity and online self-presentation in an adult sample. In

two studies, they found that higher self-concept clarity resulted in less presentation of multiple

selves (e.g., I enjoy acting out different identities online) and a preference for online

presentation (e.g., I find it easier to communicate in face-to-face environments). Similarly,

Fullwood et al, (2020), using an international sample of adult participants, found that those with

higher self-concept clarity and self-monitoring tend to present a single consistent online and

offline self.

### 1.2.4 Self-concept clarity and self-disclosure

Self-disclosure is a multidimensional concept (Berg & Derlega, 1987) and is defined as "any information exchange that refers to the self, including personal states, dispositions, events in the past, and plans for the future" (Derlega & Grzelak 1979). Self-disclosure is an especially important component in romantic relationship initiation because it increases the chance of relationship development, mutual liking, and feelings of intimacy (Altman & Taylor, 1973; Derlega, Winstead, Wong, & Greenspan, 1987). Self-disclosure to one's dating partner has been shown to be positively associated with self-reports of love, attachment, caring, and intimacy (Rubin, et al., (1980).

There are not many studies that have examined the relationship between self-concept clarity and self-disclosure. Recently, Tajmirriyahi and Ickes (2020) found that self-concept clarity can predict self-report and behavioral measures of emotional self-disclosure to romantic partners, even after controlling for self-esteem. On the other hand, individuals with low self-concept clarity had lower self-disclosure tended to disclose less information about their emotional states to their romantic partners. In another study, Valkenburg and Peter (2008) found a positive correlation between self-concept clarity and self-disclosure during adolescents' online communications, suggesting that adolescents with clearer self-concepts were more likely to self-disclose when communicating with their peers in online communications.

### 1.2.5 Self-concept clarity and interpersonal rejection

Self-concept clarity can affect how people evaluate themselves. Guerrettaz and Arkin (2015) found that individuals with higher self-concept clarity expect that thinking about their self-concepts and describing them in depth will be easier than do than individuals with less

clarity. In addition, they found that self-concept clarity moderates the process of elaborating on the most important aspects of one's self-concept and also how people respond to feedback about their self-knowledge.

For example, researchers have found that self-concept clarity is a predictor of negative emotions and aggression after failure (Stucke & Sporer, 2002; Bushman & Baumeister, 1998; Kernis, Granneman, & Barclay, 1991). Individuals with high self-concept clarity may either be less likely to perceive ego threat or may be better able to regulate their feelings. As much as self-concept clarity can influence a romantic relationship, it is also clear that experiences within romantic relationships also impact self-concept clarity. For example, interpersonal rejection can also reduce self-concept clarity (Ayduk, Gyurak, & Luerssen, 2009), perhaps because interpersonal rejection makes people think that their positive self-image is invalid. In a study examining the effect of rejection on self-concept clarity (Ayduk et al., 2009), participants received an email from a confederate who indicated that they did not wish to interact with the participant. They found that participants with higher levels of sensitivity to rejection reported lower self-concept clarity after receiving the rejection message (Ayduk et al., 2009).

1.3 Narcissism and self-concept clarity

The self-concept in individuals with narcissistic traits is unstable, and it is seemingly overshadowed by high self-evaluations. Rhodewalt and Morf (2001) proposed that the self-concept of narcissistic people would be low inaccessibility due to a lack of clarity in the representation. Therefore, there should be a negative correlation between measures of narcissism and measures of self-concept clarity. However, the existing evidence is contradictory, with some studies reporting a negative relationship (Stucke and Sporer, 2002;

Steffgen et al. 2007) and other studies reporting no relationship (Morf & Rhodewalt, 2001) between the two constructs. Furthermore, these studies mainly used NPI as a measure of narcissism and failed to separate the two dimensions of grandiose and vulnerable narcissism. However, these two dimensions could possibly have contrasting relationships with self-concept clarity.

## 1.4 The Current Investigation

There is only a limited amount of research on narcissism and online dating behaviors. In addition, most of the previous studies suffer from two major limitations. First and foremost, most of the previous work focused only on grandiose narcissism and failed to consider how vulnerable narcissism can influence online dating behaviors. Second, to my knowledge, no study to date has examined how dimensions of narcissism interact with self-concept clarity to influence online dating behaviors. Self-concept clarity seems to have an independent influence on most of the outcome variables in this study, including self-presentation (e.g., Fullwood et al. 2016), self-evaluations (Wong et al. 2014) and the person's reactions following positive or negative feedback (e.g., Stucke and Sporer, 2002). Accordingly, the main purpose of the current study was to illuminate how grandiose and vulnerable narcissism (as distinguishable measures of an inflated self-view) could, in conjunction with the level of self-concept clarity (as an additional measure of a fragile self-view), be an important predictor of online dating behaviors (e.g., self-disclosure, self-presentation). I examined how narcissism in conjunction with self-concept clarity influence a number of online dating behavior including, (1) photographic self-presentation, (2) assertive self-presentation, (3) authentic self-presentation, (4) self-disclosure, (5) verbal behavior, (6) derogatory behavior toward other daters and toward the experiment

after receiving an romantic rejection, and (7) change in self-perceived mate value. The theoretical and empirical precedents for my predictions are presented in chapter 2.

In all the analyses in the present study, I partialled out the variance associated with two demographic variables (age and gender) and the Big Five personality traits (Rammstedt & John, 2007) when testing the effects of the primary personality variables of grandiose narcissism, vulnerable narcissism, and self-concept clarity on online dating behaviors. Numerous studies over the years have documented how the Big Five factor of personality (e.g., Nettle, 2005) are especially important when studying courtship behaviors (e.g., Gaines, 2007), relationship initiation (e.g., Barelds & Barelds-Dijkstra, 2007; Schmitt, 2004), and online dating behaviors (e.g., Blackhart, et al., 2014).

In addition, there are established associations between the Big Five personality factors and the outcome variables of interest in this study. For instance, the personality trait of extraversion has been linked to a greater interest in sex and sexual activities (e.g., Nettle, 2005); as a result, those higher in extraversion are expected to overuse self-enhancement self-presentation in online dating (e.g., Hall et al., 2010). Alternatively, individuals with neurotic traits should be more sensitive to receive rejection in interpersonal relationships (e.g., Blackhar, et al.2014). Therefore, receiving romantic rejection should have a more detrimental effect on these individuals' self-image and self-evaluation compared to individuals with with low neurotic traits (e.g., Hance, et al., 2018).

Chapter 2

Method

2.1 Participants

A total sample of 185 heterosexual (126 female and 59 male) participants ($M_{age}$ = 19.22, $SD_{age}$ = 1.89, range: 18-29) completed all three phases of the study (see Appendix D. Participants were recruited via the University of Texas at Arlington Human Participation Research pool in exchange for course credit. Most participants in this sample were Hispanic/Latino (30.8%, n = 57), followed by White/Caucasian (26.5%, n = 49), Asian or Pacific Islander, (22.2%, n = 41), Black or African American (15.1%, n = 28), Middle Eastern (1.6%, n = 3), and other races (3.8%, n = 7). The participants chose to take part in the study titled "UT Arlington Online Dating project" and could participate if they were heterosexual, between the ages of 18-30, and not currently involved in a serious committed romantic relationship. After outlining the study procedure in the consent form, participants agreed to participate in the study.

2.2 Phase 1 Procedure and Personality Measures

The present study consisted of three phases of data collection. In Phase 1, after the participants signed up for the study through the SONA system, they were directed to a survey link to complete the demographic and personality questionnaires (Appendix A). After they answered the screening and demographic questions, they were asked to report how much previous experience they had with online dating on a Likert-type scale ranging from 1 (*A great deal*) to 5 (*None at all*). Participants then completed the following scales in the order presented. The internal consistency of the scales was assessed using Cronbach's alpha (Cronbach, 1951).

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*2.2.1 Marlow-Crowne Social Desirability Scale*

This 10-item Social Desirability scale (α = .51) was developed by Crowne & Marlowe (1960) to measure the strength of a person's general tendency to answer questions in a socially desirable manner. Participants responded to each item (e.g., *I like to gossip at times*) using a Yes/No response format. Participants who score high on this scale tend to present a favorable image of themselves rather than an honest one, especially on controversial or sensitive issues (e.g., strategic self-presentation). The scale demonstrates acceptable, but not high, reliability (e.g., Beretvas, Meyer & Leite, 2002).

*2.2.2 Big Five Inventory-10 (BFI-10)*

The BFI-10 is a short 10-item scale that measures the Big Five dimensions of personality: conscientiousness *(α =.51)*, agreeableness *(α =.40)*, neuroticism *(α =.57)*, openness to experience *(α =.08)*, and extraversion *(α =.60)* (e.g., Rammstedt & John, 2007). Items were scored on a Likert-type scale that ranged from 1 (*Strongly disagree*) to 5 (S*trongly agree*) (e.g., Rammstedt & John, 2007). Higher scores indicated higher levels of these traits. The scale has shown acceptable psychometric properties in previous research (e.g., Balgiu, 2018).

*2.2.3 Narcissistic Personality Inventory (NPI)*

This 40-item scale (α =.82) was developed by Raskin and Terry (1988). It uses a forced-choice response format to measure grandiose narcissism as a trait in nonclinical populations. For each item, participants are to choose between a narcissistic alternative (e.g., "*I like to be the center of attention*") and a non-narcissistic alternative (e.g., "*I prefer to blend in with the crowd*"). Higher scores indicate higher levels of grandiose narcissism. The scale has shown acceptable psychometric properties in previous work (e.g., del Rosario & White, 2005).

*2.2.4 Self-Concept Clarity scale (SCC)*

This 12-item-scale (α = .84) was developed by Campbell et al., (1996) to measure one's self-reported level of self-concept clarity. Participants responded to each item (e.g., *My beliefs about myself often conflict with one another*) on a Likert-type scale that ranged from 1 (*Strongly agree*) to 5 (*Strongly disagree*). A higher score indicates a greater level of self-concept clarity. The scale has shown acceptable psychometric properties in previous research (e.g., Nezlek, & Plesko, 2001).

*2.2.5 Hypersensitive Narcissism Scale (HSNS)*

This 10-item scale (α =.67) was developed by Hendin and Cheek, (1997) to measure vulnerable narcissism. Participants responded to items (e.g., *I can become entirely absorbed in thinking about my personal affairs, my health, my cares or my relations to others*) on a scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Higher scores indicated a higher level of vulnerable narcissism. Previous work has shown adequate internal consistency for this scale (Fossati, et al., 2009).

*2.2.6 Self-mate Value Scale*

This 4-item scale (α = .75) was developed by Edlund and Sagarin, (2014) to measure participants' self-perceived mate value. Participants responded to each item (e.g., *Overall, how would you rate your level of desirability as a partner for other daters*?) on a scale ranging from 1 (*Very much lower than average*) to 7 (*Very much higher than average*). Higher scores indicated higher perceived self-perceived mate value.

2.3 Phase 2 Procedure and Personality Measures

After participants completed Phase 1, they were allowed to work on Phase 2 of the study (see Appendix B). In Phase 2 of the study, they were directed to a survey link to create an online dating profile and were asked to provide several items of information that resemble the components of a typical dating profiles (*My self-summary, What I'm doing with my life, I'm really good at, The first thing people usually notice about me, I appreciate it when my date is, ice-breaker*). In order to measure participants' photographic self-presentation behavior, they were asked to upload a minimum of three photos in their dating profiles.

 After the participants had completed their dating profile, they were asked to rate their dating profiles in response to the two following questions "How much time did you invest on your dating profile?" and "How important is this dating profile for you?" Both responses were rated on a scale ranging from 1 (*A great deal*) to 5 (*None at all*). The scores on these two items were reverse-scored to indicate a greater importance and a greater investment of one's dating profile.

### 2.3.1. Photographic self-presentation

To measures the photographic self-presentation, I modified and used five items extracted from (Michikyan, Dennis, and Subrahmanyam, 2014). Participants responded to these five items (e.g., *I edited one or more of my dating profile photos on my dating profile to impress other daters*) on a scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Higher scores indicated greater use of photographic self-presentation techniques in creating one's dating profile. An Exploratory Factor Analysis (EFA) with oblique rotation, principal axis factoring, and eigenvalue < 1 using IBM SPSS 23 on the five items of the self-reported photographic self-presentation scale showed a one-factor solution which accounted for 41.96% of the total

variance in this outcome variable. The internal consistency was α = .78, measured by Cronbach's alpha (Cronbach, 1951).

2.3.2 Assertive Self-presentation Scale

To measure self-reported assertive self-presentation, I modified and used three items adapted from Michikyan, Dennis, and Subrahmanyam (2014) to be used in the present study. Participants rated each item (e.g., *I describe myself as more successful than I actually am on my dating profile*) on a scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Higher scores indicated a greater self-reported assertive self-presentation behavior. An Exploratory Factor Analysis (EFA) with oblique rotation, principal axis factoring, and eigenvalue < 1 using IBM SPSS 23 showed that these three items explained 45.26% of the total variance in this outcome variable. The internal consistency of the scales was α = .68, measured by Cronbach's alpha (Cronbach, 1951).

*2.3.3 Real/Inauthentic Self-presentation Scale*

To measure whether participants expressed an authentic version of themselves in their dating profiles, I modified and used five items (α= .76) adopted from Michikyan, Dennis, and Subrahmanyam (2014). Participants responded to these items (e.g., *I posted some information about myself on my dating profile that is not true*) on a scale that ranged from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Higher scores indicated higher levels of self-reported *in*authentic self-presentation behavior. An Exploratory Factor Analysis (EFA) with oblique rotation, principal axis factoring, and eigenvalue < 1 using IBM SPSS 23 showed that these five items explained 39.76% of the total variance.

*2.3.4 Self-reported self-disclosure*

In order to measure the self-reported self-disclosure behavior in the online dating profiles, I used three items (i.e., *I rarely presented intimate, personal things about myself*, *I disclosed who I really was*, *I intimately revealed myself;* α = .52). Participants responded on a Likert-type scale that ranged from 1 (S*trongly disagree*) to 7 (*Strongly agree*). Higher scores indicated higher levels of self-reported self-disclosure behavior. An Exploratory Factor Analysis (EFA) with oblique rotation, principal axis factoring, and eigenvalue < 1 using IBM SPSS 23 showed that these three items explained 33.21% of the total variance.

*2.3.5 Personal dating desirability (PDD)*

In order to measure participants' perception of their dating profile desirability, I modified and used four items (*e.g., Overall, how would you rate your level of desirability as a partner for other daters in this study?;* α = .81) adopted from Self-mate Value Scale (Edlund & Sagarin, 2014). Higher scores indicated higher perceived desirability. These four items explained 52.71% of the total variance.

*2.3.6 Preference for a short-term relationship partner scale*

To measure the participants' preference for the type of romantic partner they would like to date, I asked them to rate their degree of preference for each of five types of romantic partners (i.e., *sexual relationships that occur one time only*, *one-night stands, booty-calls, friends-with-benefits*, *serious romantic relationship*) on a Likert-scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*), with higher scores indicating more interest in that certain type of romantic partner. In order to prepare this scale for the analysis, I reversed scored the responses on the last item (i.e., serious romantic relationship), such that the higher scores on the average of all items indicate more interest in short-term romantic relationships.

2.4 Phase 3 Procedure and Personality Measures

In phase 3 of this study, a personalized survey link was sent to each participant via email. Participants were led to believe that their dating profiles had been rated by a random sub-sample of other daters in the study, and they were then randomly assigned to either the *ego-threatening* manipulation condition (rejection condition) or the *non-ego-threatening* manipulation condition (acceptance condition)[1]. In the *ego-threatening* manipulation condition, the participants received romantic rejection from most of the opposite-sex daters who they thought had viewed and rated their dating profile (i.e., Based on the data we received, about 22% of the participants reported to be willing to date you and find you attractive as a date). On the other hand, in the *non-ego-threatening* condition, the participants received romantic acceptance from most of these opposite-sex daters (i.e., Based on the data we received, about 78% of the participants reported to be willing to date you and find you attractive as a date) (see Appendix C). These percentages were consistent with the number of opposite-sex daters (9) who had presumably viewed and rated the participants' dating profiles.

These manipulation conditions were intended to evoke the perception of romantic rejection or romantic acceptance in the participants. Immediately after receiving either the ego-threatening or the non-ego-threatening message, the participants completed the Rosenberg Self-Esteem Scale (Rosenberg, (1965) and a 4-item Negative State Mood (Lubin, & Van Whitlock,

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[1] Simple Randomization technique was used to assign the participant to each of the manipulation conditions randomly.

1996), which were used to measure the effectiveness of ego-threatening manipulation. The participants were then told that they would now have the opportunity to evaluate the dating desirability of those individuals who had (presumably) rated them. In practice, all participants were shown a series of nine researcher-made dating profiles designed for this study. Participants were asked to rate these profiles on six items that were developed to measure their perception of the other person and how much they were willing to date this person.

Finally, at the end of the online experiment, before the participants were debriefed and compensated, they were asked to respond to an item regarding their willingness to change their dating profile (*If you were given the opportunity to make changes to your dating profile and have it viewed and rated by a new set of participants of the opposite gender, how likely are you to edit it to your satisfaction?*) on a Likert scale from 1 (*Not at all likely*) to 5 (*Very likely*).

*2.4.1 Researcher-made online dating profiles.*

A series of 18 online dating profiles (nine to be shown to the male participants and nine to be shown to the female participants) was created with the help of my research assistants to be used in this study. These fabricated dating profiles were carefully constructed to depict typical college students and contained the same sections of information that the participants provided in Phase 1 and Phase 2 of the study. To increase the believability that the fabricated dating profiles belonged to actual people on campus, the profiles were vetted by my research assistants and their recommended modifications were applied.

Because the physical attractiveness of the photos that appear in these dating profiles is an additional variable that was likely to influence the results, six independent raters blind to the purpose of the study coded the physical attractiveness of the "owner" of each profile on a 7-

point Likert-type scale that ranged from 1 (*Not all attractive*) to 7 (*Very attractive*). Higher

scores indicated higher levels of physical attractiveness. The inter-rater reliability of these

physical attractiveness ratings was ICC = .92, p < .001. Based on their average attractiveness

ratings, the nine male and nine female dating profiles were then divided into three groups each

composed of three profiles [low levels of attractiveness (3 profiles), average levels of

attractiveness (3 profiles), high levels of attractiveness (3 profiles)].

### 2.4.2 Modified Self-perceived Mate-value Scale

The participants were asked to complete the Modified Self-perceived Mate-value Scale

(Edlund & Sagarin, 2014). Higher scores indicated higher self-perceived mate-value. The

internal consistency of the scale was α = .61, measured by Cronbach's alpha (Cronbach, 1951).

### 2.4.3 Study evaluation questionnaire

To measure individual differences in derogatory sentiments directed toward the

experiment, the participants were asked to respond to the following three items (*How

worthwhile do you think this study is*, *In general, I liked this experiment, I think this is a good

experiment;* α = .82), on a scale from 1 (S*trongly disagree*) to 4 (*Strongly agree*). Higher scores

indicated lower derogatory behavior toward the experiment and experimenter. An Exploratory

Factor Analysis (EFA) with oblique rotation, principal axis factoring, and eigenvalue < 1 using

IBM SPSS 23 showed that these three items explained 61.83% of the total variance.

## 2.5 Phase 2 behavioral coding

### 2.5.1 Photographic self-presentation coding

Three independent coders were trained to rate the photos based on a coding scheme,

which I developed specifically for this study. The coding scheme was based on six criteria that

were used to measure aspects of strategic photographic self-presentation (e.g., Barry, et al., 2015; Fox & Rooney 2015). These included (1) the overall outfit (flashy clothing, jewelry, make-up), (2) photo editing (color enhancement, photoshop, filters), (3) body posture (striking a pose, certain facial expressions, smiling, flexing muscles), all of which were rated on a scale ranging from 1 (*Not at all*) to 5 (*Extremely*). The coders were also asked to rate each photo on three more items, (1) whether it was a selfie, (2) whether the person appeared in the photo with friends or family, (3) whether the person appeared in the photo in the context of well-known places, scenery, or a famous landmark, as rated on using a simple binary scale (Yes = 1, No = 0). The scores on these six items were then averaged and used as an overall indicator of the participants' photographic self-presentation behavior ($M$ = 1.51, $SD$ = .54). Higher scores indicated higher levels of photographic self-presentation. The data from 6.2% of the participants (12 out of 185) were either missing or uncodable, ICC = .77, $p < .001$ (Srivastava & Keen, 1988).

### 2.5.2 Behavioral self-disclosure coding

Four independent coders were trained to rate on a scale from 1 (*Not at all*) to 5 (*Extremely*) the written self-description section of each of the participants' own dating profiles for how openly the participants expressed themselves to their potential dating partners. These data were then averaged and used in the analyses, (M = 3.56, SD = .64); ICC = .86, $p < .001$ (Srivastava & Keen, 1988). Higher scores indicated higher levels of verbal self-disclosure.

### 2.5.3 Verbal behavior in online dating profiles

In order to measure participants' verbal behavior when communicating on their dating profiles, I used the Linguistic Inquiry and Word Count software (LIWC; Pennebaker, Francis, &

Booth, 2007), which analyzes the frequency and proportion of specific categories of words used in a text. The LIWC program calculates the proportion of words that represent different psychological and linguistic categories by comparing each word with an internal dictionary of more than 4,500 words assigned to the various word categories. For this study, I used five established LIWC categories: *first-person singular pronouns*, *achievement-related words*, *sexuality words*, *affective words,* and *social words* (for additional information regarding these codes, see LIWC, 2006). Previous work (Schoendienst, et al., 2011; Sharabi & Caughlin, 2019) has documented the importance of these verbal categories in the context of courtship behavior and online dating.

*First-person singular pronouns.* Self-referential language use is operationalized as I-talk, or the spontaneous use of first-person singular personal pronouns (Pennebaker, Mehl, & Niederhoffer, 2003; Tausczik & Pennebaker, 2010). More frequent use of I-talk has been linked to a number of psychological variables such as higher depression or higher levels of narcissism. Narcissistic individuals are self-focused and thus, should communicate in ways that draw attention to themselves. Accordingly, it is highly intuitive that individuals with higher levels of narcissism should use a more frequent number of first-person singular pronouns.

*Achievement-related words.* Achievement-related words, such as words describing success, achievement and striving, are implicit indicators of success and goal-orientation (LIWC, 2015), and should be important for conveying achievement and striving in one's self-presentation in the context of dating. More frequent use of these words should indicate greater achievement and striving.

*Sexual-related words.* Narcissism has been positively linked to socio-sexuality (Foster, Shrira, & Campbell, 2002), desiring multiple sexual partners, and disassociating sex from intimacy (e.g., Foster, et al., 2006). Narcissists are substantially more flirtatious with others compared to non-narcissists, and they also tend to use more sex-related words in everyday language (Holtzman, et al., 2010). On the other hand, sexual words are commonly used in the context of online dating, even by non-narcissists (Campbell, et al., 2002).

*Affective words.* According to the model of interpersonal intimacy proposed by Reis and Shaver (1988), people frequently display behaviors that increase emotional intimacy, especially during the initial stages of a relationship (e.g., Clark et al., 1999). One of the verbal indicators of this behavior is the more frequent use of emotionally-focused words during the initial phases of romantic relationship, which tend to promote emotional intimacy. Consistent with this idea, Arguello et al. (2006) found that the use of both negative and positive affect in messages can trigger greater feedback and involvement in online dating.

*Social words.* Previous dating research suggests that daters use words that are associated with social processes in order to increase their chance of receiving a response from potential partners (e.g., Schoendienst & Dang-Xuan, 2011). According to the evolutionary theory of parental investment (e.g., Buss, 1989; Robert, 1972), humans—especially women—seek mates with whom they can raise offspring and who also have the willingness and ability to invest care and resources into provisioning them and their children. In addition, words that refer to social processes have been found to be linked to perceived social support, and interpersonal mechanism that improves likability (e.g., Rellini & Meston 2007).

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2.6 List of hypotheses

I hereby present the hypotheses derived from Phase 2 of the study focusing on the behaviors relating to creating the participants' own online dating profiles (e.g., self-presentation, self-disclosure and verbal communication).

*Hypothesis 1. Photographic self-presentation.*

Narcissism is correlated with several self-presentation tactics. In the online dating context, profile photo selection should be particularly influenced by self-presentation motivations. Grandiose narcissism, in particular, is related to enhanced impression motivation and, by extension, to the enhanced use of self-presentation tactics (Kernis, 2001; Morf & Rhodewalt, 2001; Raskin, Novacek, & Hogan, 1991; Rhodewalt & Peterson, 2008). Previous research has shown that grandiose narcissism is associated with posting selfies, provocative content in selfies, and wearing more fashionable and stylish clothing, and having a more "neat" appearance in selfies than vulnerable narcissism is (e.g., Barry et al. 2017). Accordingly, I expected to find a positive correlation between grandiose narcissism and photographic self-presentation. In other words, participants with higher scores on grandiose narcissism should make the "self" more attractive to others on their online dating profiles. Further, I expected gender to moderate the relationship between narcissism and photographic self-presentation because, in general women, have been shown to place more emphasis than men on displaying physical attractiveness (Manago et al., 2008; Siibak, 2009).

*Hypothesis 2. Self-reported inauthentic self-presentation.*

Previous work has shown that individuals with higher vulnerable narcissism tend to provide a less authentic version of themselves in online communication (Grieve, et al. 2020).

Furthermore, individuals with an unclear and unstable sense of self, tend to experiment more regularly with their online self-presentation, and present an idealized version of self in online communications (e.g., Fullwood et al. 2016). Whereas in individuals with a more stable self-concept, their online self-presentation is more consistent with their offline self-presentation. Finally, people with higher levels of grandiose narcissism tend to engage in more deceptive behavior (Jonason, et al., 2017), manipulative behavior (Konrath, et al., 2014) and assertive self-presentation (Hart, et al., 2017). Therefore, it is expected that these people are included to show a less real version of themselves in online dating. Accordingly, I predicted that participants with higher levels of vulnerable narcissism and lower levels of self-concept clarity would report higher levels of inauthentic self-presentation. I also expected to see that grandiose narcissism to predict higher scores in inauthentic self-presentation.

*Hypothesis 3. Self-reported assertive self-presentation*

Individuals with higher levels of grandiose narcissism are motivated by gaining social power and enhanced self-esteem in their interpersonal relationships (e.g., Leary & Kowalski, 1990). Thus, grandiose narcissists' approach to self-enhancement is often described as enthusiastic, agentic, and bold (e.g., Wallace, 2011). Grandiose narcissists also tend to present themselves in more successful and charming ways (e.g., Kim & Lee, 2011). Previous work (e.g., Buss & Chiodo, 1991; Hart & Adams, 2014) suggested that grandiose narcissism is related to the heightened use of assertive self-presentation tactics; a special type of self-presentation which is typically desired by and can be reasonably claimed by grandiose narcissists (i.e., dominant, and glibly charming). Thus, I predicted that grandiose narcissism should be a significant predictor of assertive self-presentation.

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*Hypothesis 4. Self-reported and behavioral self-disclosure*

Self-disclosure in online dating provides an important means for favorable self-presentation (e.g., Gibbs, et al., 2006). Self-disclosure and self-presentation are obviously not mutually exclusive (e.g., Schlosser, 2020), and both can be used to increase one's likelihood of receiving a favorable response in online communication (Collins, & Miller, 1994). I therefore predicted that individuals with higher levels of grandiose narcissism would use self-disclosure as a favorable self-presentation strategy in online dating, resulting in positive correlations between grandiose narcissism and both self-reported and behavioral self-disclosure. In addition, previous studies (Valkenburg & Peter, 2008, Tajmirriyahi & Ickes, 2020) have linked high self-concept clarity to high levels of self-disclosure. Thus, I predicted that participants who score higher in grandiose narcissism and who also have a more clear and coherent self-concept would tend to disclose more intimate information about themselves in their online dating profiles.

*Hypothesis 5. Personal dating desirability (PDD)*

Grandiose narcissism is characterized by a highly positive self-view, higher self-perceived mate-value (Zeigler-Hill & Trombly, 2018), and overly positive evaluations of one's own physical attractiveness (Bleske-Rechek, Remiker, & Baker, 2008; Gabriel, Critelli, & Ee, 1994). Therefore, grandiose narcissism should be related to higher ratings of one's perceived dating desirability. In addition, I predicted that self-concept clarity should also be related to higher ratings of one's own perceived dating desirability. This second prediction was exploratory due to a lack of previous research on the relationship between self-concept clarity and self-perceived mate-value. However, self-concept clarity is closely related to self-esteem

(Usborne & Taylor 2010); and individuals with higher levels of self-esteem report having a greater self-mate value (Webster & Kirkpatrick 2006).

*Hypothesis* 6. P*reference for short-term relationship partner as the outcome*

There are theoretical reasons to believe that narcissism should be related to an opportunistic, short-term mating strategy such as one-night stands and friends-with-benefits (Hurlbert, et al., 1994; Wryobeck & Wiederman,1999). Narcissism is also associated with empirical studies with lower interest in relationship commitment and more permissive attitudes toward casual sex (Simpson& Gangestad, 1991). Accordingly, I predicted that both grandiose and vulnerable narcissism would be associated with seeking short-term relationship partners in the present study.

*Hypothesis 7. Number of first-person singular pronouns.*

Narcissism is characterized by excessive self-focus and self-importance (Raskin, & Shaw, 1988; DeWall, et al., 2011), and therefore it seems reasonable to expect that narcissism should be manifested in self-referential language use.  I therefore expected grandiose narcissistic individuals to use relatively more first-person singular pronouns (*I, me, my, mine, myself*) in their online dating profiles, with the implicit goal of drawing more attention to themselves. Moreover, because individuals with higher levels of self-concept clarity possess more stable and consistent self-views, leading them to be more goal-oriented (e.g., Thomas and Gadbois, 2007), I expect high self-concept clarity to be associated with more frequent self-referential language use in the participants' own online dating profiles.

*Hypothesis 8. Usage of Sexual Words as a Cue for Interest in Sexual Intimacy*

More frequent use of sexual words in online dating is often an indicator of interest in sexual intimacy with potential partners (e.g., Schoendienst & Dang-Xuan, 2011). Because narcissism is associated with more flirtatious behavior (Campbell, et al., 2002) and a higher interest in casual sexual relationships (Wurst, et al., 2017), I expected to observe a positive relationship between narcissism and the frequency of sexual word use in the participants' online dating profiles.

*Hypothesis 9. Affect words as a Cue for Emotional Intimacy*

Previous research has indicated that the use of negative and positive affect in text messages can trigger feedback and involvement in online communications (e.g., Joyce & Kraut 2006; Huffaker, 2010). Moreover, use of affect words is an indicator of interest in emotional intimacy (e.g., Schoendienst & Dang-Xuan, 2011; Nagarajan, & Hearst, 2009). Derived from these two lines of findings, I predicted that grandiose narcissism and self-concept clarity—although motivated by different goals—should both be positively correlated with the use of more affect words in the participants' online dating profiles.

*Hypothesis 10. Use of achievement-related words as a Cue for-long-term and assertive self-presentation*

Similarly, I predicted that grandiose narcissism and self-concept clarity should be significant predictors of achievement-related word use in the participants' online dating profiles. Grandiose narcissists are motivated to use these types of words as a tactic for assertive self-presentation (e.g., Hart, et al., 2017). Participants with a more clear self-concept should use a higher number of achievement-related words because they are more purposeful, decisive and are more goal-oriented (Błażek, & Besta, 2012). Thus, it is expected that individuals with higher

levels of self-concept clarity should be more interested in using online dating for forming more long-term romantic relationships (e.g., Campbell, et al., 1996). For this reason, I expect self-concept clarity to significantly predict more frequent use of achievement-related words.

*Hypothesis 11. Social words as a cue for social support*

Previous research has shown how the use of social words in online dating is an indicator of social support (e.g., Schoendienst & Dang-Xuan, 2011). A greater use of social words is especially important from the evolutionary psychology standpoint because these words should be an indicator of ability and willingness to provide the resources related to parental investment (e.g., Buss 1989; Trivers 1972). Personality traits can influence use of social and emotional language. For example, more extraverted people tend to use more social words, more positive emotion, and less negative emotion. Narcissism is closely related to the personality trait of extraversion (Pennebaker & King, 1999; Mehl, Gosling, & Pennebaker, 2006). Thus, I predict that higher levels of grandiose narcissism should significantly predict more frequent use of social words in online profile. Another reason for this prediction is that participants with higher grandiose narcissism should be aware of the positive impact of social processes words on attracting potential partners and thus tend to use social words as a self-presentation strategy. On the other hand, greater self-concept clarity is related to higher quality of interpersonal relationships (Becht, et al, 2017). Consequently, participants with more clear and coherent self-concept should use more frequent social processes words in their online communications.

In this next section, I present the hypotheses derived from Phase 3 of the study focusing on the self and other evaluations after receiving ego-threatening manipulation.

*Hypothesis 12. Derogatory behavior toward other daters after receiving an ego-threatening manipulation in online dating*

Grandiose narcissistic people tend to react to ego-threatening situations with higher aggression (e.g., Horton & Sedikides 2009). Furthermore, low self-concept clarity has been shown to be a meaningful predictor of aggressive behavior following negative feedback such as romantic rejection (e.g., Ayduk, et al., 2009). In line with these findings, I predicted that high grandiose narcissism in combination with low self-concept clarity should predict more aggressive feedback after receiving rejection, rather than acceptance, from others in online dating.

*Hypothesis 13. Derogatory behavior toward the experiment and the experimenter*

Previous research has found that grandiose narcissistic individuals maintain their positive self-evaluations following negative feedback by reducing their perception of the task importance (e.g., Crocker, Brook, Niiya, & Villacorta, 2006; Morf & Rhodewalt, 2001; Nicholls & Stukas, 2011). Therefore, I predicted that grandiose narcissism should predict more derogatory behavior toward the experiment after receiving a romantic rejection.

*Hypothesis* 14. *Change in one's self-perceived mate value after receiving the ego-threatening manipulation*

Individuals with high levels of grandiose narcissism or high levels of vulnerable narcissism react differently when facing ego-threatening situations. Specifically, grandiose narcissistic individuals should react with aggression and hostility after receiving negative reactions from others, whereas vulnerable narcissistic individuals should react by devaluating themselves (e.g., Besser & Priel, 2010). Thus, I expect that vulnerable narcissism in

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combination with low self-concept clarity should predict the greatest change in self-perceived mate value after receiving rejection from other daters.

*Hypothesis 15. Willingness to make changes to one's dating profile*

Both forms of narcissism are sensitive to domains requiring external validation. However, the subtypes differ in how they react to positive or negative validation. Previous research (e.g., Besser & Priel, 2010) has shown that vulnerable narcissism is associated with devaluating oneself after receiving negative feedback from others. Thus, a possible reaction of those with high levels of vulnerable traits to emotional rejection is, devaluing self or in this study to think that their dating profile was not good enough. I predicted that vulnerable narcissism should predict more willingness to make a change in the dating profile.

Chapter 3

Results

3.1 Descriptive Statistics and Zero-Order Correlations

A detailed description of the independent and dependent variables is reported in Table 1.

Assumptions of normal distribution and kurtosis were assessed for all measures in the present

study prior to conducting the statistical analyses, and results are reported in Table 2. Histograms

of each variable confirmed that normality assumptions were met. A few univariate outliers

emerged but were retained because they represented plausible values according to the guidelines

provided by Field (2013).

| Table 1. Description of the variables in this study with type of measurements, sample item, and data collection phase | | |
|---|---|---|
| **Predictors** | | |
| Variable | Measurement (e.g., sample item) | |
| Self-concept clarity | Self-concept Clarity scale (e.g., "*My beliefs about myself often conflict with one another*") | Phase 1 |
| Grandiose narcissism | Narcissistic Personality Inventory (e.g., "*I like to be the center of attention*") | Phase 1 |
| Vulnerable narcissism | Hypersensitive Narcissism Scale (e.g., "*I can become entirely absorbed in thinking about my personal affairs, my health, my cares or my relations to others*") | Phase 1 |
| **Outcome variables** | | |
| **Self-report** | | |
| Photographic self-presentation | Photographic self-presentation scale (e.g., *I edited one or more of my dating profile photos on my dating profile to impress other daters*) | Phase 2 |
| Inauthentic self-presentation | Inauthentic Self-presentation Scale (e.g., *I describe myself as more successful than I actually am on my dating profile*) | Phase 2 |
| Assertive self-presentation | Assertive Self-presentation Scale (e.g., *I describe myself as more successful than I actually am on my dating profile*) | Phase 2 |

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| Self-reported self-disclosure | Self-disclosure scale (e.g., *I rarely presented intimate*) | Phase 2 |
|---|---|---|
| Personal dating desirability | Personal dating desirability (e.g., *Overall, how would you rate your level of desirability as a partner for other daters in this study?*) | Phase 2 |
| Preference for short-term relationship partner | Preference for a short-term relationship partner scale (e.g., *sexual relationships that occur one time only).* | Phase 2 |
| Derogatory behavior toward other daters | Dating desirability ratings on the fake dating profiles (e.g., *How positively would you rate this person as a potential dating partner for yourself?*" | Phase 3 |
| Derogatory behavior toward experiment/er | Study evaluation scale (e.g., *How worthwhile do you think this study is*) | Phase 3 |
| Change in self-perceived mate-value | Change scores in Self-mate Value Scale (e.g., *Overall, how would you rate your level of desirability as a partner for other daters?*) | Phase 1&3 |
| Willingness to make changes in one's dating profile | Single item ("*If you were given the opportunity to make changes to your dating profile and have it viewed and rated by a new set of participants of the opposite gender, how likely are you to edit it to your satisfaction?*) | Phase 3 |
| **Behavioral** | | |
| Photographic self-presentation | Coding's of each photo based on the following criteria (1) the overall outfit (flashy clothing, jewelry, make-up), (2) photo editing (color enhancement, photoshop, filters), (3) body posture (striking a pose, certain facial expressions, smiling, flexing muscles) (4) whether it was a selfie, (5) whether the person appeared in the photo with friends or family, (6) whether the person appeared in the photo in the context of well-known places, scenery, or a famous landmark. | Phase 2 |
| Self-disclosure | The behavioral indicators of self-disclosure behavior measured by coders' rating | Phase 2 |
| **Verbal** | | |
| First-person singular pronouns | The LIWC category of first-person singular pronouns (e.g., *I, me, my, mine, myself)* | Phase 2 |
| Sexual Words | The LIWC category of sexual words (e.g., *horny, sex*) | Phase 2 |
| Affect words | The composite score on the LIWC categories of positive emotions (e.g., *love, nice, sweet*) negative emotions (e.g., *hurt, ugly, nasty*) and affect words (e.g., *happy, cried*) | Phase 2 |

| Achievement-related words | The LIWC category of achievement words (e.g., win, success) | Phase 2 |
|---|---|---|
| Social processes words | The composite score on the LIWC categories of social words (e.g., mate, talk, they), family (e.g., daughter, dad, aunt) and friends (e.g., buddy, neighbor) | Phase 2 |

In order to see whether the current sample size had enough power to detect true effects, I conducted power-analyses using the program *G\*power* version 3.1.9.2. (Erdfelder, Faul, & Buchner, 1996) for the most important analyses in in the study. The results for the post-hoc power analysis at 0.05 for each model are reported accordingly.

Table 2. Descriptive statistics of the main variables in the study

| | Mean | SD | Skewness | Kurtosis |
|---|---|---|---|---|
| Self-concept clarity | 4.15 | .97 | .18 | -.17 |
| Grandiose narcissism | .39 | .16 | .10 | -.60 |
| Vulnerable narcissism | 3.81 | .78 | -.17 | -.08 |
| Social desirability | .58 | .19 | -.04 | -.27 |
| Extraversion | 4.42 | 1.54 | -.24 | -.91 |
| Agreeableness | 5.48 | 1.166 | -.86 | .46 |
| Conscientiousness | 5.30 | 1.25 | -.66 | .15 |
| Neuroticism | 4.00 | 1.46 | -.05 | -.98 |
| Openness | 4.82 | 1.24 | -.24 | -.24 |
| Self-reported photographic self-presentation | 3.15 | 1.19 | .45 | -.04 |
| Behavioral photographic self-presentation | 3.56 | .64 | -.29 | .59 |
| Assertive self-presentation | 3.43 | 1.24 | .19 | .13 |
| Inauthentic self-presentation | 2.22 | .89 | .96 | 1.01 |
| Self-reported self-disclosure | 3.82 | 1.11 | .37 | -.05 |
| Behavioral self-disclosure | 3.56 | .64 | -.29 | .59 |
| Self-mate value | 4.24 | .79 | -.15 | 1.01 |
| Personal dating desirability (PDD) | 4.23 | .86 | -.09 | .70 |
| Preference for short-term partner | 2.22 | 1.09 | 1.21 | .99 |
| Study evaluation | 3.34 | .67 | -.45 | .23 |
| Willingness to make change in dating profile | 3.06 | 1.44 | -.06 | -1.33 |

Results of the zero-order correlation analyses (see Table 3) indicated that the participants' scores on grandiose narcissism, as measured by the Narcissistic Personality Inventory (NPI), were not correlated with the participants' scores on vulnerable narcissism, as measured by the Hypersensitive Narcissism Scale, $r(183) = .04$, $p = .59$. However, the participants' scores on self-concept clarity, as measured by Self-concept Clarity Scale, were positively correlated with grandiose narcissism, $r(183) = .26$, $p < .001$, and negatively correlated with vulnerable narcissism, $r(183) = -.49$, $p < .001$. Independent sample $t$-tests indicated no significant gender differences in the main personality predictors in the study.

Table 3. Zero-order correlation results among all the variables measured

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Age | 1 | .16* | -.03 | -.02 | .07 | .08 | .17* | .12 | .07 | .12 | .05 | -.03 |
| 2. Grandiose narcissism | | 1 | .04 | .26*** | .09 | .05 | .09 | .03 | .20 | .16* | .43** | .43** |
| 3. Vulnerable narcissism | | | 1 | -.49*** | .08 | .09 | .19* | -.08 | .02 | -.12 | -.08 | -.17* |
| 4. Self-concept clarity | | | | 1 | -.07 | -.09 | -.25** | .21** | .04 | .15* | .28** | .31** |
| 5. Self-reported photographic self-presentation | | | | | 1 | .49*** | .27** | .004 | .12 | .05 | .05 | .21* |
| 6. Assertive self-presentation | | | | | | 1 | .43*** | -.02 | -.05 | -.07 | -.008 | -.03 |
| 7. Inauthentic self-presentation | | | | | | | 1 | -.25** | 1 | -.07 | -.11 | -.04 |
| 8. Self-reported self-disclosure | | | | | | | | 1 | .27** | 1 | .04 | .09 |
| 9. Behavioral self-presentation | | | | | | | | | 1 | .18* | .18* | .18* |

| | | | |
|---|---|---|---|
| 10. Behavioral self-disclosure | 1 | .17* | .19* |
| 11. Self-mate value | | 1 | .17* |
| 12. Personal dating desirability | | | 1 |

*Note.* * = *p* < .05; ** = *p* < .01, *** = *p* < .001.

### 3.2 LIWC analyses

Zero-order correlation analyses were conducted between the primary personality variables and all the word categories extracted from the LIWC 2007 dictionary. Table 4 presents the significant correlations, along with sample phrases that illustrate the kinds of words that belong to each word category.

These results indicated that the participants' scores on grandiose narcissism were most positively correlated with the frequency of *sexual words* (e.g., horny, love, incest; $r(185) = .24$, $p = .001$), *clout words* (i.e., words indicating high expertise and confidence ; $r(185) = .23$, $p = .002$), *biological words* (e.g. eat, blood, pain; $r(185) = .22$, $p = .002$), *social processes* words (e.g., talk, us, friend; $r(186) = .18$, $p = .01$), and *ingestion words* (e.g., eat, swallow, taste; $r(185) = .17$, $p = .03$). In general, these word categories refer to biological needs (*sexual words*, *biological words)*, *ingestion words* and to power (*clout words*). On the other hand, the participants' scores on grandiose narcissism were most negatively correlated with the use of *parentheses*, $r(185) = -.29$, $p < .001$, *differ words* (e.g., but, without; $r(185) = -.21$, $p = .005$), and *cognitive processes words* (e.g., cause, know, ought; $r(185) = -.15$, $p = .05$). In general, these word categories refer to an absence of qualification and cognitive analysis.

The participants' scores on vulnerable narcissism had distinctly different word-use correlates. Their scores on vulnerable narcissism were positively correlated with the frequency

of *death words* (e.g., bury, coffin, kill; $r(185) = .17$, $p = .02$), and negatively correlated with the frequency of *affiliation words*, (i.e., words used in reference to others; $r(185) = -.18$, $p = .02$), *social words* (e.g., talk, us, friend; $r(185) = -.17$, $p = .02$), *home* (e.g., house, kitchen, lawn; $r(185) = -.16$, $p = .03$, and *articles* (e.g., a, an, the; $r(185) = -.15$, $p = .04$). In general, these word categories refer to vulnerability (*death words*) and isolation (fewer references to *socializing, affiliation with others,* and to *home*).

Further, the participants' scores on self-concept clarity were negatively correlated with *tentative words* (e.g., maybe, perhaps, guess; $r(185) = -.18$, $p = .01$), and most positively correlated with *periods*, $r(185) = .23$, $p = .002$, $r(185) = .22$, $p = .003$, *punctuation*, $r(185) = .19$, $p = .008$, *positive emotions* (e.g., happy, pretty, good; $r(185) = .19$, $p = .008$), *third person singular pronouns* (e.g., he, she; $r(185) = .18$, $p = .02$, *affect words* (e.g., happy, ugly, bitter; $r(185) = .18$, $p = .01$, *second person singular pronouns* (e.g., you, your*; $r(185) = .16$, $p = .03$, *male references* (e.g., he, his, him; $r(185) = .15$, $p = .04$), and *achievement words* (e.g., try, goal, win; $r(185) = .16$, $p = .03$). In general, this pattern of word usage is marked with word categories are were theoretically expected to be related to higher self-concept clarity, including more frequent use of affective words, social processes words and words that show goal-orientation and certainty.

Overall, the word category usage results suggest that individual differences in the personality variables influenced the participants' word choice when they created their online dating profiles. However, the zero-order correlations between total word count and the primary personality variables were non-significant.

Table 4. Linguistic correlates of primary personality variables

|  | R | Examples |
|---|---|---|
| *Grandiose narcissism* | | |
| Total word count | .06 | |
| First person | .01 | I, me, mine, my |
| clout | .23** | |
| Social | .18* | mate, talk, they |
| cogproc | -.15* | cause, know, ought |
| differ | -.21* | hasn't, but, else |
| bio | .22* | eat, blood, pain |
| sexual | .24** | horny, love, incest |
| ingest | .17* | dish, eat, pizza |
| parenth | -.29*** | Parentheses (pairs) |
| *Vulnerable narcissism* | | |
| Total word count | -.02 | |
| First person | .005 | I, me, mine, my |
| article | -.15* | a, an, the |
| Social | -.17* | mate, talk, they |
| affiliation | -.18* | ally, friend, social |
| death | .17* | bury, coffin, kill |
| home | -.16* | kitchen, landlord |
| *Self-concept clarity* | | |
| Total word count | -.002 | |
| First person | .11 | |
| tone | .22* | Emotional tone |
| ppron | .15* | I, them, her |
| You | .16* | you, your, thou |
| shehe | .18* | she, her, him |
| affect | .18* | happy, cried |

| | | |
|---|---|---|
| posemo | .19* | love, nice, sweet |
| male | .16* | boy, his, dad |
| tentat | -.18* | maybe, perhaps |
| achieve | .16* | win, success, better |
| Allpunc | .19* | All Punctuation |
| period | .23* | All periods |

Note. $* = p < .05$; $** = p < .01$, $*** = p < .001$

## 3.3 Tests of Main Hypotheses

In order to test the primary hypotheses of the study, I conducted a series of multi-step Multiple Linear Regression (MLR) models and Multilevel Modeling analyses. To improve the interpretability of the results, all of the continuous predictors were centered to the mean before entering into the regression models (Robinson & Schumacker, 2009; Smith & Sasaki 1979). The categorical variable of gender was dummy coded (female = 1, male = 0). In the Multiple Linear Regression (MLR) models, the theoretically relevant covariates were entered in Step 1 of the model, all the main effects were entered in Step 2, the two-way interactions were entered in Step 3 and all the higher-order interactions were entered in Step 4. According to recommendations proposed by Jaccard et al., (1990), results including significant main effects or two-way interactions were not interpreted in the presence of significant higher-order interactions.

In all the analyses conducted in this study, the variance related to the demographic variables of age, gender, and the variance related to the Big Five personality correlates are statistically controlled. In addition, when testing the hypotheses related to creating one's online dating profile, the effects of other relevant covariates were also modeled in the analyses. The

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first covariate was the extent to which participants reported having previous experience with online dating. Interestingly, the participants' scores on the "previous experience" variable were positively correlated with grandiose narcissism, $r(183) = .18$, $p = .02$, but not with self-concept clarity, $r(183) = -.10$, $p = .16$, or vulnerable narcissism, $r(183) = -.01$, $p = .88$. In addition, participants who had a greater amount of experience with online dating reported presenting a less authentic version of themselves in their online dating profile, $r(183) = .24$, $p = .001$, and they expressed a greater degree of interest in having short-term relationship partners, $r(183) = .37$, $p < .001$. Based on these observations, I examined whether "previous experience with online dating" would interact with my primary personality variables to predict the most relevant outcome variables in the study (see Appendix D).

For the outcome variables which were related to creating one's dating profile, I decided to partial out the variance related to two other potential covariates: "profile importance" and "profile investment."[2] Although these two covariates were not significantly correlated with the primary variables in the study, the participants who reported investing more time on their dating profile scored higher in self-disclosure, $r(183) = .18$, $p = .12$, and said they presented a more authentic version of themselves on their dating profiles, $r(183) = -.16$, $p = .03$. Finally, the participants who rated their dating profile as more important, scored higher in photographic self-presentation, $r(183) = .32$, $p < .001$.

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[2] The participants' scores on "profile importance" and "profile investment" variables were both reversed scored before entering in the statistical analyses, so that higher scores would indicate greater importance and greater investment in one's dating profile.

### 3.3.1 Testing the hypotheses derived from Phase 2

#### 3.3.1.1 Photographic self-presentation as the outcome

I predicted that higher grandiose narcissism would predict higher self-reported and behavioral photographic self-presentation (H1). Contrary to my expectations, participants' scores on the self-reported photographic self-presentation were not significantly correlated with participants' scores on grandiose narcissism $r(183) = .09$, $p = .19$, vulnerable narcissism $r(183) = .08$, $p = .29$, or self-concept clarity $r(183) = -.07$, $p = .32$. However, participants' scores on behavioral photographic self-presentation was positively correlated with grandiose narcissism, $r(171) = .20$, $p = .009$, but not vulnerable narcissism, $r(171) = .02$, $p = .79$, or self-concept clarity, $r(171) = .04$, $p = .62$.

Next, I conducted a Multiple Linear Regression (MLR) model to examine the main effects and interactions between the primary variables in the study on self-reported photographic self-presentation. In Step 1 of the model, I entered the theoretically important covariates, $R = .42$, $R^2 = .18$, $\Delta R = .18$, $F(11, 170) = 3.30$, $p < .00$, which together explained 18% of the variance in self-reported photographic self-presentation. In Step 2 of the model, the primary personality variables were entered, $R = .44$, $R^2 = .19$, $\Delta R = .01$, $F(3,167) = .96$, $p = .41$. In Step 3 of the model, the two-way interactions were entered, $R = .48$, $R^2 = .24$, $\Delta R = .05$,

$F(5,162) = 2.08$ , $p = .07$ and in the Step 4 of the model, all the higher order interactions were

entered, R = .49, $R^2$ = .25, $\Delta R$ = .007, $F(2,160)$ = .56, $p$ = .49 (Table 5)[3].

| Table 5. Multiple Linear Regression predicting self-reported photographic self-presentation | | | | | |
|---|---|---|---|---|---|
| | ß(SE) | | | | |
| Variable | | ß | t | $sr^2$ | 95% CI |
| **Step 1** | | | | | |
| Age | .04 (.05) | .06 | .75 | .003 | [-.06, .14] |
| Gender | .48(.19) | .19 | 2.54* | .03 | [.11, .85] |
| Previous experience | .20(.11) | .15 | 1.84 | .02 | [-.01, .42] |
| Profile invest | .03 (.10) | .02 | .29 | .0003 | [-.18, .24] |
| Profile importance | .41(.09) | .325 | 4.11*** | .08 | [.21, .61] |
| Social desirability tendencies | -.93 (.47) | -.149 | -1.96* | .02 | [-1.86, .004] |
| Extraversion | -.06(.06) | -.08 | -1.02 | .005 | [-.17, .05] |
| Agreeableness | -.002(.08) | -.003 | -.04 | .000007 | [-.15, .1] |
| Conscientiousness | .03 (.07) | .031 | .41 | .0008 | [-.11, .17] |
| Neuroticism | -.10(.06) | -.13 | -1.68 | .01 | [-.22, .02] |
| Openness | -.004 (.07) | -.005 | -.07 | .0003 | [-.15, .14] |
| **Step 2** | | | | | |
| Self-concept clarity | -.005(.12) | -.004 | -.04 | .000009 | [-.24, .23] |
| Vulnerable | .21(.14) | .14 | 1.52 | .01 | [-.06, .47] |
| Grandiose | -.23(.67) | -.03 | -.35 | .0006 | [-1.56, 1.10 |
| **Step 3** | | | | | |
| Gender × self-concept clarity | .02(.22) | .03 | .09 | .0004 | [-.46, .42] |
| Gender × grandiose | 2.37(1.21) | .25 | 1.96* | .02 | [-4.75, .02] |
| Gender × vulnerable | .34(.28) | .53 | 1.21 | .007 | [-.89, .21] |

[3] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .98.

| | | | | | |
|---|---|---|---|---|---|
| Self-concept clarity × grandiose | .56(.51) | .08 | 1.10 | .006 | [-.45, 1.58] |
| Self-concept clarity × vulnerable | .18(.10) | .12 | 1.64 | .01 | [-.04, .39] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | .99 (1.03) | .78 | .961 | .004 | [-3.01,1.04] |
| Gender × self-concept clarity × vulnerable | -.16 (.22) | -.09 | -.75 | .003 | [.45, -.26] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

The main effect of grandiose narcissism emerged as non-significant. However, the main effect of gender was significant, $\beta = 18$, $t(172) = 2.27$, $p = .02$, suggesting that female participants reported having engaged in more photographic self-presentation. The interaction between gender and grandiose narcissism was marginally significant, $\beta = .25$, $t(167) = 1.96$, $p = .05$, and thus did not warrant further inspection.

Next, I conducted a Multiple Linear Regression (MLR) model with participants' scores on behavioral photographic self-presentation as the outcome variable. The covariates were entered in Step 1, $R = .34$, $R^2 = .12$, $\Delta R = .12$, $F(11, 159) = 1.89$, $p = .04$, and significantly explained 12% of the variance in behavioral photographic self-presentation. In Step 2, the main effects of primary variables were entered, $R = .36$, $R^2 = .13$, $\Delta R = .03$, $F(3,156) = .97$, $p = .41$. The two-way interaction terms were entered in Step 3, $R = .45$, $R^2 = .21$, $\Delta R = .07$, $F(5,151) =$

2.80 , $p = .02$. Finally all the higher order interactions were entered in Step 4, R = .47, $R^2 = .22$,

$\Delta$R = .01, $F(2,149) = .89$, $p = .48$ (Table 6)[4].

Table 6. Multiple Linear Regression predicting behavioral photographic self-presentation

| Variable | ß(SE) | ß | t | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Age | .01(.03) | .02 | .26 | .0004 | [-.04, .06] |
| Gender | .28(.09) | .24 | 3.04* | .05 | [.10,.45] |
| Previous experience | .10(.05) | .17 | 1.90 | .0055 | [-.004,.20] |
| Profile invest | .03(.05) | .05 | .57 | .002 | [-.07, .13] |
| Profile importance | -.05(.05) | -.08 | -.96 | .02 | [-.14, .05] |
| Social desirability tendencies | -.18(.23) | -.06 | -.76 | .003 | [-.64, .28] |
| Extraversion | .02(.03) | .05 | .66 | .002 | [-.04,.07] |
| Agreeableness | -.06(.04) | -.14 | -1.75 | .02 | [-.13,.008] |
| Conscientiousness | .004(.04) | .009 | .11 | .0004 | [-.06, .07] |
| Neuroticism | -.02(.03) | -.05 | -.61 | .002 | [-.08, .04] |
| Openness | .009(.03) | .02 | .27 | .004 | [-.06, .08] |
| **Step 2** | | | | | |
| Self-concept clarity | .05(.06) | .10 | .94 | .005 | [-.06, 16] |
| Vulnerable | .01(.07) | .02 | .22 | .0003 | [-.11, .14] |
| Grandiose | .33(.32) | .10 | 1.02 | .006 | [-.31,.96] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | .23(.11) | .90 | 2.20* | .03 | [.02, .44] |
| Gender × grandiose | -.20(.57) | -.08 | -.34 | .0006 | [-1.32(.93] |
| Gender × vulnerable | .28(.13) | .99 | 2.12* | .02 | [.02,.54] |
| Self-concept clarity × grandiose | .27(.25) | .09 | 1.10 | .006 | [-.22, .77] |
| Self-concept clarity × vulnerable | .14(.05) | .22 | 2.72* | .04 | [.04,.24] |
| **Step 4** | | | | | |

[4] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .98.

| | .46(.49) | | | | |
|---|---|---|---|---|---|
| Gender × self-concept clarity × grandiose | | .10 | .94 | .004 | [-.51,1.44] |
| Gender × self-concept clarity × vulnerable | .13(.10) | .15 | 1.23 | .0008 | [-.08, .33] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

Again, the main effect of gender was significant, $\beta = .24$, $t(159) = 3.04$, $p = .003$, such that female participants engaged in more behavioral photographic self-presentation. Furthermore, three significant two-way interactions were evident. First, gender interacted with self-concept clarity to predict behavioral photographic self-presentation, $\beta = .90$, $t(151) = 2.20$, $p = .03$. Second, the two-way interaction between gender and vulnerable narcissism was significant, $\beta = .99$, $t(151) = 2.12$, $p = .04$. Finally, self-concept clarity interacted with vulnerable narcissism to predict the participants' scores on behavioral photographic self-presentation, $\beta = .22$, $t(151) = 2.72$, $p = .007$.

I conducted moderation analysis (Model 1 in the PROCESS macro for SPSS; Hayes, 2013) to examine in greater depth the significant two-way interaction between vulnerable narcissism and gender. The effects are significant if the upper and lower bounds of the bias-corrected 95% confidence intervals do not contain zero, thus indicating significant moderation (Preacher & Hayes, 2008). The results indicated that the overall model was significant, R = .44, $R^2 = .20$, $F(19,153) = 2.06$, $p = .004$. The main effect of vulnerable narcissism was not significant, $\beta = -.19$, se = .11, $t(151) = -1.74$, $p = .08$, CIs [-.4233, .0273], whereas the main effect of gender was significant, $\beta = .21$, se = .09 , $t(151) = 2.28$, $p = .02$, CIs [.0279, .3968]. These results were qualified by a significant interaction between vulnerable narcissism and gender, $\beta = .28$, se = .13, $t(151) = 2.12$, $p = .03$, CIs [.0194, .538].

Simple slope analysis (Field, 2013) indicated that the effect of vulnerable narcissism on behavioral photographic self-presentation was not significant for male participants, $\beta$ = -.19, se =.11 , $t(153)$ = -1.74, $p$ = .08, CIs [-.4217, .0269], or for female participants, $\beta$ = .09, se = .07, $t(153)$ = 1.18, $p$ = .24, CIs [-.0572, .2278] (see Figure1). These non-significant simple slopes indicate evidence for a cross-over effect, which means that the (non-significant) effect of vulnerable narcissism on photographic self-presentation is opposite depending on the gender of the participants (Gail & Simon, 1985).



*Figure 1.* The moderation effect of gender on the relationship between vulnerable narcissism and behavioral photographic self-presentation

Next, I examined the significant two-way interaction between self-concept clarity and gender using moderation analysis (Model 1 in the PROCESS macro for SPSS; Hayes, 2013). The results indicated that the overall model was significant, R = .45, $R^2$ = .21, $F(19,151)$ = 2.06,

*p* = .009. The main effect of self-concept clarity was non-significant, β = -.11, se = .08, *t*(151) =

-1.26, *p* = .21, CIs [-.2721, .0603]. The main effect of gender was significant, β = .21, se = .09,

*t*(151) = 2.28, *p* = .02, CIs [.0279, .3968]. These results were qualified by a significant

interaction term, β = .23, se = .11, *t*(153) = 2.20, *p* = .03, CIs [.0240, .4429].

Simple slope analyses indicated that the effect of self-concept clarity on behavioral

photographic self-presentation was not significant for male participants, β = -.10, se =.08 ,

t(153) = -1.25, p = .21, CIs [-.2721, .0603], or female participants, β = .13, se = .07, *t*(153) =

1.79, *p* = .07, CIs [-.0126, .2678]. Again, these non-significant simple slopes indicated evidence

for a cross-over effect, which means that the effect of vulnerable narcissism on photographic

self-presentation is opposite depending on gender, although neither of the slopes was

significantly different from zero (Figure 2).
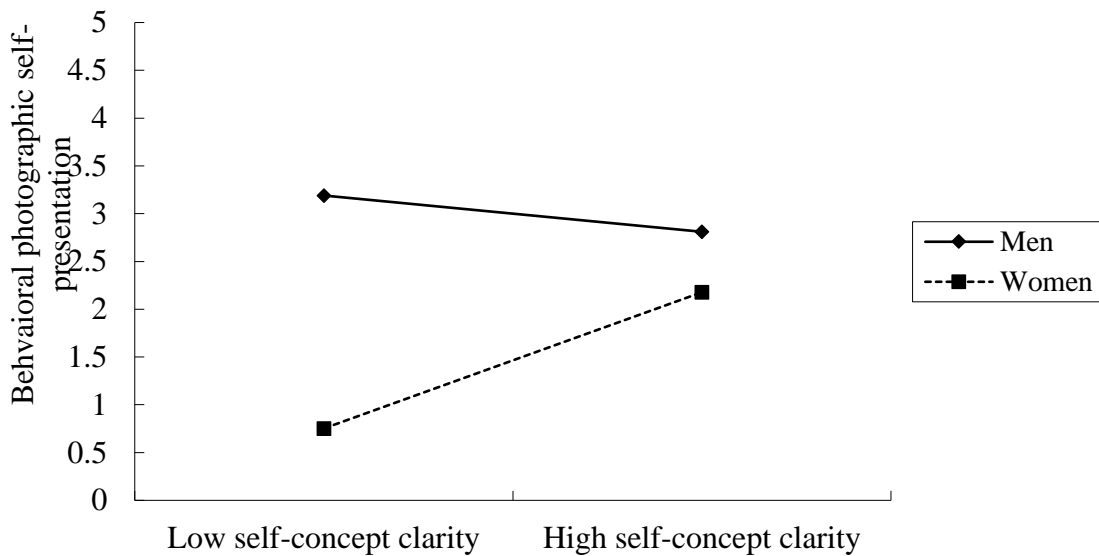
*Figure 2*. The moderation effect of gender on the relationship between self-concept clarity and behavioral photographic self-presentation

Finally, I tested the significant two-way interaction between self-concept clarity and vulnerable narcissism using moderation analysis (Model 1 in the PROCESS macro for SPSS; Hayes, 2013). Because I had no previous prediction for this hypothesis, the following analysis is exploratory. I tested whether self-concept clarity moderated the relationship between vulnerable narcissism and behavioral photographic self-presentation. Results of the moderation analysis indicated that the overall model was significant, R = .45, $R^2$ = .21, $F(19,151) = 2.06$, $p = .008$. The weighted average effect of self-concept clarity was non-significant, b = -.11, SE = .08, $t(151) = -1.26$, $p = .21$, CIs = [-.2754, .0573]. The weighted average effect for vulnerable narcissism was also non-significant, b = -.19, SE = .11, $t(151) = -1.74$, $p = .08$, CIs = [-.2721, .0603]. However, these results were qualified by a significant self-concept clarity and vulnerable narcissism interaction, b = .14, SE = .03, $t(166) = 2.72$, $p = .09$, CIs = [.0386, .2430].

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I then examined how vulnerable narcissism was related to behavioral photographic self-presentation at each level of self-concept clarity using simple slope analysis (Aiken, et al., 1991). The results indicated that at low levels of self-concept clarity, vulnerable narcissism significantly predicted participants' scores on photographic self-presentation, b = -.33, se = .13, $t(151) = -2.55$, $p = .02$, CIs = [-.5844, -.0736]. However, the effect of vulnerable narcissism was non-significant at average levels of self-concept clarity, b = -.19, SE = .12, $t(151) = -1.69$, $p = .09$, CIs = [-.4181, .0317], or high levels of self-concept clarity, b = -.06, se = .12, $t(151) = -.48$, $p = .63$, CIs = [-.2926, .1778] (Figure 3).
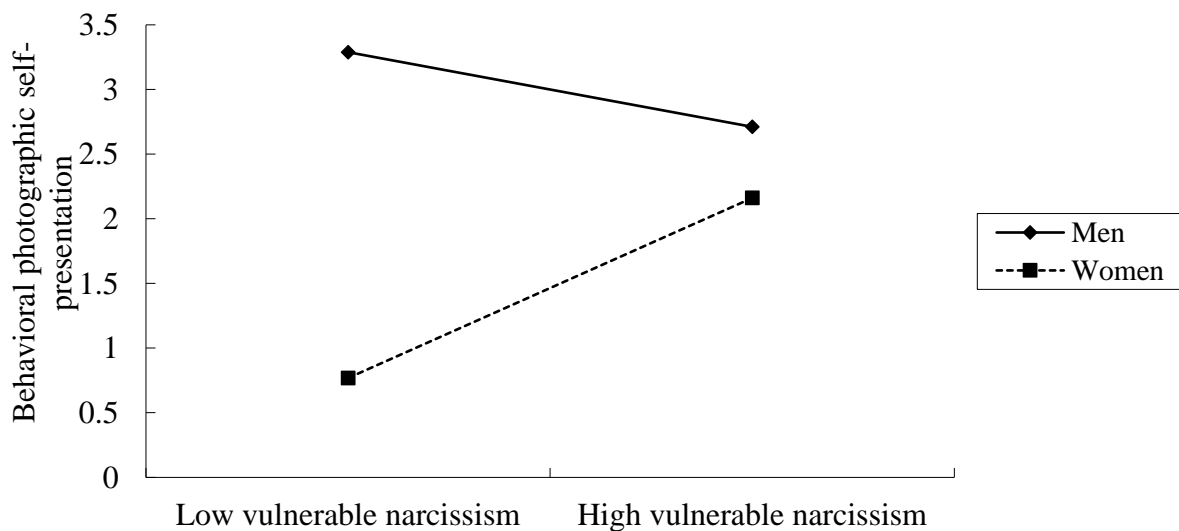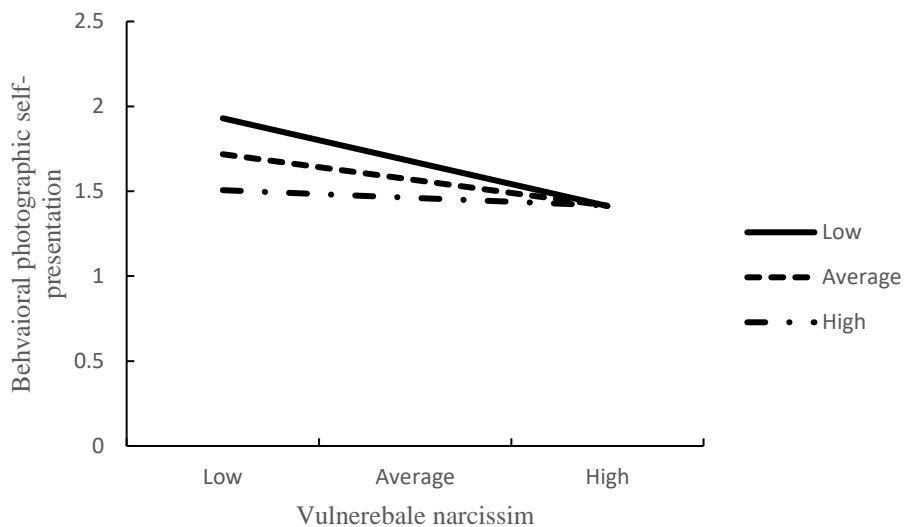


*Figure 3*. The moderating effect of self-concept clarity on the relationship between vulnerable narcissism and behavioral photographic self-presentation

*3.3.1.2 Inauthentic self-presentation as the outcome*

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I expected higher levels of vulnerable narcissism, higher levels of grandiose narcissism and lower levels of self-concept clarity to predict higher scores on the inauthentic self-presentation scale (H2). Zero-order correlation analyses indicated that the participants' scores on the inauthentic self-presentation scale were negatively correlated with their scores on self-concept clarity, $r(183) = -.25$, $p = .001$, positively correlated with the scores on vulnerable narcissism , $r(183) = .19$, $p = .009$, but not correlated with the scores on grandiose narcissism $r(183) = .09$, $p = .24$.

I then conducted a Multiple Linear Regression (MLR) model to examine whether the primary personality variables interact with each other to predict participants' scores on inauthentic self-presentation. In Step 1 of the model, the covariates contributed significantly to the model, $R = .39$, $R^2 = .16$, $\Delta R = .16$, $F(11, 170) = 2.87$ , $p = .002$, and explained 16% of the variance in inauthentic self-presentation variable. I entered the main effects in Step 2 of the model, $R = .43$, $R^2 = .19$, $\Delta R = .03$, $F(3, 167) = 2.01$, $p = .12$, all two-way interactions were entered in Step 3, $R = .45$, $R^2 = .21$, $\Delta R = .02$, $F(162, 5) = .82$, $p = .54$, and all the three-way interactions in Step 4 of the model, $R = .45$, $R^2 = .19$, $\Delta R = .002$, $F(160, 2) = .19$, $p = .83$. Contrary to my expectation, all of the main effects, two-way interactions, and three-way interactions were non-significant (Table 7)[5].

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[5] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .98.

Table 7. Multiple Linear Regression predicting inauthentic self-presentation

| Variable | ß(SE) | ß | *t* | $sr^2$ | **95% CI** |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Age | .04(.04) | .07 | .91 | .008 | [-.04, .12] |
| Gender | .19(.14) | .09 | 1.29 | .007 | [-.09 .47] |
| Previous experience | .18(.08) | .19 | 2.30* | .03 | [.02, .35] |
| Profile invest | -.12(.08) | -.13 | -1.56 | .01 | [-.28, .03] |
| Profile importance | .06(.08) | .06 | .77 | .003 | [-.09, .21] |
| Social desirability tendencies | -.67(.36) | -.14 | -1.8 | .02 | [-1.39, .04] |
| Extraversion | -.03(.04) | -.04 | -.59 | .002 | [-.11, .06] |
| Agreeableness | -.10(.06) | -.14 | -1.85 | .02 | [-.22, .01] |
| Conscientiousness | -.08(.05) | -.13 | -1.70 | .01 | [-.19, .03] |
| Neuroticism | -.01(.05) | -.012 | -.16 | .0001 | [-.10, .08] |
| Openness | .01(.05) | -.002 | -.03 | .000004 | [-.09, .12] |
| **Step 2** | | | | | |
| Self-concept clarity | -.14(.09) | -.16 | -1.74 | .01 | [-.32, .03] |
| Vulnerable | .10(.10) | .09 | .98 | .005 | [-.10, .31] |
| Grandiose | .41(.51) | .07 | .82 | .003 | [-.60, 1.42] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | -.19(.17) | -.48 | -1.18 | .007 | [-.53, .15] |
| Gender × grandiose | -.11(.94) | -.01 | -.06 | .00002 | [-1.96, 1.74 |
| Gender × vulnerable | -.11(.22) | -.19 | -.43 | .0009 | [-.54, .32] |
| Self-concept clarity × grandiose | -.47(.39) | -.08 | -1.07 | .006 | [-1.26, .31] |
| Self-concept clarity × vulnerable | .09(.08) | .08 | 1.07 | .006 | [-.08, .25] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | -.21(.79) | -.03 | -.26 | .005 | [-1.37,1.78] |

| Gender × self-concept clarity × vulnerable | -.08(.17) | -.06 | -.50 | .001 | [-.26,.42] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

### 3.3.1.3 Self-reported assertive self-presentation as the outcome

I expected grandiose narcissism to predict the scores on the measure of self-reported assertive self-presentation (H3). Contrary to my expectations, participants' scores on self-reported assertive self-presentation were not correlated with grandiose narcissism, $r(185) = .05$, $p = .47$, self-concept clarity, $r(185) = -.09$, $p = .20$, or vulnerable narcissism $r(185) = .09$, $p = .21$.

I then conducted a Multiple Linear Regression (MLR) model to examine whether grandiose narcissism predicted the participants' scores on self-reported assertive self-presentation. In Step 1 of the model, the covariates were entered, R = .21, $R^2 = .05$, ΔR = .05, $F(11, 170) = .73$, $p = .71$. All the main effects were entered in Step 2, R = .26, $R^2 = .06$, ΔR = .02, $F(3, 167) = 1.22$, $p = .31$, the two-way interaction terms were entered in Step 3, R = .30, $R^2 = .09$, ΔR = .03, $F(5, 162) = .96$, $p = .46$, and the three-way interactions terms were entered in Step 4, R = .31, $R^2 = .09$, ΔR = .002, $F(2, 160) = .16$, $p = .87$. However, all of the main effects and interactions were non-significant (Table 8)[6].

Table 8. Multiple Linear Regression predicting assertive self-presentation

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[6] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .98.

| Variable | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Age | .07(.06) | .09 | 1.11 | .007 | [-.05, .18] |
| Gender | .34(.21) | .12 | 1.56 | .01 | [-.08, .76] |
| Previous experience | -.04(.12) | -.01 | -.17 | .0002 | [-.28, .21] |
| Profile invest | -.04(.12) | -.03 | -.037 | .0007 | [-.28, .19] |
| Profile importance | .11(.11) | .08 | .96 | .005 | [-.11, .33] |
| Social desirability tendencies | -.27(.53) | -.03 | -.41 | .0009 | [-1.33,.78] |
| Extraversion | -.06(.06) | -.08 | -1.02 | .006 | [-.19,.06] |
| Agreeableness | .04(.08) | .03 | .38 | .0008 | [-.13,.21] |
| Conscientiousness | -.11(.08) | -.11 | -1.34 | .01 | [-.27, .05] |
| Neuroticism | -.04(.07) | -.06 | -.70 | .003 | [-.18, .09] |
| Openness | -.04(.08) | -.04 | -.54 | .002 | [-.19, .12] |
| **Step 2** | | | | | |
| Self-concept clarity | -.10(.13) | -.10 | -.96 | .005 | [-.36, .16] |
| Vulnerable | .17(.15) | .095 | 1.011 | .006 | [-.14, .47] |
| Grandiose | .67(.76) | .095 | 1.01 | .006 | [-.82, 2.17] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | -.21(.25) | -.35 | -.81 | .004 | [-.29, .71] |
| Gender × grandiose | 1.54(1.38) | .15 | 1.12 | .004 | [-4.28, 1.18] |
| Gender × vulnerable | .27(.31) | .37 | .77 | .002 | [-.90, .36] |
| Self-concept clarity × grandiose | -.53(.59) | -.07 | -.89 | .006 | [-1.69, .62] |
| Self-concept clarity × vulnerable | .08(.12) | .05 | .62 | .003 | [-.16, .32] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | -.55(1.18) | -.45 | -.52 | .002 | [-1.79,2.87] |
| Gender × self-concept clarity × vulnerable | .07(.25) | .39 | .25 | .0004 | [-.56,.43] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$

### 3.3.1.4 Self-disclosure as the outcome

I predicted that participants' scores on self-concept clarity and grandiose narcissism would significantly predict the scores on self-reported and behavioral self-disclosure in their

online dating profiles (H4). Zero-order correlation analysis indicated that participants' scores on self-reported self-disclosure were positively correlated with self-concept clarity, $r(183) = .21$, $p = .004$, but not correlated with grandiose narcissism, $r(183) = .03$, $p = .72$, or vulnerable narcissism, $r(183) = -.08$, $p = .31$. Further, participants' scores on behavioral self-disclosure were positively correlated with self-reported self-disclosure $r(183) = .25$, $p = .001$, self-concept clarity, $r(183) = .15$, $p = .04$, and grandiose narcissism, $r(183) = .16$, $p = .03$, but were not correlated with vulnerable narcissism, $r(183) = -.12$, $p = .11$.

I then conducted a Multiple Linear Regression (MLR) model to examine whether self-concept clarity interacted with grandiose narcissism and vulnerable narcissism to predict participants' scores on self-reported self-disclosure. In Step 1 of the model, the covariates were entered, $R = .32$, $R^2 = .09$, $\Delta R = .09$, $F(11,170) = 1.69$, $p = .08$, the main effects were entered in Step 2, $R = .36$, $R^2 = .13$, $\Delta R = .06$, $F(3,167) = 2.16$, $p = .09$, the two-way interactions were entered in Step 3, $R = .40$, $R^2 = .16$, $\Delta R = .03$, $F(162, 5) = 1.12$, $p = .35$, and the three-way interactions were entered in Step 4, $R = .40$, $R^2 = .16$, $\Delta R = .001$, $F(160, 2) = .09$, $p = .92$ (Table 9)[7]. An examination of the main effects indicated that the main effect of self-concept clarity was significant, $\beta = 23$, $t(172) = 2.32$, $p = .02$. In addition, there was a marginally significant two-way interaction between self-concept clarity and vulnerable narcissism, $\beta = 16$, $t(172) = 1.98$, $p = .05$.

_____

[7] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .98.

Table 9. Multiple Linear Regression predicting self-reported self-disclosure

| Variable | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Age | .06(.05) | .06 | .69 | .003 | [-.04, .16] |
| Gender | -.17(.18) | -.07 | -.86 | .004 | [-.53, .19] |
| Previous experience | .02(.11) | .02 | .19 | .0002 | [-.19, .23] |
| Profile invest | .16(.11) | .13 | 1.53 | .01 | [-.05, .36] |
| Profile importance | .01(.09) | .01 | .14 | .0001 | [-.18, .21] |
| Social desirability tendencies | .72(.46) | .13 | 1.61 | .01 | [-.18, 1.63] |
| Extraversion | .01 (.06) | .01 | .16 | .0001 | [-.09, .12] |
| Agreeableness | -.07(.07) | -.08 | -1.03 | .006 | [-.22, .07] |
| Conscientiousness | .08(.07) | .10 | 1.36 | .009 | [-.06, .22] |
| Neuroticism | -.08(.06) | -.12 | -1.54 | .01 | [-.20, .03] |
| Openness | .07(.06) | .09 | 1.23 | .008 | [-.07, .20] |
| **Step 2** | | | | | |
| Self-concept clarity | .27(.11) | .24 | 2.41* | .03 | [.05, .49] |
| Vulnerable | .15(.13) | .11 | 1.37 | .005 | [-.11, .41] |
| Grandiose | -1.02(.65) | -.14 | -1.57 | .01 | [-2.30, .26] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | -.002(.22) | -.05 | -.13 | .00009 | [-.43, .43] |
| Gender × grandiose | -.81(1.18) | -.15 | -.71 | .003 | [-1.52,3.14] |
| Gender × vulnerable | .16(.27) | .26 | .56 | .002 | [-.69, .38] |
| Self-concept clarity × vulnerable | .23(.11) | .17 | 2.15* | .02 | [.02, .44] |
| Self-concept clarity × grandiose | .36(.49) | .04 | .55 | .002 | [-.63, 1.34] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | .35(1.01) | .31 | .36 | .0007 | [-1.64, 2.33] |
| Gender × self-concept clarity × vulnerable | .05(.22) | .34 | .22 | .0003 | [-.38,.47] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

A moderation analysis (Model 1 in the PROCESS macro for SPSS; Hayes, 2013) was then conducted to test whether vulnerable narcissism moderated the association between the self-concept clarity and self-reported self-disclosure. Results of the moderation analysis indicated that the overall model was marginally significant, $R = .40$, $R^2 = .19$, $F(19,162) = 1.63$, $p = .05$. The weighted average effect of vulnerable narcissism on self-disclosure, $b = .02$, $SE = .24$, $t(162) = .10$, $p = .92$, CIs = [-.4448, .4924], and the weighted average effect of self-concept clarity on self-disclosure, $b = .24$, $SE = .17$, $t(162) = 1.39$, $p = .17$, CIs = [-.1024, .5865], were both non-significant. These results were qualified by a significant self-concept clarity and vulnerable narcissism interaction, $b = .23$, $SE = .11$, $t(162) = 2.15$, $p = .03$, CIs = [.0186, .4352].

I then examined how self-concept clarity predicted self-disclosure at each level of vulnerable narcissism using simple slope analysis (Aiken, et al., 1991). The results indicated that at low levels of vulnerable narcissism, there was no significant effect of self-concept clarity on self-disclosure, $b = .09$, $se = .14$, $t(162) = .64$, $p = .53$, CIs = [-.1903, .3708]. The effect of self-concept clarity was also non-significant at average levels of vulnerable narcissism, $b = .23$, $SE = .17$, $t(162) = 1.36$, $p = .17$, CIs = [-.1046, .5845]. On the other hand, the effect of self-concept clarity was significant at high levels of vulnerable narcissism, $b = .42$, $se = .19$, $t(162) = 2.22$, $p = .03$, CIs = [.0452, .7890]. (Figure 4).
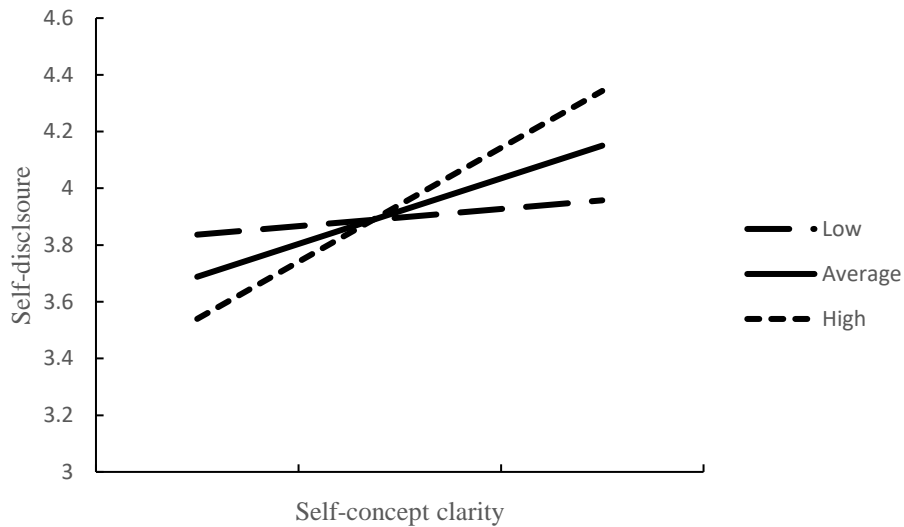
*Figure 4.* The moderation effect of vulnerable narcissism on the relationship between self-concept clarity and self-reported self-disclosure

Next, a Multiple Linear Regression (MLR) model was conducted with the verbal self-disclosure (as measured by coders' ratings) as the outcome variable. The covariates were entered in the Step 1, R = .31, $R^2$ = .09, $\Delta R$ = .09, $F(11,170)$ = 1.65, $p$ = .08, the main effects of the primary personality variables were entered in Step 2, R = .36, $R^2$ = .13, $\Delta R$ = .03, $F(3, 167)$ = 1.96, $p$ = .12, the two-way interactions were entered in Step 3, R = .37, $R^2$ = .14, $\Delta R$ = .01, $F(5,162)$ = .139, $p$ = .85, and all the higher-order terms were entered in Step 4, R = .38, $R^2$ = .03, $\Delta R$ = .006, $F(2, 160)$ = .57, $p$ = .56. Regardless of the significant zero-order correlations between behavioral self-disclosure and the two primary predictor variables of grandiose

narcissism and self-concept clarity, the results obtained from the regression model indicated that none of the effects were significant (Table 10)[8].

Table 10. Multiple Linear Regression predicting behavioral self-disclosure

| Variable | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Age | .04(.03) | .13 | 1.44 | .01 | [-.02, .10] |
| Gender | -.15(.11) | -.11 | -1.43 | .01 | [-.36, .06] |
| Previous experience | .03(.06) | .04 | .46 | .001 | [-.09, .15] |
| Profile invest | .14(.05) | .20 | 2.36* | .03 | [.02, .25] |
| Profile importance | -.03(.06) | -.04 | -.48 | .001 | [-.14, .08] |
| Social desirability tendencies | -.05(.27) | -.02 | -.19 | .0002 | [-.58, .47] |
| Extraversion | .04(.03) | .09 | 1.29 | .009 | [-.02, .10] |
| Agreeableness | -.07(.04) | -.13 | -1.63 | .01 | [-.15, .01] |
| Conscientiousness | .03(.04) | .07 | .87 | .004 | [-.04, .11] |
| Neuroticism | -.01(.03) | -.03 | -.39 | .0008 | [-.08, .05] |
| Openness | .02(.04) | .03 | .39 | .0008 | [-.06, .09] |
| **Step 2** | | | | | |
| Self-concept clarity | .07(.07) | .09 | .99 | .005 | [-.06, .19] |
| Vulnerable | -.11(.08) | -.13 | -1.39 | .01 | [-.25, .04] |
| Grandiose | .29(.38) | .07 | .76 | .003 | [-.46, 1.03] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | .09(.13) | .28 | .67 | .002 | [-.34, .17] |
| Gender × grandiose | .27(.69) | .08 | .39 | .0008 | [-1.64, 1.09] |
| Gender × vulnerable | .18(.16) | .53 | 1.141 | .007 | [-.49, .13] |
| Self-concept clarity × grandiose | -.06(.29) | -.02 | -.20 | .0002 | [-.64, .52] |

[8] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .98.

| | | | | | |
|---|---|---|---|---|---|
| Self-concept clarity × vulnerable | -.02(.06) | -.02 | -.24 | .0003 | [-.14, .11] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | .36(.59) | .52 | .61 | .002 | [-.80, 1.52] |
| Gender × self-concept clarity × vulnerable | .11(.13) | 1.28 | .85 | .004 | [-.14, .35] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

### 3.3.1.5 Personal dating desirability (PDD) as the outcome

I predicted that high levels of grandiose narcissism and high levels of self-concept clarity would significantly predict participants' scores on the personal dating desirability scale (H5). At zero-order correlation analysis, the participants' scores on personal dating desirability were positively correlated with grandiose narcissism, $r(183) = .43$, $p < .001$, and self-concept clarity, $r(183) = .31$, $p < .001$, but were negatively correlated with vulnerable narcissism, $r(183) = -.17$, $p = .02$. These results suggested that those participants with higher levels of grandiose narcissism, higher levels of self-concept clarity and lower levels of vulnerable narcissism considered their dating profiles more appealing for other daters in the study.

In order to test how the primary personality variables in the study interacted with each other to affect self-perceived dating desirability scores, I conducted Multiple Linear Regression (MLR) analysis. In Step 1 of the model, the covariates were entered, R = .42, $R^2$ = .18, ΔR = .18, $F(11, 169) = 3.26$ , $p < .001$, and significantly explained 18% of the variance in self-perceived dating desirability. In Sep 2, the main effects were entered, R = .54, $R^2$ = .29, ΔR = .12, $F(3, 166) = 9.67$ , $p < .001$, and significantly explained 12% of the variance in the personal dating desirability scores. In Step 3, the two-way interactions were entered, R = .57, $R^2$ = .32, ΔR = .03, $F(5, 161) = 1.55$ , $p = .18$, and in Step 4, the three-way interactions were entered, R =

.58, $R^2 = .33$, $\Delta R = .01$, $F(6, 159) = .53$, $p = .78$. Overall, the results indicated that grandiose narcissism emerged as the only significant predictor of personal dating desirability, $\beta = 36$, $t(168) = 4.37$, $p < .001$ (Table 11)[9].

| Table 11. Multiple Linear Regression predicting personal dating desirability | | | | | |
|---|---|---|---|---|---|
| **Step 1** | ß(SE) | ß | *t* | $sr^2$ | **95% CI** |
| Age | -.06(.04) | -.17 | -2.16* | .02 | [-.13, .01] |
| Gender | .17(.13) | .09 | 1.27 | .008 | [-.09, .43] |
| Previous experience | .19(.08) | .21 | 2.64* | .03 | [.04, .35] |
| Profile invest | .05(.07) | .06 | .68 | .002 | [-.09, .19] |
| Profile importance | .07(.07) | .08 | 1.04 | .005 | [-.07, .21] |
| Social desirability tendencies | -.43(.33) | -.09 | -1.15 | .007 | [-1.09, .24] |
| Extraversion | .03(.04) | .06 | .80 | .003 | [-.04, .11] |
| Agreeableness | -.009(.05) | -.02 | -.29 | .0004 | [-.11, .09] |
| Conscientiousness | .18(.05) | .28 | 3.73*** | .07 | [.08, .28] |
| Neuroticism | -.13(.04) | -.24 | -3.23* | .05 | [-.22, -.05] |
| Openness | .01(.05) | .03 | .03 | .0006 | [-.09, .11] |
| **Step 2** | | | | | |
| Self-concept clarity | .10(.08) | .10 | 1.17 | .006 | [-.05, .26] |
| Vulnerable | -.11(.09) | -.11 | -1.37 | .008 | [-.29, .07] |
| Grandiose | 1.86(.44) | .36 | 4.37*** | .08 | [.98, 2.75] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | -.14(.14) | -.37 | -.99 | .004 | [-.43,.16] |
| Gender × grandiose | -.49(.81) | -.12 | -.65 | .002 | [-2.09,1.11] |
| Gender × vulnerable | .14(.18) | .29 | .69 | .002 | [-.51, .23] |
| Self-concept clarity × grandiose | .55(.3) | .11 | 1.52 | .02 | [-.13, 1.23] |

[9] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .98.

| | | | | | |
|---|---|---|---|---|---|
| Self-concept clarity × vulnerable | .11(.07) | .10 | 1.43 | .004 | [-.03, .25] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | .98(.68) | 1.39 | -.16 | .008 | [-.18,.38] |
| Gender × self-concept clarity × vulnerable | -.04(.15) | -.36 | -.27 | .003 | [-.33,.25] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

### 3.3.1.6 Preference for a short-term relationship partner as the outcome

I predicted that both grandiose and vulnerable narcissism would be associated with seeking short-term relationship partners (H6). Participants' scores on the preference for short-term relationship partners were positively correlated with grandiose narcissism, $r(183) = .20$, $p = .006$, but were not significantly correlated with vulnerable narcissism $r(183) = .005$, $p = .95$, or with self-concept clarity, $r(183) = -.02$, $p = .82$.

In order to test how the primary variables in the study interact with each other to affect the preference for a short-term relationship partner, I conducted a Multiple Linear Regression (MLR) analysis. In Step 1 of the model, the covariates were entered, $R = .49$, $R^2 = .25$, $\Delta R = .25$, $F(9, 171) = 6.18$, $p < .001$, and significantly explained 25% of the variance in the outcome variable. In Step 2, the main effects were entered, $R = .54$, $R^2 = .29$, $\Delta R = .05$, $F(3, 168) = 3.51$, $p = .02$, and significantly explained 4% of the variance in the preference for the short-term relationship partner. In Step 3, the two-way interactions were entered, $R = .58$, $R^2 = .34$, $\Delta R = .05$, $F(5, 163) = 2.37$, $p = .04$, and explained almost 5% of the variance. In the final Step of the

model, all the three-way interactions were entered, $R = .56$, $R^2 = .365$ $\Delta R = .01$, $F(2, 161) = 1.58$, $p = .21$ (Table 12)[10].

Results indicated that the main effect of grandiose narcissism was significant, $\beta = .24$, $t(168) = 2.98$, $p = .003$, such that those participants with higher levels of grandiose narcissism were more interested in dating romantic partners for short-term relationship purposes. Moreover, a significant two-way interaction between grandiose narcissism and gender emerged, $\beta = .52$, $t(168) = 2.78$, $p = .006$. Finally, there was a marginally significant two-way interaction between self-concept clarity and gender, $\beta = -.73$, $t(168) = -1.99$, $p = .05$, which was not interpreted.

Table 12. Multiple Linear Regression predicting short-term relationship partner

| Variable | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Age | -.002(.05) | -.004 | -.054 | .00009 | [-.09,.09] |
| Gender | -.68(.17) | -.29 | -4.13*** | .08 | [-1.01, -.35] |
| Previous experience | .37(.09) | .30 | 3.93*** | .07 | [.18, .56] |
| Social desirability tendencies | -.19(.42) | -.03 | -.43 | .0008 | [1.02,.63] |
| Extraversion | .05(.05) | .07 | 1.05 | .004 | [-.05,15] |
| Agreeableness | .05(.06) | .09 | .69 | .002 | [-.08,17] |
| Conscientiousness | .02(.06) | .02 | .25 | .0003 | [-.10, 15] |
| Neuroticism | -.06(.05) | -.08 | -1.16 | .006 | [.04, -.17] |
| Openness | .02(.06) | .02 | .23 | .0002 | [-.10,.15] |

[10] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .99.

**Step 2**

| | | | | | |
|---|---|---|---|---|---|
| Self-concept clarity | -.19(.10) | -.16 | -1.89 | .02 | [-.39,.01] |
| Vulnerable | -.03(.12) | -.01 | -.18 | .0001 | [-.26,.21] |
| Grandiose | 1.76(.59) | .24 | 2.98* | .04 | [.60,2.91] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | .37(.19) | .73 | 1.99* | .02 | [-.01, .75] |
| Gender × grandiose | -2.86(1.04) | -.52 | -2.76** | .03 | [-4.91,-.79] |
| Gender × vulnerable | .37(.24) | .62 | 1.53 | .009 | [-.11, .84] |
| Self-concept clarity × grandiose | -.57(.44) | -.08 | -1.30 | .006 | [-1.45, .30] |
| Self-concept clarity × vulnerable | .02(.09) | .02 | .27 | .0002 | [-.17, .20] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | -1.40(.88) | -1.19 | -1.61 | .01 | [-3.13,.34] |
| Gender × self-concept clarity × vulnerable | .16(.18) | 1.08 | .82 | .004 | [-.22,.53] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

To probe the significant two-way interaction between grandiose narcissism and gender, I conducted a moderation analysis (PROCESS macro model 1, Hayes, 2013) with the covariates in the model. The overall model was significant, R = .58, $R^2$ = .34, $F(17, 163)$ = 4.39, $p < .001$. There was a main effect of grandiose narcissism, β = 3.56, SE = .87, $t(163)$ = 4.09, p = .0001, CIs [1.8428, 5.2690], and a significant main effect of gender, β = -.85, SE = .17, $t(163)$ = -5.05, $p < .0001$, CIs [-1.1798, -.5152]. There was also a significant two-way interaction between gender and grandiose narcissism, β = -2.85, SE = 1.04, $t(163)$ = -2.74, $p$ = .007, CIs [-4.9135, -.7987].

The results of this analysis indicated that the effect of grandiose narcissism on the preference for a short-term relationship partner was significant for male participants, β = 3.56, SE = .87, $t(163)$ = 4.09, $p$ = .0001, CIs [1.8428, 5.2690], such that in the male participants,

higher levels of grandiose narcissism were significantly associated with a greater preference for short-term relationship partners. However, the same association was not significant for the female participants, $\beta = .69$, SE $= .70$, $t(163) = .99$, $p = .32$, CIs [-.6853, 2.0850] (Figure 5).
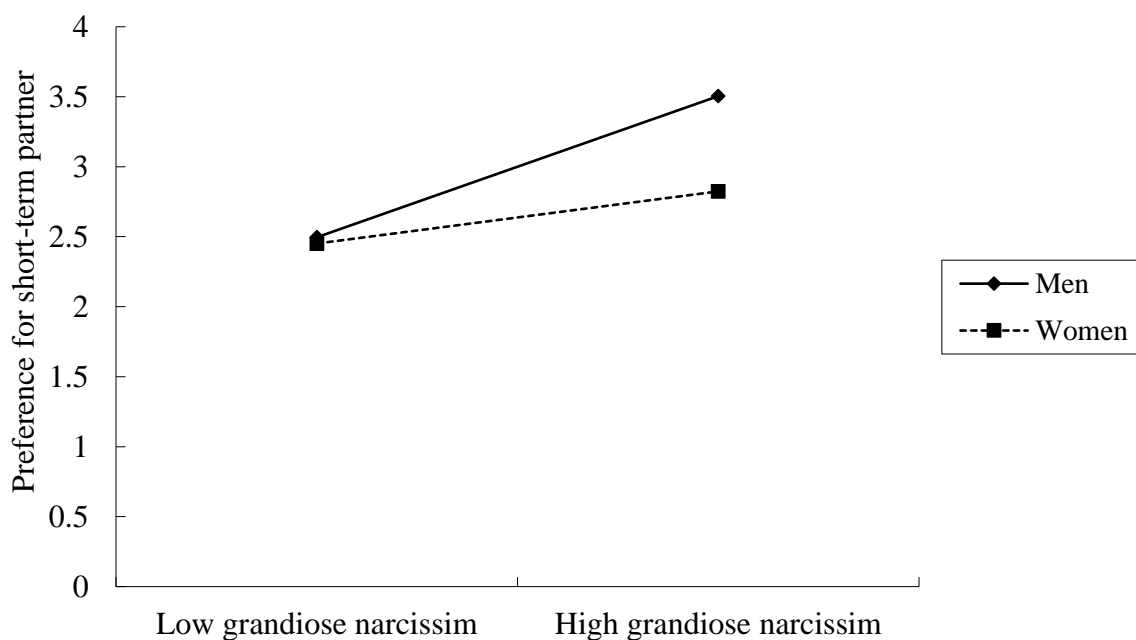


*Figure 5*. Gender as a moderator between grandiose narcissism and preferences for short-term relationship partner

Next, I conducted a moderation analysis using the Hayes (2013, 2014) PROCESS macro model 1, in order to explore how gender moderated the association between self-concept clarity and preference for short-term relationship partners. The overall model was significant, R $= .58$, $R^2 = .34$, $F(19, 161) = 4.39$, $p < .001$. The main effect of self-concept clarity was significant, $\beta = -.41$, SE $= .15$, $t(164) = -2.69$, $p = .008$, CIs [-.7079, -.1090], but the main effect of gender was

non-significant β = -2.72, SE = 1.44, $t(164)$ = -1.89, $p$ = .06, CIs [-5.5668, .1239]. These results

were qualified by a significant interaction between gender and self-concept clarity, β = .38, SE

= .19, $t(164)$ = 2.03, $p$ = .04, CIs [.0101, .7587].

Simple slope analysis indicated that the effect of self-concept clarity on the preference

for short-term relationship partners was significant for the male participants, β = -.41, SE = .15,

$t(169)$ = -2.69, $p$ = .008, CIs [-.7079, -.1090], such that higher self-concept clarity was

significantly associated with lower preference for short-term partner. However, for the female

participants, the effect of grandiose narcissism on the preference for short-term relationship

partners was non-significant, β = -.02, SE = .12, $t(169)$ = -.19, $p$ = .85, CIs [-.2681, .2200]

(Figure 6).
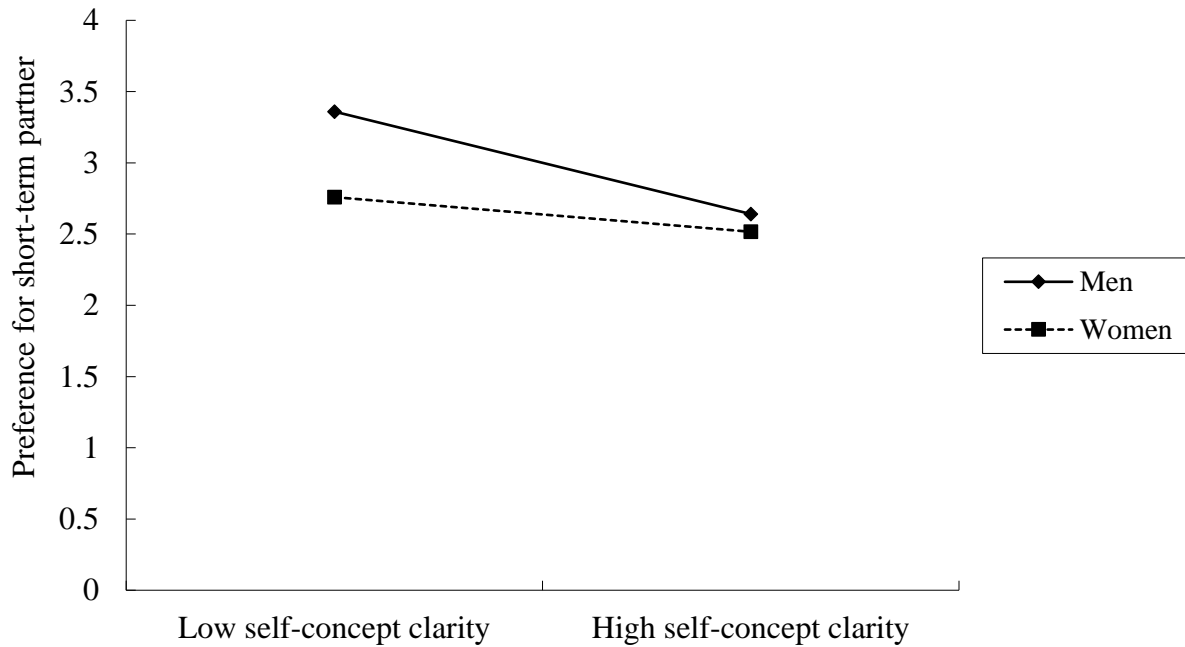
*Figure 6.* Gender moderated the association between self-concept clarity and preferences for short-term relationship partner

*3.3.1.7 Use of first-person singular pronouns as the outcome variable*

To test this hypothesis, the LIWC category of *first-person singular pronouns* was used, the data for which were normally distributed in this sample (M = 11.41, SD = 2.06) (Figure 7). I hypothesized that both grandiose narcissism and self-concept clarity should be positively correlated with more frequent use of first-person pronouns when participants were completing their online dating profiles (H7). However, the zero-order correlations did not support these predictions.
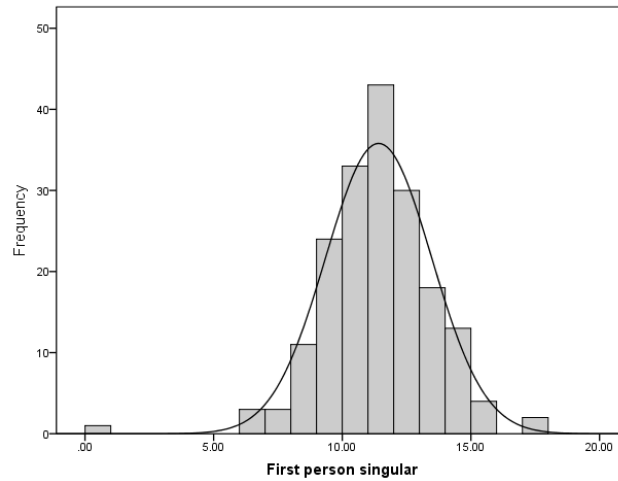
Figure 7. Histogram of the variable "first-person singular"

I then conducted a Multiple Linear Regression (MLR) model with the *first-person*

*singular* word count as the outcome variable. The covariates were entered in Step 1, R = .36, $R^2$

= .13, $\Delta R$ = .13, $F(8,174)$ = 3.14, $p$ = .002, the main effects of the primary personality variables

were entered in Step 2, R = .39, $R^2$ = .15, $\Delta R$ = .03, $F(3, 171)$ = 1.88, $p$ = .13, the two-way

interactions were entered in Step 3, R = .44, $R^2$ = .19, $\Delta R$ = .04, $F(5,166)$ = 1.58, $p$ = .17, and

finally all the higher order interaction terms were entered in Step 4, R = .46, $R^2$ = .21, $\Delta R$ = .02,

$F(2, 164)$ = 2.01, $p$ = .14 (Table 13)[11].

The results revealed that the main effect of self-concept clarity was significant, $\beta$ = .19,

$t(166)$ = 2.06, $p$ = .02, indicating that those participants with higher levels of self-concept clarity

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[11] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .99.

more frequently used first-person singular pronouns. The three-way interaction between gender and self-concept clarity and vulnerable narcissism was only marginally significant, $\beta = 2.78$, $t(166) = 1.95$, $p = .05$, and therefore was not interpreted.

Table 13. Multiple Linear Regression predicting first-person singular pronoun use

| Step 1 | ß(SE) | ß | t | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| Age | -.08(.08) | -.07 | -.94 | .004 | [-.23, .08] |
| Gender | 1.11(.33) | .25 | 3.38*** | .06 | [.46, 1.75] |
| Social desirability tendencies | .71(.83) | .07 | .86 | .004 | [-.92, 2.34] |
| Extraversion | -.27(.10) | -.20 | -2.73* | .04 | [-.08, -.17] |
| Agreeableness | .02(.13) | .01 | .17 | .0001 | [-.24,.28] |
| Conscientiousness | .09(.12) | .06 | .75 | .003 | [-.149, .33] |
| Neuroticism | .06(.11 | .05 | .59 | .002 | [-.15, .28] |
| Openness | -.10(.12) | -.06 | -.83 | .004 | [-.34, .14] |
| **Step 2** | | | | | |
| Self-concept clarity | .41(.21) | .19 | 2.06* | .02 | [.02, .81] |
| Vulnerable | .19(.24) | .07 | .82 | .003 | [-.27, .66] |
| Grandiose | .58(1.15) | .04 | .50 | .001 | [-1.69, 2.84] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | -.65(.39) | -.66 | -1.66 | .01 | [-1.42,.12] |
| Gender × grandiose | .30(2.12) | .03 | .13 | .00009 | [-3.91,4.48,] |
| Gender × vulnerable | -.55(.49) | -.49 | -1.12 | .006 | [-1.53, .43] |
| Self-concept clarity × grandiose | 1.46(.89) | .12 | 1.65 | .01 | [-.29, 3.21] |
| Self-concept clarity × vulnerable | .26(.19) | .10 | 1.36 | .009 | [-.12, .63] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | -.72(1.79) | -.32 | -.40 | .0008 | [-4.25,2.82,] |
| Gender × self-concept clarity × vulnerable | -.75(.39) | -2.78 | -1.95 | .02 | [-1.51, .01] |

*Note*. ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

These results were not totally unexpected. science participants were explicitly asked to talk about themselves in their dating profile. This instructed task might have resulted in different pattern of word use than what can usually be observed in daily conversations. Therefore, participants who had higher levels of self-concept clarity should have a more elaborated network of self-knowledge, resulting in more frequent use of first-person singular pronouns.

Thus, I suspected that more interesting result might be obtained if I only consider the percentage of first-person singular words in the "*I appreciate it when my date is ....*" section of participant's dating profiles. If individuals with high grandiose narcissism are self-focused and self-absorbed, they should only focus on what they want and what they need, when describing their ideal romantic partner[12]. I then conducted a Multiple Linear Regression (MLR) model with the *first-person singular* word count only in "I appreciate it when my date is ...." section of participant's dating profiles as the outcome variable. The covariates were entered in Step 1, $R = .11$, $R^2 = .01$, $\Delta R = .01$, $F(8,174) = .26$, $p = .97$, the main effects of the primary personality variables were entered in Step 2, $R = .15$, $R^2 = .02$, $\Delta R = .01$, $F(3, 171) = .63$, $p = .59$, the two-way interactions were entered in Step 3, $R = .23$, $R^2 = .05$, $\Delta R = .03$, $F(5,166) = 1.07$, $p = .34$,

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[12] Two samples of participants responses that shows excessive focus on one's needs are presented here. (1) Intelligence is a major turn on for me. It really helps to have someone who wants to talk about cool things like science and philosophy and the universe. I'm not a super social person myself, so someone a little more outgoing can help keep conversation flowing, (2) I appreciate when my date is generous and eventful. I like to have a good time and be able to hold a conversation with a person. I do not like to sit in silence. I want my date to be a gentleman and hold the door open for me or pull my chair out at a restaurant.

and finally all the higher order interaction terms were entered in Step 4, R = .26, $R^2$ = .07, $\Delta R$ = .02, $F(2, 164)$ = 1.43, $p$ = .24 (Table 14)[13]. None of the results were significant.

Table 14. Multiple Linear Regression predicting first person singular pronoun use in the ideal partner section of participant's dating profiles

| Step 1 | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| Age | .01(.02) | .04 | .49 | .001 | [-.04, .06] |
| Gender | .06(.10) | .05 | .65 | .002 | [-.13, .26] |
| Social desirability tendencies | -.09(.25) | -.03 | -.35 | .0007 | [-.58, .40] |
| Extraversion | -.01(.03) | -.03 | -.36 | .0007 | [-.07,.05] |
| Agreeableness | -.01(.04) | -.02 | -.28 | .0004 | [-.09, .07] |
| Conscientiousness | -.02(.04) | -.04 | -.46 | .001 | [-.09, .06] |
| Neuroticism | .02(.03) | .04 | .52 | .002 | [-.05,.08] |
| Openness | -.01(.04) | -.03 | -.37 | .0008 | [-.09, .06] |
| **Step 2** | | | | | |
| Self-concept clarity | -.08(.06) | -.13 | -1.32 | .01 | [-.20, .04] |
| Vulnerable | -.06(.07) | -.08 | -.87 | .004 | [-.20,.08] |
| Grandiose | .19(.35) | .05 | .54 | .002 | [-.49, .88] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | .001(.12) | .001 | .008 | .00001 | [-.24,.24] |
| Gender × grandiose | -.97(.6) | -.21 | -1.49 | .01 | [-2.25,.32) |
| Gender × vulnerable | -.08(.15) | -.09 | -.55 | .002 | [-.38,.22] |
| Self-concept clarity × grandiose | .34(.27) | .09 | 1.25 | .009 | [-.19,.87] |
| Self-concept clarity × vulnerable | .05(.06) | .07 | .92 | .005 | [-.06,.17] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | -.48(.55) | -.10 | -.88 | .004 | [-1.56,.60] |

[13] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .12. Because of this small effect size, the results should be interpreted with caution.

| Gender × self-concept clarity × vulnerable | .18(.12) | .19 | 1.48 | .01 | [-.06,.11] |

*3.3.1.8. Usage of Sexual Words as a Cue for Interest in Sexual Intimacy as the outcome variable*

From LIWC's main category Biological Processes, the relevant category of sexual words was selected to test this hypothesis. The data for the use of sexual words were positively skewed (Figure 8). Because transformations did not help to improve the normality of this variable, I used the original variable in the analyses (M = .08, SD = 15).
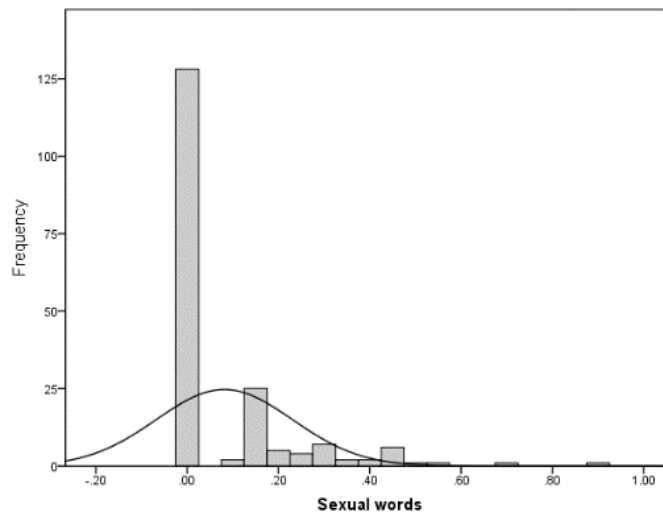


*Figure 8.* Histogram of the variable "sexual words"

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I hypothesized that grandiose narcissism should predict more frequent use of sexual words when creating one's online dating profile (H8). Zero-order correlation analysis indicated that the sexual word use variable was positively correlated with grandiose narcissism, $r(183) = .24, p < .001$ , but was not correlated with vulnerable narcissism, $r(183) = .004, p = .96$, or with self-concept clarity, $r(183) = .08, p = .23$.

I conducted a Multiple Linear Regression (MLR) model with the sexual word count as the outcome variable. The covariates were entered in Step 1, $R = .22, R^2 = .05, \Delta R = .05, F(8,174) = 1.06, p = .39$, the main effects were entered in Step 2, $R = .31, R^2 = .09, \Delta R = .05, F(3, 171) = 3.25, p = .02$, the two-way interactions were entered in Step 3, $R = .42, R^2 = .08, \Delta R = .01, F(5,166) = 3.03, p = .01$, and all the higher-order interaction terms were entered in Step 4, $R = .42, R^2 = .17, \Delta R = .001, F(2, 164) = .07, p = .93$ (Table 15)[14].

Interestingly, the main effect of grandiose narcissism was significant, $\beta = .25, t(171) = 2.79, p = .006$, suggesting that those participants with higher levels of grandiose narcissism more frequently used sexual words when creating their online dating profiles. Furthermore, there was a significant two-way interaction between gender and grandiose narcissism, $\beta = -.69, t(166) = -3.38, p = .001$, and a significant two-way interaction between gender and vulnerable narcissism, $\beta = 1.01, t(166) = 2.26, p = .03$.

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[14] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .99.

Table 15. Multiple Linear Regression predicting sexual word use

| Step 1 | ß(SE) | ß | t | sr² | 95% CI |
|---|---|---|---|---|---|
| Age | -.003(.01) | -.04 | -.58 | .002 | [-.02,.01] |
| Gender | .04(.02) | .11 | 1.47 | .01 | [-.01, .09] |
| Social desirability tendencies | -.01(.06) | -.01 | -.17 | .0002 | [-.13,.11] |
| Extraversion | .01(.01) | .09 | 1.23 | .008 | [-.006, .02] |
| Agreeableness | -.01(.01) | -.04 | -.52 | .001 | [-.02, .01] |
| Conscientiousness | .01(.01) | .10 | 1.34 | .009 | [-.006, .03] |
| Neuroticism | .01(.01) | .05 | .62 | .002 | [-.01,.02] |
| Openness | -.004(.01) | -.03 | -.45 | .001 | [-.02,.01] |
| **Step 2** | | | | | |
| Self-concept clarity | .007(.02 | .05 | .48 | .001 | [-.02,.04] |
| Vulnerable | -.003(.02) | -.02 | -.17 | .0002 | [-.04,.03] |
| Grandiose | .24(.09) | .25* | 2.80 | .04 | [.07,.4] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | -.03(.03) | -.46 | -1.15 | .007 | [-.09,.02] |
| Gender × grandiose | .53(.16) | .69 | 3.38** | .06 | [.22, .83] |
| Gender × vulnerable | -.08(.04) | -1.007 | -2.25* | .03 | [-.15, .01] |
| Self-concept clarity × grandiose | -.03(.07) | -.03 | -.46 | .001 | [-.16,.09] |
| Self-concept clarity × vulnerable | .002(.01) | .01 | .13 | .00008 | [-.03,.03] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | -.03(.13) | -.18 | -.22 | .0002 | [-.29,.23] |
| Gender × self-concept clarity × vulnerable | -.008(.03) | -.43 | -.29 | .0004 | [-.06,.05] |

*Note*. ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

To investigate how gender moderated the association between grandiose narcissism and sexual word use and the association between vulnerable narcissism and sexual word use, I conducted two moderation analyses using PROCESS SPSS model 1 (Hayes, 2017).

The overall model with gender moderating the association between grandiose narcissism and sexual word use was significant, R = .42, $R^2$ = .17, $F(16, 166) = 2.17$, $p = .007$. Next, I examined the main effects and interactions and found that the main effect of grandiose narcissism was significant, $\beta = -.09$, SE = .12, $t(166) = -.72$, $p = .47$, CIs [-.3502, .1629], however, the main effect of gender was not significant $\beta = .02$, SE = .10, $t(166) = 1.32$, $p = .18$, CIs [-.0163, .0823]. These results were qualified by a significant interaction between gender and grandiose narcissism, $\beta = .53$, SE = .16, $t(166) = 3.37$, $p = .0009$, CIs [.2186, .8331].

Follow-up findings indicated that the interaction between gender and grandiose narcissism on sexual word use was significant for the female participants, $\beta = .43$, SE = .13, $t(166) = 4.26$, $p < .001$, CIs [.2317, .6327], such that female participants with higher levels of grandiose narcissism used a greater number of sexual words in their online dating profiles. However, for the male participants, gender did not moderate the relationship between grandiose narcissism and the frequency of sexual word use, $\beta = -.09$, SE = .13, $t(166) = -.72$, $p = .42$, CIs [-.3502, .1629].
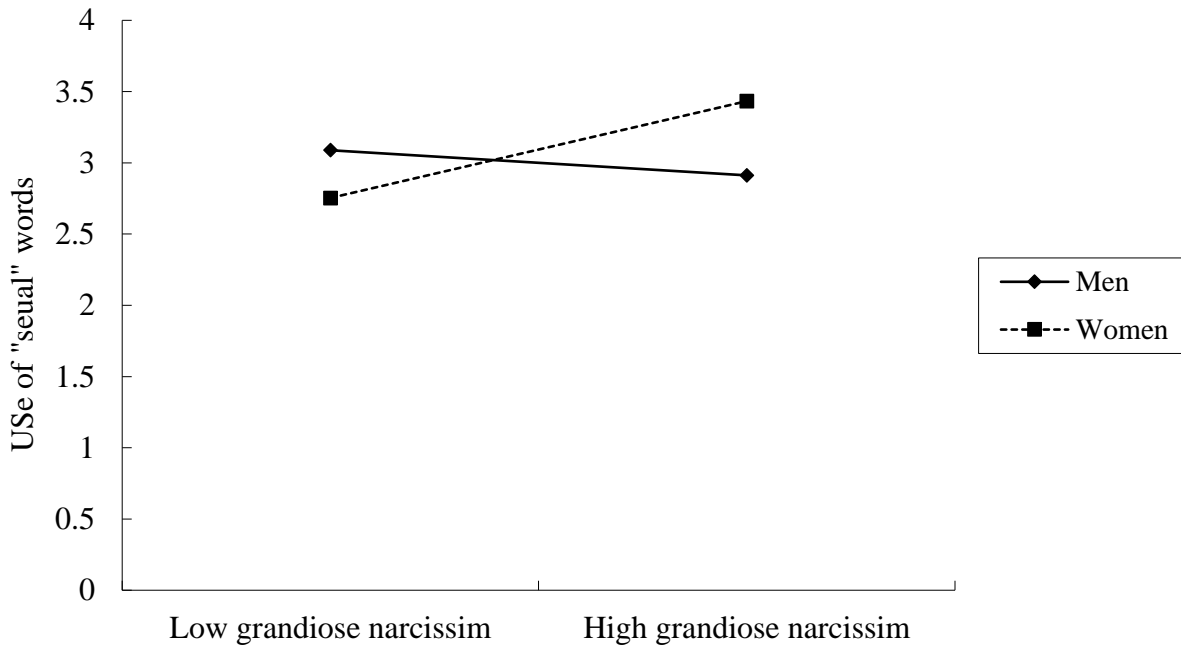
*Figure 9*. Gender as a moderator between grandiose narcissism and sexual word use

The second model tested the moderating role of gender in the association between vulnerable narcissism and the frequency of sexual word use, indicated that the overall model was significant, R = .42, $R^2$ = .17, $F(16, 166)$ = 2.18, $p$ = .008. Examining the main effects and interactions indicated that the main effect of vulnerable narcissism, β = .05, SE = .03, $t(166)$ = 1.73, $p$ = .08, CIs [-.0078, .1171], or the main effect of gender were non-significant, β = .03, SE = .03, $t(166)$ = 1.32, $p$ = .18, CIs [-.0163, .0823]. However, there was a significant interaction between gender and vulnerable narcissism, β = -.08, SE = .04, $t(166)$ = -2.25, $p$ = .03, CIs [-.1537, -.0102]. Ultimately, the simple slope analyses indicated that the interaction between vulnerable narcissism and gender was not significant for the female participants, β = .05, SE =

.03, *t*(166) = 1.73, *p* = .08, CIs [-.0078, .1171], or for the male participants, β = .32, SE = -.03,

*t*(166) = -1.38, *p* = .17, CIs [-.0664, .0119].

*3.3.1.9. Affective words as a Cue for Emotional Intimacy as the outcome variable*

To test this hypothesis, the relevant LIWC categories of "positive emotions, "negative

emotions" and "affect" words were combined to create a new variable called "affect words".

This new variable was normally distributed (M = 4.85. SD = 1.25) (Figure 10).
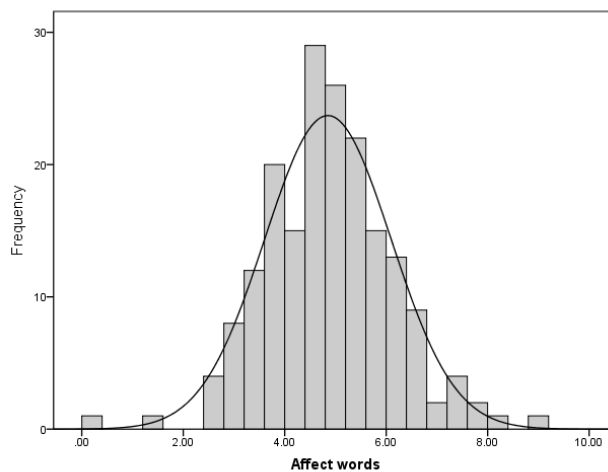


*Figure 10.* Histogram of the variable affective word use

I expected both self-concept clarity and grandiose narcissism to be positively correlated

with more frequent use of affective words in the participants' online dating profiles (H9). Zero-

order correlation results indicated that affective word count was positively correlated with self-

concept clarity, *r*(183) = .18, *p* = .02, but was not correlated with grandiose narcissism, *r*(183) =

-.01 *p* = .85, or with vulnerable narcissism, *r*(183) = -.08, *p* = .28.

I then conducted a Multiple Linear Regression (MLR) model with the "affect word"

variable as the outcome. The covariates were entered in the Step 1, R = .27, $R^2$ = .07, $\Delta R$ = .07,

$F(8,174)$ = 1.73, $p$ = .09, the main effects of primary variables were entered in Step 2, R = .33,

$R^2$ = .09, $\Delta R$ = .02 $F(3, 171)$ = 1.14, $p$ = .33, the two-way interactions were entered in Step 3, R

= .38, $R^2$ = .15, $\Delta R$ = .06, $F(5,166)$ = 2.26, $p$ = .05, and all the higher-order interaction terms

were entered in Step 4, R = .41, $R^2$ = .17, $\Delta R$ = .1.79, $F(2, 164)$ = 1.12, $p$ = .17 (Table 16)[15].

Table 16. Multiple Linear Regression predicting affective word use

| Step 1 | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| Age | .09(.05) | .01 | .18 | .0001 | [-.09, .11] |
| Gender | .07(.20) | .03 | .34 | .0006 | [-.33, .47] |
| Social desirability tendencies | 1.21 (.52) | .18 | 2.36* | .03 | [.19, 2.23] |
| Extraversion | .007(.06) | .01 | .12 | .00007 | [-.11,.13] |
| Agreeableness | .17(.08) | .16 | 2.09* | .02 | [.01,.33] |
| Conscientiousness | -.03(.08) | -.02 | -.32 | .00005 | [-.17,.11] |
| Neuroticism | .01(.07) | .01 | .17 | .0003 | [-.12,.14] |
| Openness | -.024(.08) | -.02 | -.31 | .0005 | [-.17, .13] |
| **Step 2** | | | | | |
| Self-concept clarity | .22(.13) | .17 | 1.73 | .02 | [-.03,.47] |
| Vulnerable | .15(.15) | .09 | .97 | .005 | [-.15,.44] |
| Grandiose | .01(.72) | .001 | .008 | .0000001 | [-1.41,1.42] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | -.42(.24) | -.69 | -1.74 | .02 | [-.90, .06] |
| Gender × grandiose | 1.96(1.32) | .36 | 1.47 | .01 | [-.64, 4.56] |

[15] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .99.

| | | | | | |
|---|---|---|---|---|---|
| Gender × vulnerable | -.173(.31) | -.261 | -.562 | .002 | [-.78, .44] |
| Self-concept clarity × grandiose | 1.19(.55) | .16 | 2.17* | .02 | [.11, 2.28] |
| Self-concept clarity × vulnerable | .16(.12) | .10 | 1.32 | .009 | [-.08, .39] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | -1.29(1.11) | 1.13 | -1.17 | .007 | [-3.49, .90] |
| Gender × self-concept clarity × vulnerable | -.35(.24) | -1.17 | -1.44 | .01 | [-.82, .13] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

The two-way interaction between grandiose narcissism and self-concept clarity was significant, $\beta = .16$, SE = 2.17, $t(166) = -2.25$, $p = .03$. A moderation analysis was conducted using PROCESS model 1 suggested by Hayes (2017), to test whether grandiose narcissism moderated the association between the scores on self-concept clarity and the frequency of affective word in one's dating profile. Results of the moderation analysis indicated that the overall model was significant, R = .39, $R^2 = 15$, $F(16,166) = 1.82$, $p = .03$. The weighted average effect of self-concept clarity on affective word use was significant, b = .43, SE = .20, $t(166) = 2.17$, $p = .03$, CIs = [.0391, .8102]. The weighted average effect for grandiose narcissism on affective word use was not significant, b = -1.03, SE = 1.10, $t(166) = -.94$, $p = .35$, CIs = [-3.2079, 1.1388]. These results were then qualified by a significant interaction between self-concept clarity and grandiose narcissism, b = 1.19, SE = .55, $t(166) = 2.17$, $p = .03$, CIs = [.1071, 2.2799].

I then examined how self-concept clarity predicted affective word use at each level of grandiose narcissism using simple slope analysis (Aiken, et al., 1991). Results indicated that at low levels of grandiose narcissism, there was no significant effect for self-concept clarity on the

frequency of affective word, b = .24, se = .22, $t(166)$ = 1.11, $p$ = .28, CIs = [-.1972, .6712].

However, the effect of self-concept clarity was significant at average levels of grandiose

narcissism, b = .42, SE = .20, $t(166)$ = 2.17, $p$ = .03, CIs = [.0391, .8102], and high levels of

grandiose narcissism, b = .16, se = .61, t(166) = 2.96, $p$ = .004, CIs = .2035, 1.0213]. In

summary, as the level of grandiose narcissism increases, the interaction between self-concept

clarity and affective word use becomes stronger (Figure 11).
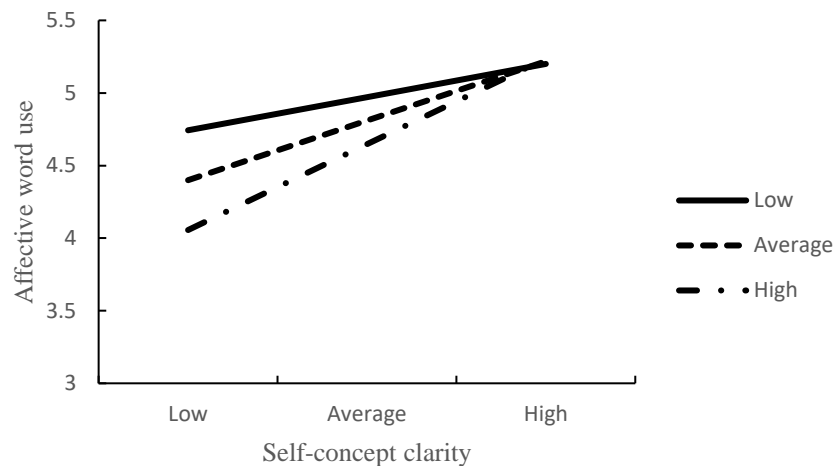


*Figure 11.* Probing the interaction between self-concept clarity and grandiose
narcissism in predicting the frequency of "affective words" use

*3.3.10 Achievement related words as the outcome variable*

In order to test this hypothesis, the relevant LIWC category of achievement words (e.g.,

try, goal, win) was used, which was normally distributed in the present data (M = 2.41, SD =

.90) (Figure 12). I expected self-concept clarity and grandiose narcissism to be positively

associated with more frequent use of achievement-related words (H10). Results indicated that

achievement-related words were positively correlated with self-concept clarity, $r(183) = .16$, $p = .03$, but not with grandiose narcissism, $r(183) = .03$, $p = .65$, or with vulnerable narcissism, $r(183) = -.009$, $p = .89$.
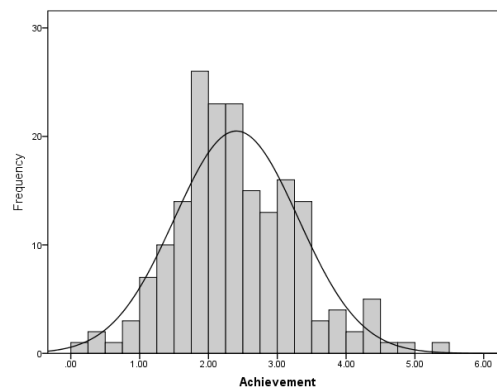


*Figure 12*. Histogram of the variable achievement-related word use

I then conducted a Multiple Linear Regression (MLR) model with the achievement-related word variable as the outcome variable. The covariates were entered in Step 1, R = .22, $R^2 = .05$, $\Delta R = .05$, $F(8,174) = 1.06$, $p = .39$, the main effects of primary variables were entered in Step 2, R = .29, $R^2 = .08$, $\Delta R = .04$ $F(3, 171) = 2.28$, $p = .08$, the two-way interactions were entered in Step 3, R = .36, $R^2 = .13$, $\Delta R = .04$, $F(5,166) = 1.63$, $p = .16$, and all the higher order interaction terms were entered in Step 4, R = .37, $R^2 = .13$, $\Delta R = .009$, $F(2, 164) = .81$, $p = .45$. The main effect of self-concept clarity was significant, $\beta = .22$, $t(166) = 2.21$, $p = .03$, such that

those participants with higher levels of self-concept clarity more frequently used achievement-related words when creating their online dating profiles (Table 17)[16].

Table 17. Multiple Linear Regression predicting achievement-related word use

| Step 1 | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| Age | .005(.04) | .009 | .123 | .00008 | [-.07, .08] |
| Gender | .17(.15) | .09 | 1.17 | .007 | [-.12, .47] |
| Social desirability tendencies | -.23(.38) | -.05 | -.62 | .002 | [-.98,.51] |
| Extraversion | -.06(.05) | -.01 | -1.29 | .009 | [-.15,.03] |
| Agreeableness | -.10(.06) | -.13 | -1.66 | .02 | [-.22,.02] |
| Conscientiousness | .08(.06) | .11 | 1.37 | .01 | [-.03,.19] |
| Neuroticism | -.04(.05) | -.06 | -.74 | .003 | [-.13,.06] |
| Openness | -.001(.06) | -.001 | -.01 | .000001 | [-.11,.11] |
| **Step 2** | | | | | |
| Self-concept clarity | .20(.09) | .22 | 2.21* | .03 | [.02,.38] |
| Vulnerable | -.02(.11) | -.11 | -.19 | .0002 | [-.23, .19] |
| Grandiose | -.67(.52) | -.12 | -1.92 | .009 | [-1.70,.36] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | -.21(.18) | -.46 | -1.15 | .007 | [-.56,.15] |
| Gender × grandiose | .79(.96) | .20 | .83 | .004 | [-1.11, 2.70] |
| Gender × vulnerable | -.48(.23) | -.99 | -2.11* | .02 | [-.92, -.03] |
| Self-concept clarity × grandiose | -.04(.40) | -.01 | -.09 | .00005 | [-.83,.76] |
| Self-concept clarity × vulnerable | .14(.09) | .12 | 1.57 | .01 | [-.04,.31] |
| **Step 4** | | | | | |

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[16] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .99.

| | | | | | |
|---|---|---|---|---|---|
| Gender × self-concept clarity × grandiose | -1.03(82) | -1.20 | -1.26 | .008 | [-2.65,.58] |
| Gender × self-concept clarity × vulnerable | .04(18) | .30 | .19 | .002 | [-.31,.38] |

*Note.* ß = standardized coefficient; * = *p* < .05; ** = *p* < .01, *** = *p* < .001.

To investigate the moderating role of gender in the relationship between vulnerable narcissism and the frequency of achievement words, I conducted a moderation analysis using PROCESS SPSS model 1 (Hayes, 2017). Because the overall model was not significant, R = .35, $R^2$ = .13, *F*(16, 167) = 1.49, *p* = .11, I did not probe the simple slopes.

### 3.3.1.11 Social processes words as the outcome variable

The relevant LIWC categories of social words, family and friends were averaged to create a new variable, which was indicator of social processes in verbal communication. This new variable was normally distributed (M = 2.79, SD = .96) (Figure 13). I expected both self-concept clarity and grandiose narcissism to be positively correlated with more frequent usage of social processes words in the participants' online dating profiles (H11). Results indicated that the frequency of social processes words was positively correlated with grandiose narcissism, *r*(183) = .19, *p* = .01, and was negatively correlated with vulnerable narcissism, *r*(183) = -.19, *p* = .01, but was not correlated with self-concept clarity, *r*(183) = .14, *p* = .05.

93
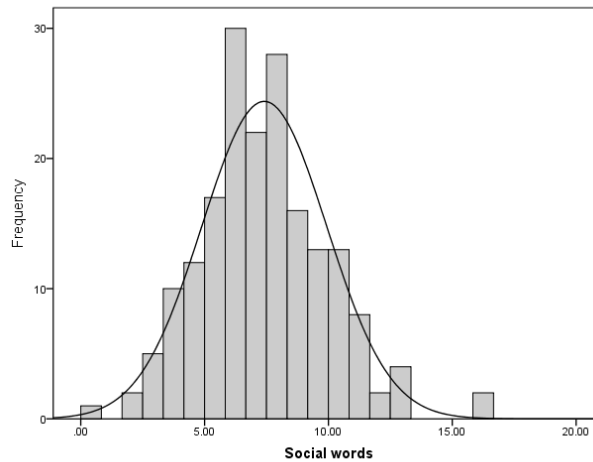
*Figure 13*. Histogram of the variable social processes word use

I conducted a Multiple Linear Regression (MLR) model with the frequency of social processes words as the outcome variable. The covariates were entered in the Step 1, R = .30, $R^2$ = .10, $\Delta R$ = .10, $F(8,174) = 2.13$, $p = .04$, the main effects of primary personality variables were entered in Step 2, R = .36, $R^2$ = .13, $\Delta R$ = .04, $F(3, 171) = 2.62$, $p = .05$, the two-way interactions were entered in Step 3, R = .43, $R^2$ = .19, $\Delta R$ = .06, $F(5,166) = 2.27$, $p = .05$, and finally all the higher-order interaction terms were entered in Step 4, R = .43, $R^2$ = .17, $\Delta R$ = .001, $F(2, 164) = .08$, $p = .93$. The main effect of grandiose narcissism was significant, $\beta$ = .19, $t(166) = 2.10$, $p = .04$, such that those participants with higher levels of grandiose narcissism used more social words when creating their dating profiles (Table 18)[17].

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[17] Statistical observed power to detect the effects in each step of the model with an alpha of .05 was equal or greater than .99.

Table 18. Multiple Linear Regression predicting social words use

| Step 1 | ß(SE) | ß | t | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| Age | .02(.04) | .04 | .53 | .002 | [-.06,.10] |
| Gender | .44(16) | .21 | 2.83* | .04 | [.13,.75] |
| Social desirability tendencies | .13(.40) | .03 | .32 | .0005 | [-.65, .91] |
| Extraversion | .08(.05) | .121 | 1.59 | .01 | [-.02, 19] |
| Agreeableness | .09(.06) | .11 | 1.45 | .01 | [-.03, .22] |
| Conscientiousness | -.04(.06) | -.05 | -.67 | .002 | [-.15, .08] |
| Neuroticism | -.05(.05) | -.08 | -1.04 | .0006 | [-.16, .0] |
| Openness | -.05(.06) | -.07 | -.91 | .004 | [-.17, .06] |
| **Step 2** | | | | | |
| Self-concept clarity | .004(.10) | .004 | .04 | .00001 | [-.18, 19] |
| Vulnerable | -.20(.11) | -.16 | -1.74 | .02 | [-.42, -03] |
| Grandiose | 1.14(.54) | .19 | 2.10* | .02 | [.07, 2.22] |
| **Step 3** | | | | | |
| Gender × self-concept clarity | -.04(.18) | -.08 | -.22 | .0002 | [-.40, .33] |
| Gender × grandiose | -.88(.99) | -.21 | -.89 | .004 | [-2.85,.10] |
| Gender × vulnerable | -.18(.23) | -.36 | -.79 | .003 | [-.64, .28] |
| Self-concept clarity × grandiose | .89 (.42) | .16 | 2.14* | .02 | [.07,1.71] |
| Self-concept clarity × vulnerable | .18(.10) | .16 | 2.10 | .02 | [.01,.36] |
| **Step 4** | | | | | |
| Gender × self-concept clarity × grandiose | -.23(.85) | -.26 | -.28 | .004 | [-1.91,1.44] |
| Gender × self-concept clarity × vulnerable | .05(18) | .42 | .28 | .004 | [-.31, .41] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

There was a significant interaction between self-concept clarity and grandiose narcissism, $\beta = .16$, $t(166) = 2.14$, $p = .03$. Results of the moderation analysis indicated that the overall model was significant, R = .43, $R^2 = .18$, $F(16,166) = 2.35$, $p = .004$. The weighted

average effect of grandiose narcissism on social word use was significant, b = 1.89, SE = .83, $t(166) = 2.28$, $p = .02$, CIs = [.2542, 3.5457]. The weighted average effect of self-concept clarity on social word use was not significant, b = .01, SE = .15, $t(166) = .07$, $p = .99$, CIs = [-.2806, .3034]. These results were qualified by a significant interaction between self-concept clarity and grandiose narcissism, b = .89, SE = .42, $t(166) = 2.14$, $p = .03$, CIs = [.0680, 1.7133].

I then examined how grandiose narcissism predicted social word use at each level of self-concept clarity using simple slope analysis (Aiken, et al., 1991). The results indicated that at low levels of grandiose narcissism, there was not a significant effect for self-concept clarity on social word use, b = 1.04, se = .89, $t(166) = 1.72$, $p = .24$, CIs = [-.7125, 2.7951]. However, the effect of grandiose narcissism was significant at average levels of self-concept clarity, b = 1.89, SE = .83, t(166) = 2.28, p = .02, CIs = [.2542, 3.5457], and at high levels of self-concept clarity, b = 2.87, se = .96, t(166) = 2.87, $p = .005$, CIs = [.8614, 4.6557]. In summary, as the level of self-concept clarity increases, the effect of grandiose narcissism on social word use becomes stronger (Figure 14).
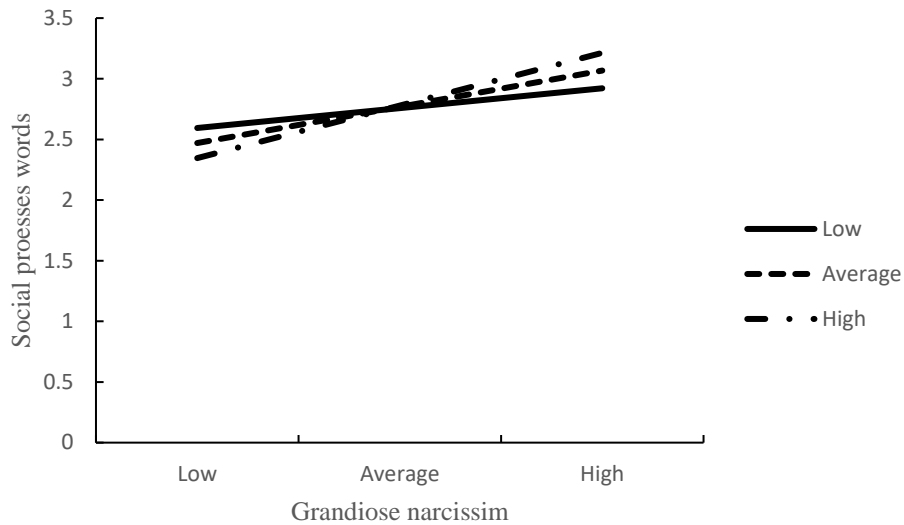
*Figure 14*. The interaction between self-concept clarity and grandiose narcissism predicting social processes words

## 3.4 Testing the hypotheses derived from Phase 3 of the study

### 3.4.1 Manipulation check

Because of the unbalanced sample sizes for the male and female participants, I conducted a separate set of analyses for each gender. First, to ensure there was no initial differences between the participants who were randomly assigned to the two *ego-threatening* conditions, I conducted an independent sample *t*-test with the participants' scores on grandiose narcissism, vulnerable narcissism and self-concept clarity as the outcome variables in the analysis. The random sampling resulted in no significant differences in the primary predictor variables, which were assessed prior to exposure to the manipulation conditions. Therefore, any significant effect(s) should not be attributed to the initial differences in the primary personality variables.

Next, in order to check whether the ego-threatening manipulation actually affected participants' level of state self-esteem and mood, I used independent sample *t*-tests to determine the effect of the manipulation condition (*ego-threatening* and *non-ego-threatening*) on the Self-esteem scores and the Negative State Mood scale (Lubin, & Van Whitlock, 1996). I expected that participants in the *ego-threatening* manipulation condition to report lower self-esteem and a higher degree of negative mood after receiving romantic rejection than the participants in the *non-ego-threatening* condition.

The results of these independent sample *t*-tests for the female sample indicated that the participants in the *ego-threatening* manipulation condition (N = 62, M = 5.03, SD = 1.09) reported significantly lower state self-esteem than participants in the *non-ego-threatening* manipulation condition (N = 64, M = 5.47, SD = .96), *t*(124) = 2.38, *p* = .02, d = .43. Also, female participants in the *ego-threatening* manipulation condition (M = 3.48, SD = 1.49) reported significantly higher levels of negative mood than participants in the *non-ego-threatening* manipulation condition (M = 2.95, SD = 1.44), *t*(124) = 02.07, *p* = .04, d = .36.

As a follow-up, I conducted a one-way ANOVA test with the condition as the grouping variable and the participants' scores on the *state* self-esteem as the dependent variable, controlling for the participants' scores on the *trait* self-esteem measured in Phase 1 of the study. The results revealed a significant effect of condition on state self-esteem scores, *F*(1, 122) = 4.19, *p* = .04, such that those female participants in *non-ego-threatening manipulation condition* reported having higher levels of state self-esteem than those participants in *ego-threatening* condition, even after controlling for their baseline levels of self-esteem. The results confirmed the effectiveness of the ego-threat manipulation for the female sample.

The same independent sample *t*-test was conducted with the data obtained from the male sample. Results indicated no significant differences between participants in the *ego-threatening* manipulation condition (N = 31, M = 5.42, SD = 1.07) and participants in the *non-ego-threatening* manipulation condition (N = 28, M = 5.17, SD = 1.09) in state self-esteem, $t(57) = -.89$, $p = .38$, d = .23. Similarly, participants in the *ego-threatening* manipulation condition (N = 28, M = 2.82, SD = 1.55) did not significantly experience a worse mood after receiving the *ego-threatening* manipulation than participants in the *non-ego-threatening* manipulation condition (N = 31, M = 3.25, SD = 1.41), $t(57) = 1.11$, $p = .27$, d = .36.

As a follow-up, I conducted a one-way ANOVA test with manipulation condition as the grouping variable and the male participants' scores on the *state* self-esteem as the dependent variable, controlling for the participants' scores on *trait* self-esteem. The results indicated a non-significant effect of condition on *state* self-esteem scores, $F(1, 56) = .08$, $p = .78$, suggesting that the manipulation was not effective for the male participants. Because the manipulation was not effective among male sample, the results obtained from the male participants are reported but should be interpreted with caution.

When both samples were combined, results indicated no significant differences between participants in the *ego-threatening* manipulation condition (N = 93, M = 5.1624, SD = 1.09) and participants in the *non-ego-threatening* manipulation condition (N = 92, M = 5.38, SD = 1.00) in *state* self-esteem, $t(57) = -1.39$, $p = .16$. Similarly, participants in the *ego-threatening* manipulation condition (M = 3.27, SD = 1.53) did not significantly experience more negative mood after receiving the *ego- threatening* manipulation than participants in the *non-ego-threatening* manipulation condition (M = 3.04, SD = 1.43), $t(183) = 1.03$, $p = .30$. When both

samples are combined, results indicated that the manipulation treatment was not effective.[18] For

this reason, the analyses of the data obtained from Phase 3 of the study are reported separately

for each gender. As a final point, in the Phase 3 analysis, the non-significant covariates of age,

social desirability and Big Five personality traits were excluded from the model if they did not

change the results.

### 3.4.2 Derogatory behavior toward other daters as the outcome variable

The female participants rated opposite gender profiles that were low in attractiveness (M

= 4.03, SD = .89) as being less desirable than dating profiles that were average in attractiveness

(M = 3.64, SD = .93), and dating profiles which were high in attractiveness (M = 2.98, SD =

.99). [19]. In other words, female participants in this study showed more derogatory behavior

toward opposite-gender dating profiles who were lower in physical attractiveness.

Similarly, male participants rated dating profiles that were lower in attractiveness (M =

4.02, SD = .92) as being less desirable than dating profiles which were average in attractiveness

(M = 3.49, SD = 1.03), and dating profiles which were high in attractiveness (M = 2.39, SD =

.80). In other words, male participants showed more derogatory behavior toward opposite-

gender profiles which were lower in physical attractiveness.

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[18] Results of the independent sample t-test on the combined sample indicated that participants in the ego-threatening manipulation condition (M = 5.16, SD = 1.09) did not experience lower state self-esteem than participants in the non-ego-threatening manipulation condition (N = 64, M = 5.38, SD = .10), $t(183) = 1.03$, $p =$ .30.Also, participants in the ego-threatening manipulation condition (M = 3.27, SD = 1.09) did not report having higher levels of negative mood than participants in the non-ego-threatening manipulation condition (M = 5.38, SD = 1.01), $t(183) = -1.39$, $p = .16$.

[19] Higher scores indicated lower desirability and consequently higher derogatory behavior.

An independent sample *t*-test was conducted on the data obtained on the female participants, with the manipulation condition as a grouping variable and participants' scores on the three types of dating profiles as dependent variables. The results indicated that female participants in the *ego-threatening manipulation* condition rated all the dating profiles, at each of the three levels of attractiveness, as being significantly less desirable than did the female participants in *non-ego-threatening* manipulation condition. Similar results were obtained for male sample, such that the male participants in the *ego-threatening manipulation* condition rated all the dating profiles, at each level of attractiveness, as being significantly less desirable than male participants in *non-ego-threatening manipulation* condition (Table 19). These results indicate that both the female and the male participants tended to reciprocate the kind of ratings (22% acceptance rate versus 78% acceptance rate) that they received, regardless of how attractive those raters are.

Table 19. Independent sample *t*-test testing the derogatory behavior toward each group of opposite-gender dating profiles

| Female sample | | | | |
|---|---|---|---|---|
| Group | Condition | M | SD | |
| High-attractiveness profiles* | ego-threatening | 2.57 | .79 | $t(123.25) =$ |
| | non-ego-threatening | 2.20 | .78 | 4.93, $p < .001$. |
| Average-attractiveness profiles | ego-threatening | 3.81 | 1.00 | $t(124) = 3.43$, |
| | non-ego-threatening | 3.14 | .98 | $p = .001$. |
| Low-attractiveness profiles | ego-threatening | 4.29 | .84 | $t(124) = 2.31$, |
| | non-ego-threatening | 3.73 | .93 | $p = .02$. |
| Male sample | | | | |

| | | | | |
|---|---|---|---|---|
| High-attractiveness profiles | ego-threatening | 3.39 | .93 | $t(57) = 1.79$, |
| | non-ego-threatening | 2.59 | .89 | $p = .07$. |
| Average-attractiveness profiles* | ego-threatening | 3.92 | .93 | $t(56.64) =$ |
| | non-ego-threatening | 3.37 | .85 | 2.58, $p = .01$. |
| Low-attractiveness profiles* | ego-threatening | 4.21 | .85 | $t(54.58) =$ |
| | non-ego-threatening | 3.85 | .89 | 2.39, $p = .02$. |

Note. Equal variances not assumed for variables marked by *; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

I expected higher grandiose narcissism combined with lower self-concept clarity to predict derogatory behavior in the ego-threatening manipulation condition (H12). In order to test this hypothesis, I conducted a Multilevel Model Analysis (Hierarchical Linear Model) (Kenny, Kashy, & Bolger, 1998; Raudenbush & Bryk, 2002) in R version 3.3.3 (R core team, 2017) using the package nlme (Pinhiero, Bates, DebRoy, & Sarkar, 2014) and Maximum Likelihood Estimation. The Hierarchical Linear Modeling (HLM) was selected followed the recommendations of Raudenbush and Bryk (2002) and others (e.g., West & Hepworth, 1991) because (1) it deals with any missing variable at the trait level by case wise deletion, (2) it estimates within-subject or repeated measures (i.e., three scores for each level of dating profile attractiveness) and between-subjects (manipulation condition) variations simultaneously, thereby allowing for the modeling of each source of variation while taking into account the statistical characteristics of the other sources. Within-person aggregate means for each level of dating profile attractiveness were calculated for each participant and used as the outcome variable for each level of profile attractiveness. When I set up the multilevel model, I centered

each of the personality variables to avoid multicollinearity (Enders, & Tofighi, 2007; Finch, et al., 2019).

In accordance with recommended multilevel model specifications for dropping non-significant predictors (Kreft & de Leeuw, 1998; Raudenbush & Bryk, 2002; Snijders & Bosker, 1999), the final analysis only reported the most theoretically relevant terms. Removing the non-significant covariates helped the fit model (e.g., AIC and BIC[20]; Burnham, & Anderson, 2004). The interclass correlation coefficient was .075 indicating that 7.5 of variance in the outcome variable was explained by the manipulation condition[21].

Results obtained from Hierarchical Linear Model on female sample indicated that the main effect of profile attractiveness, $\beta = -.49$, SE = .08, $t(371.99) = -5.17$, $p < .001$, the main effect of self-concept clarity, $\beta = .59$, SE = .22, $t(371.99) = 2.70$, $p = .007$, were significant (Table 20). The significant main effect of manipulation condition indicates that female participants in *non-threatening* manipulation condition scored lower in derogatory behavior. The main effect of profile attractiveness indicated that female participants found low attractive profiles less desirable and subsequently showed more derogatory behavior. Unexpectedly, the female participants with higher levels of self-concept clarity, regardless of manipulation

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[20] AIC is an estimate of a constant plus the relative distance between the unknown true likelihood function of the data and the fitted likelihood function of the model. BIC is an estimate of a function of the posterior probability of a model being true, under a certain Bayesian setup. Thus, lower scores in both AIC and BIC means a model is considered to be closer to the truth (Hamaker, et al., 2011).

[21] The intraclass correlation coefficient (ICC) is a statistic that quantifies the proportion of variance explained by a grouping (random) factor in multilevel/hierarchical data (Nakagawa, et al., 2017). In this study, the ICC represents the degree of common environments that observations share in each manipulation condition. Higher values of ICC reflect higher between-group variability.

condition or level of profile attractiveness, showed more derogatory behavior toward other

daters.

Table 20. Multilevel modeling predicting derogatory behavior toward other daters in female sample

| | β | SE | t | P value |
|---|---|---|---|---|
| Age | .10 | .03 | 3.96 | < .001 |
| Extraversion | -.09 | .03 | -2.94 | .004 |
| Conscientiousness | .06 | .04 | 1.67 | .09 |
| Manipulation condition | -.34 | .25 | -1.41 | .16 |
| Level of profile attractiveness | -.42 | .08 | -5.17 | < .001 |
| Self-concept clarity | .59 | .22 | 2.70 | .007 |
| Grandiose narcissism | 1.67 | 1.23 | 1.36 | .18 |
| Vulnerable narcissism | .19 | .23 | .80 | .42 |
| Condition × self-concept clarity | -.48 | .32 | -1.53 | .13 |
| Condition × grandiose narcissism | .09 | 1.67 | .06 | .95 |
| Condition × vulnerable narcissism | .04 | .33 | .11 | .91 |
| Condition × self-concept clarity × grandiose narcissism | .54 | 1.68 | .32 | .75 |
| Condition × self-concept clarity × vulnerable narcissism | -.20 | .34 | -.59 | .55 |
| Condition × level × Self-concept clarity × grandiose narcissism | .24 | .78 | .31 | .76 |
| Condition × level × self-concept clarity × vulnerable narcissism | .11 | .16 | .71 | .47 |

Similar Hierarchical Linear Modeling analysis was conducted on the data obtained from

the male sample. The interclass correlation coefficient was .043, indicating that 4.3% of the

variance in the outcome variable was explained by the manipulation condition. The results

obtained from the model with the most theoretically relevant terms included revealed that the main effect for the level of profile attractiveness, $\beta = -.85$, SE $= .14$, $t(14.42) = -6.03$, $p < .001$, was significant (Table 19). Similar to the female participants, the male participants found the lower attractive profiles less desirable and subsequently showed more derogatory behavior.

Similar Hierarchical Linear Modeling analysis was conducted on the male sample. The interclass correlation coefficient was .043 indicating that 4.3% of the variance in the outcome variable was explained by the manipulation condition. Results obtained from the model with the most theoretically relevant terms included in the model indicated that the main effect for the level, $\beta = -.85$, SE $= .14$, $t(14.42) = -6.03$, $p < .001$, was significant (Table 21). Similar to female participants, male participants found low attractive profiles less desirable and subsequently showed more derogatory behavior.

Table 21. Multilevel modeling predicting derogatory behavior toward other daters in male sample

| | β | SE | t | P value |
|---|---|---|---|---|
| Extraversion | -.08 | .04 | -2.0 | .05 |
| Manipulation condition | -.54 | .42 | -1.31 | .19 |
| Level | -.85 | .14 | -6.03 | < .001 |
| Self-concept clarity | -.04 | .26 | -.16 | .87 |
| Grandiose narcissism | -.86 | 1.42 | -.60 | .55 |
| Vulnerable narcissism | .06 | .39 | .17 | .87 |
| Condition × Self-concept clarity | -.08 | .43 | -.19 | .85 |
| Condition × Grandiose narcissism | 3.00 | 2.26 | 1.33 | .187 |
| Condition × Vulnerable narcissism | -.28 | .57 | -.49 | .62 |
| Condition × Self-concept clarity × Grandiose narcissism | -1.35 | 1.89 | -.72 | .47 |
| Condition × Self-concept clarity × Vulnerable narcissism | .04 | .45 | .09 | .93 |
| Condition × Level × Self-concept clarity × Grandiose narcissism | .64 | .87 | .74 | .46 |

| Condition × Level × Self-concept clarity × vulnerable narcissism | .06 | .21 | .28 | .78 |
| --- | --- | --- | --- | --- |

I also tested the assumption of Multicollinearity for the Multilevel models conducted in this study. The observed levels of the variance inflation factor (VIF) for the main predictors, indicated that multicollinearity should be a problem (see Appendix F). Generally speaking, Multicollinearity happens when there are high correlations between two or more predictor variables in the model. In the current study, there are some reasons that might have created multicollinearity. First, the relatively high Multicollinearity values might be caused by the small sample size used in this study (Grewal, et al., 2004). Small sample size can also increase the chance of error rates (Type I and Type II) and decrease the necessary statistical power to detect true effects (Lavery, et al., 2017). The second reason for high observed Multicollinearity might be the inclusion of interaction terms in the model (which is referred to as the structural multicollinearity). Because the interactions terms are highly correlated with products of other variables, multicollinearity can be expected. One way to address this problem is to remove the variables which are less crucial in the study design. However, I did not drop the variables because they were all theoretically important to the study. Future research is suggested to gather a much larger sample size to avoid this problem.

*3.4.3 Derogatory behavior toward the experiment/er as the outcome variable*

I predicted that grandiose narcissism in combination with low levels of self-concept clarity should predict more derogatory behavior toward the experiment/er in response to the *ego-threatening* manipulation (H13). Zero-order correlation analysis was used to examine the basic association between the primary personality variables in the study and the participants' scores on the items measuring the participants' evaluation of the study. The results indicated that the female participants' scores on study evaluation were not significantly correlated with grandiose narcissism $r(124) = .04$, $p = .69$, vulnerable narcissism, $r(124) = -.16$, $p = .08$, or self-concept clarity, $r(124) = -.02$, $p = .79$. Similarly, the male participants' scores on study evaluation were not significantly correlated with grandiose narcissism $r(57) = -.08$, $p = .59$, vulnerable narcissism, $r(57) = .04$, $p = .77$, or self-concept clarity, $r(57) = .09$, $p = .52$.

I then conducted an independent sample *t*-test to examine whether there is a significant difference between the participants' scores in *ego-threatening* manipulation condition and the participants' scores in the *non-ego-threatening* manipulation condition on their study evaluation scores. The results indicated that the female participants in the *ego-threatening* manipulation condition (N = 62, M = 2.43, SD = .72) showed significantly more derogatory behavior toward experiment/er than the participants in the *non-ego-threatening manipulation condition* (N = 64, M = 1.92, SD = .52), $t(124) = 4.49$, $p < .001$ , d = .80. In contrast, the male participants in *ego-threatening* manipulation condition (N = 31, M = 2.26, SD = .64) did not significantly evaluate the study lower than the male participants in the *non-ego-threatening* manipulation condition (N = 28, M = 2.03, SD = .65), $t(57) = 1.38$, $p = .17$.

In the next step of the analysis, two Multiple Linear Regression (MLR) analyses with the study evaluation as the outcome variable were conducted. In female sample, the covariates were entered in Step 1 of the model, R = .52, $R^2$ = .27, $\Delta R$ = .27, $F(8, 115)$ = 5.39 , $p < .001$. In Step 2, the main effects were entered, R = .54, $R^2$ = .29, $\Delta R$ = .02, $F(3, 112)$ = .89 , $p = .45$. In Step 3, the two-way interactions were entered, R = .56, $R^2$ = .31, $\Delta R$ = .02, $F(5,107)$ = .72 , $p = .62$. In the Step 4 of the model, all the other higher order interactions were entered, R = .58, $R^2$ = .34, $\Delta R$ = .03, $F(2, 105)$ = 2.04 , $p = .14$. The results indicated a significant main effect for manipulation condition, $\beta$ = -.31, $t(173)$ = -3.67, $p < .001$. However, the main effects or interactions were non-significant (Table 22)[22].

Table 22. Multiple Linear Regression predicting derogatory behavior toward the experiment/er in female sample

| Variable | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Age | .09(.03) | .25 | 2.96* | .06 | [.03,.16] |
| Condition | -.43(.12) | -.31 | -3.67** | .09 | [-.66,-.19] |
| Social desirability | .83(.32) | .22 | 2.59* | .04 | [.19,1.46] |
| Extraversion | .04(.04) | .08 | .95 | .006 | [-.04,.12] |
| Agreeableness | -.04(.05) | -.06 | -.71 | .003 | [-.13,.06] |
| Conscientiousness | .008(.05) | .013 | .15 | .0001 | [-.09,.11] |
| Neuroticism | .09(.04) | .21 | 2.44* | .04 | [.02, .18] |
| Openness | -.05(.05) | -.09 | -1.06 | .007 | [-.14,.04] |
| **Step 2** | -.61(.46) | -.13 | -1.33 | | [-1.52, .30] |

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[22] Statistical observed power to detect the effects with an alpha of .05 was .98 in Step 1 and greater or equal to .99 in other steps of the model.

| | | | | | |
|---|---|---|---|---|---|
| Self-concept clarity | .07(.08) | .09 | .89 | .005 | [-.09,.24] |
| Vulnerable | .10(.09) | .12 | 1.18 | .01 | [-.07, .28] |
| Grandiose | -.61(.46) | -.13 | -1.33 | .01 | [-1.52,.30] |
| **Step 3** | | | | | |
| Condition × self-concept clarity | -.17(.16) | -.14 | -1.07 | .007 | [-.48,.14] |
| Condition × grandiose | -.52(.84) | -.08 | -.61 | .002 | [-2.18,1.15] |
| Condition × vulnerable | -.13(.17) | -.10 | -.78 | .004 | [-.47, .21] |
| Self-concept clarity × grandiose | -.09(.41) | -.02 | -.23 | .0004 | [-.92, .72] |
| Self-concept clarity × vulnerable | -.06(.08) | -.06 | -.73 | .003 | [-.22, .10] |
| **Step 4** | | | | | |
| Condition × self-concept clarity × grandiose | 1.37(.87) | .21 | 1.58 | .02 | [-.35, 3.09] |
| Condition × self-concept clarity × vulnerable | .19 (.18) | .12 | 1.09 | .008 | [-.16, .54] |

*Note.* Condition was dummy coded (0 = non-ego threatening manipulation condition, 1 = ego-threatening manipulation condition). ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

In the male sample, the manipulation condition variable was entered in the Step 1 of the model, R = .23, $R^2$ = .05, ΔR = .05, $F(1, 57)$ = .36 , $p$ = .94. In Step 2, the main effects of personality variables were entered, R = .36, $R^2$ = .13, ΔR = .07, $F(3, 47)$ = 1.33 , $p$ = .27. In Step 3, the two-way interactions were entered, R = .56, $R^2$ = .32, ΔR = .18, $F(5,42)$ = 2.29 , $p$ = .06. In Step 4 of the model, all the other higher order interactions were entered, R = .58, $R^2$ = .34, ΔR = .02, $F(2, 40)$ = .65 , $p$ = .53 (Table 23)[23]. Results indicated a significant two-way

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[23] Statistical observed power to detect the effects in all steps of the model with an alpha of .05 was equal or greater than .40. the lowest power was found for Step 1 of the model.

interaction between condition and self-concept clarity in male participants, $\beta = -.51$, $t(42) = -2.17$, $p = .04$.

Table 23. Multiple Linear Regression predicting derogatory behavior toward the experiment/er in male sample

| Variable | ß(SE) | ß | t | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Condition | -.23(.19) | -.18 | -1.21 | .03 | [-.60, .15] |
| **Step 2** | | | | | |
| Self-concept clarity | .18(.12) | .32 | 1.54 | .04 | [-.06,.42] |
| Vulnerable | .19(.16) | .23 | 1.22 | .03 | [-.12,.50] |
| Grandiose | -1.08(.72) | -.28 | -1.50 | .04 | [-2.52,.36] |
| **Step 3** | | | | | |
| Condition × self-concept clarity | -.47(.22) | -.51 | -2.17* | .08 | [-.91, -.03] |
| Condition × grandiose | -.46(1.15) | -.08 | -.39 | .003 | [-2.79, 1.87] |
| Condition × vulnerable | -.54(.29) | -.44 | -1.90 | .06 | [-1.12,.03] |
| Self-concept clarity × grandiose | .24(.48) | .08 | .50 | .004 | [-.72,1.20] |
| Self-concept clarity × vulnerable | .17(.11) | .23 | 1.50 | .04 | [-.06,.33] |
| **Step 4** | | | | | |
| Condition × self-concept clarity × grandiose | -.55(.98) | -.11 | -.56 | .005 | [-2.53,1.42] |
| Condition × self-concept clarity × vulnerable | .21(.23) | .18 | .89 | .01 | [-.26,.68] |

*Note.* Condition was dummy coded (0 = non-ego threatening manipulation condition, 1 = ego-threatening manipulation condition). ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

In order to investigate the significant two-way interaction between self-concept clarity and condition in the male sample, I conducted a moderation analysis using PROCESS model 1 suggested by Hayes (2017). The results of the moderation analysis indicated that the overall

model was non-significant, R = .56, $R^2$ = .31, $F(16,42)$ = 1.21, $p$ = .30. The main effect of self-concept clarity was significant, β = .337, se = .14, $t(42)$ = 2.74, $p$ = .009, CIs [.0984, .6465]. The main effect of manipulation condition was non-significant, β = -.21 se = .18, $t(42)$ = -1.17, $p$ = .25, CIs [-.5848, .1551]. These results were qualified by a significant interaction between manipulation condition and self-concept clarity, β = -.47, se = .22, $t(42)$ = 2.12, p = .03, CIs [-.9115, -.0328]

Simple slope analyses indicated that the effect of self-concept clarity on study evaluation was significant in *ego-threatening* manipulation condition, β = .37, se =.14 , t(42) = 2.74, p = .009, CIs [.0984, .6465], but not in *non-ego-threatening* manipulation condition, β = -.09, se = .18, t(42) = -.54, p = .59, CIs [-.4725,.2731] (see Figure 15). These results suggest that the male participants with higher levels of self-concept clarity in the ego-threatening manipulation condition evaluated the study more negatively.
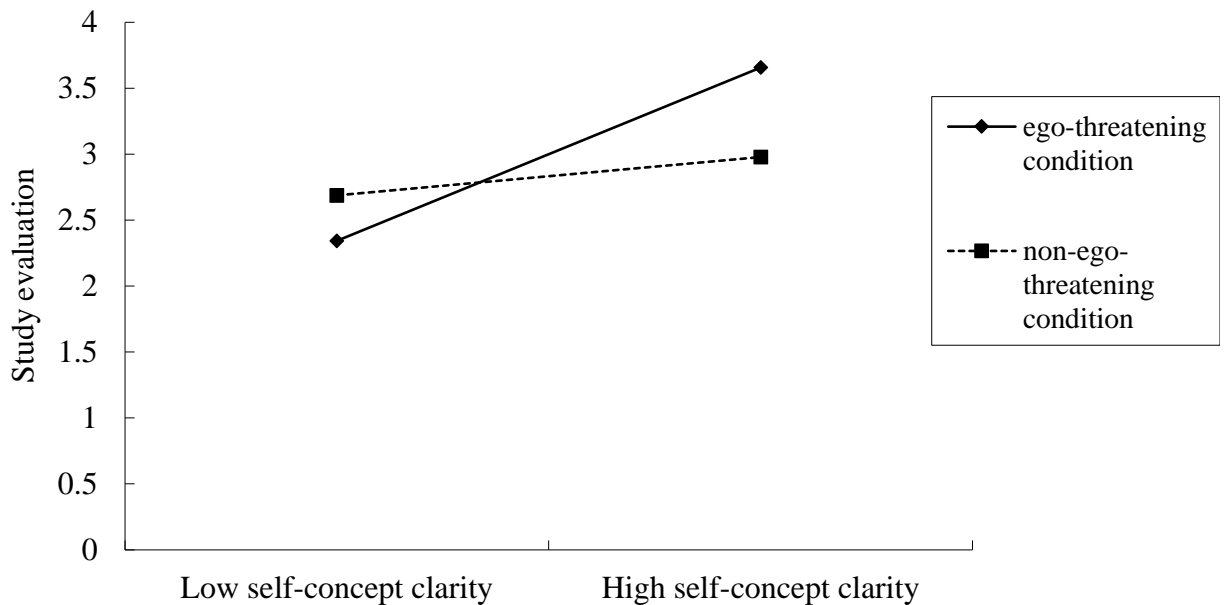
*Figure 15.* Probing the significant two-way interaction between manipulation condition and self-concept clarity in male participants

*3.4.4 Change in self-perceived mate value as the outcome value*

I predicted that high levels of vulnerable narcissism combined with low levels of self-concept clarity would predict greater change in self-perceived mate value after receiving the ego-threatening manipulation (H14). To test this prediction, I conducted a Multilevel Model Analysis (Hierarchical Linear Model; Kenny, Kashy, & Bolger, 1998; Raudenbush & Bryk, 2002) in R version 3.3.3 (R core team, 2017) using the package nlme (Pinhiero, Bates, DebRoy, & Sarkar, 2014) and Maximum Likelihood Estimation. The interclass correlation coefficient in both samples were .00, indicating that 0% of variance in the outcome variable was explained by manipulation condition. Following the recommendation of Shieh, (2016), the low

value of ICC indicates that multilevel modeling is not be an appropriate test in this case, and thus should not be used.

Independent sample *t*-tests was conducted with manipulation condition as the grouping variable and participants' scores in self-perceived mate value measured at Phase 1 as the outcome variable. Results indicated no significant differences between the participants' scores in self-perceived mate value measured at Phase 1 of the study, which suggest no significant baseline or pre-manipulation differences between participants allocated to the *ego-threatening* and the *non-ego-threatening* conditions.

The data for male and female sample were separately submitted to a 2 (self-perceived mate value scores measured at Phase 1 and self-perceived mate value scores measured at Phase 3) × 2 (manipulation condition: ego-threatening or non-ego-threatening manipulating) mixed-model analysis of variance (ANOVA) (within between subject ANOVA) using SPSS. Table 24 shows the descriptive statistics for self-perceived mate value at both phases. Results obtained from the female sample showed that there was a main effect of pre-post measurement on self-perceived mate value scores, $F(1, 122) = 11.24$, $p = .001$, $\eta_p^2 = .08$. On the other hand, the interaction between pre-post scores and manipulation condition was not significant, $F(1, 122) = 2.63$, $p = .11$.

The same analysis for the male participants' data showed that the main effect of pre-post measurement on self-perceived mate value scores was non-significant, $F(1, 57) = 1.04$, $p = .31$. However, the interaction between pre-post scores and manipulation condition was significant, $F(1, 122) = 16.55$, $p < .001$, $\eta_p^2 = .23$, such that self-perceived mate value scores measured at Phase 3 in *ego-threatening* manipulation condition was significantly lower than self-perceived

mate values scores measured at Phase 3 in *non-ego-threatening* manipulation condition (see

Figure 16 & Figure 17).

| | | Mean | SD |
|---|---|---|---|
| Table 24. Descriptive statistics on mixed-model analysis of variance (ANOVA) | | | |
| | Female sample | | |
| Self-perceived mate value scores at Phase 1 | Ego-threatening manipulation condition | 4.23 | .59 |
| | Non-ego-threatening manipulation condition | 4.32 | .82 |
| Self-perceived mate value scores at Phase 3 | Ego-threatening manipulation condition | 3.77 | .89 |
| | Non-ego-threatening manipulation condition | 4.16 | .91 |
| | Male sample | | |
| Self-perceived mate value scores at Phase 1 | Ego-threatening manipulation condition | 4.31 | .91 |
| | Non-ego-threatening manipulation condition | 4.04 | 1.01 |
| Self-perceived mate value scores at Phase 3 | Ego-threatening manipulation condition | 3.73 | .71 |
| | Non-ego-threatening manipulation condition | 4.38 | .85 |
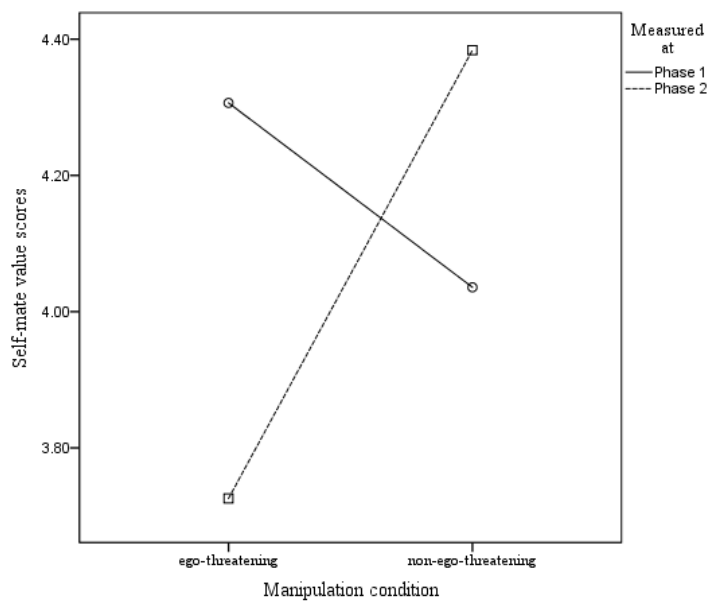
*Figure 17*. Change in self-perceived mate value scores measured in Phase 1 and Phase 3 in male sample

I then computed a directional difference-score measure in which I subtracted the phase 1 rating of self-perceived mate value scores from the phase 3 rating of self-perceived mate value scores. These change scores provided an evaluation of either increase or decrease in the self-perceived mate value scores. This change score variable was normally distributed in both the female and male samples (Figure 18). Positive scores indicated an increase in self-perceived mate value (which is expected in non-ego-threatening manipulation condition), whereas negative scores indicate a decrease in self-perceived mate value (which is expected in ego-

threatening manipulation condition). These change scores in self-perceived mate value were then used as the basis for evaluating the hypothesis in a multiple regression model.
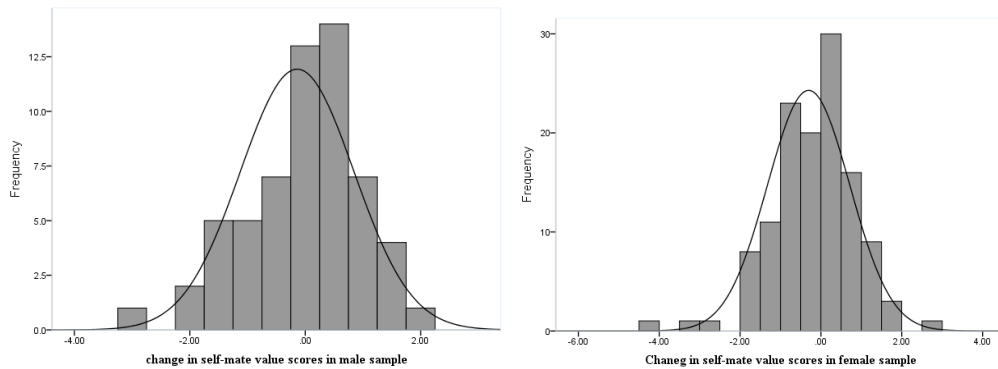


*Figure 18*. Histogram of self-perceived mate value change variable in both male and female samples

In female sample, manipulation condition was entered in Step 1, $R = .16$, $R^2 = .03$, $\Delta R = .03$, $F(1, 121) = 9.33$ , $p = .20$. In Step 2, main effects of the primary predictors were entered, $R = .22$, $R^2 = .05$, $\Delta R = .02$, $F(3, 118) = .85$ , $p = .27$. In Step 3, the two-way interactions were entered, $R = .29$, $R^2 = .08$, $\Delta R = .04$, $F(5,113) = 1.02$, $p = .41$. In Step 4 of the model, all the higher-order interactions were entered, $R = .41$, $R^2 = .17$, $\Delta R = .08$, $F(2, 111) = 5.22$ , $p = .007$ (Table 25)[24].

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[24] Statistical observed power to detect the effects in all steps of the model with an alpha of .05 was equal or greater than .48, with the lowest power found for Step 1 of the model.

Table 25. Multiple Linear Regression predicting change in self-perceived mate value scores in female sample

| Variable | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Condition | .29(.18) | .15 | 1.62 | .02 | [-.07, .65] |
| **Step 2** | | | | | |
| Self-concept clarity | .02(.13) | .02 | .14 | .0001 | [-.23, .27] |
| Vulnerable | .11(.13) | .08 | .80 | .005 | [-.16,.37] |
| Grandiose | -.89(.65) | -.13 | -1.37 | .02 | [-2.17,.40] |
| **Step 3** | | | | | |
| Condition × self-concept clarity | -.27(.26) | -.15 | -1.04 | .009 | [-.77, .24] |
| Condition × grandiose | -.31(1.35) | -.03 | -.23 | .0004 | [-2.98, 2.36] |
| Condition × vulnerable | -.27(.27) | -.14 | -.97 | .007 | [-.81, .28] |
| Self-concept clarity × grandiose | -.99(.67) | -.14 | 1.47 | .02 | [-2.34,.34] |
| Self-concept clarity × vulnerable | -.02 (.13) | -.02 | -.18 | .0003 | [-.27,.23] |
| **Step 4** | | | | | |
| Condition × self-concept clarity × grandiose | .51(1.36) | .05 | .38 | .001 | [-2.17,3.19] |
| Condition × self-concept clarity × vulnerable | -.88(.27) | -.38 | -3.23* | .08 | [-1.43, -.34] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

The significant three-way interaction was inspected using PROCESS SPSS (Hayes, 2017) model 3. The purpose was to examine how vulnerable narcissism influences the change in self-perceived mate value at levels of self-concept clarity in each of the manipulation conditions. The overall model was significant, R = .40, $R^2$ = .16, (9,114) = 2.39, $p$ = .02. The main effect of vulnerable narcissism was not significant, β = .29, se = .18, $t(114)$ = .91, $p$ = .30, CIs [-.0726, .6505]. The main effect of self-concept clarity was not significant, β = .14, se = .16, $t(114)$ = .91, $p$ = .36, CIs [-.1685, .4569]. The main effect of manipulation condition was not

significant, β = .11, se = .19, $t(114)$ = .55, $p$ = .58, CIs [-.2765, .4883]. However, the results

were qualified by a significant three-way interaction, β = -.88, se = .27, $t(114)$ = -3.31, $p$ = .001,

CIs [-1.4132, -.3558].

Results of testing the conditional effects are presented in Table 26. Results indicated that

for the participants in the *non-ego-threatening manipulation* condition who possessed low

levels of self-concept clarity, the effect of vulnerable narcissism on self-perceived mate value

change scores was significant, β = .67, se = .31, $t(114)$ = 2.17, $p$ = .03, CIs. [.0320, .0585].

Further, for the participants in *ego-threatening manipulation* condition who possessed high

levels of self-concept clarity, the effect of vulnerable narcissism on self-perceived mate value

change scores was significant, β = .51, se = .24, $t(114)$ = 2.12, $p$ = .03, CIs. [.0355, .0352]

(Figure 19).

Table 26. Three-way interaction between manipulation condition, self-concept clarity and vulnerable narcissism

| | | β | se | t | 95% CI |
|---|---|---|---|---|---|
| Low self-concept clarity | Ego-threatening | .05 | .20 | .24 | [.81, -.35] |
| Low self-concept clarity | Non-ego-threatening | .67 | .31 | 2.17* | [.03, .06] |
| Average self-concept clarity | Ego-threatening | .28 | .18 | 1.53 | [.13, -.08] |
| Average self-concept clarity | Non-ego-threatening | .13 | .19 | .70 | [.48, -.24] |
| High self-concept clarity | Ego-threatening | .51 | .24 | 2.12* | [.04, .04] |
| High self-concept clarity | Non-ego-threatening | -.40 | .22 | -1.79 | [.08, -.85] |

*Note*. ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.
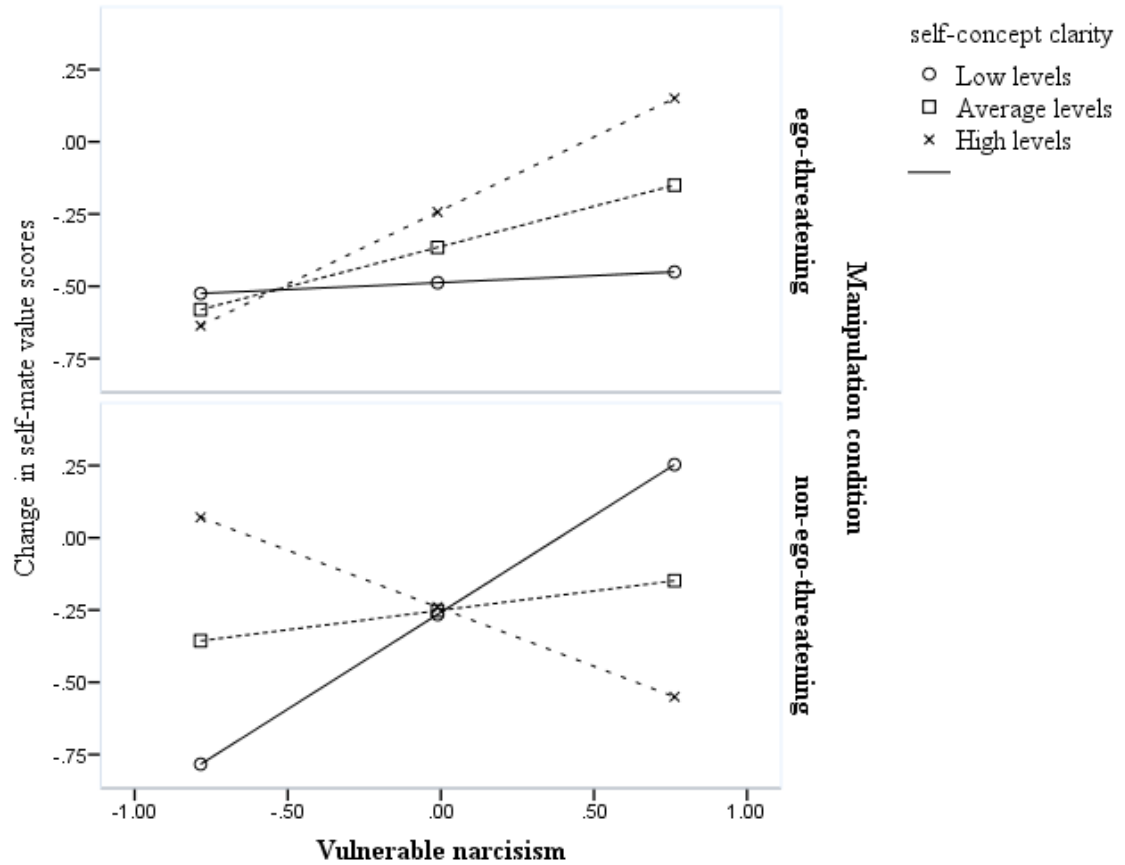
*Figure 19.* The three-way interaction between manipulation condition, self-concept clarity and vulnerable narcissism in female sample

The same analysis was conducted for the male participants' data. In Step 1, the manipulation condition was entered, $R = .47$, $R^2 = .23$, $\Delta R = .22$, $F(1, 57) = 16.55$, $p < .001$. In Step 2, the main effects were entered, $R = .51$, $R^2 = .26$, $\Delta R = .03$, $F(3, 54) = .72$, $p = .54$. In Step 3, the two-way interactions were entered, $R = .61$, $R^2 = .37$, $\Delta R = .12$, $F(5,49) = 1.79$, $p = .13$. In Step 4 of the model, all the other higher order interactions were entered, $R = .62$, $R^2 = $

.39, $\Delta R = .02$, $F(2, 47) = .62$, $p = .54$ (Table 27)[25]. The results indicated that only the main

effect of condition was significant, $\beta = .99$, se $= .23$, $t(57) = 4.07$, $p < .001$.

Table 27. Multiple Linear Regression predicting change in self-perceived mate value scores in male sample

| Variable | ß(SE) | ß | t | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Condition | .93(.23) | .47 | 4.07*** | .22 | [.47, 1.39] |
| **Step 2** | | | | | |
| Self-concept clarity | -.09(.14) | -.10 | -.65 | .006 | [-.36,.18] |
| Vulnerable | -.03(.19) | -.02 | -.14 | .0003 | [-.40,.35] |
| Grandiose | -.74(.72) | -.13 | -1.03 | .01 | [-2.19,.71] |
| **Step 3** | | | | | |
| Condition × self-concept clarity | .003(.29) | .002 | .001 | .000001 | [-.57, .58] |
| Condition × grandiose | 2.50(1.46) | .29 | 1.72 | .04 | [-.42, .43] |
| Condition × vulnerable | .34(.38) | .18 | .89 | .01 | [-.42, 1.11] |
| Self-concept clarity × grandiose | .34(.57) | .07 | .59 | .004 | [-.81, 1.49] |
| Self-concept clarity × vulnerable | -.25(13) | -.23 | -1.89 | .05 | [-.52,.02] |
| **Step 4** | | | | | |
| Condition × self-concept clarity × grandiose | -1.41 | 1.27 | -.19 | .02 | [-3.96,1.16] |
| Condition × self-concept clarity × vulnerable | -.02(.31) | -.01 | -.06 | .00005 | [-.64,.60] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

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[25] Statistical observed power to detect the effects in all steps of the model with an alpha of .05 was equal or greater than .93.

*3.4.5 Willingness to make changes in profile as the outcome variable*

I predicted that high levels of vulnerable narcissism in combination with low levels of self-concept clarity would predict willingness to make changes in one's dating profile after receiving romantic rejection (H15). In female sample, results of zero-order correlation analysis indicated that participants' scores on willingness to change one's dating profile was not significantly correlated with self-concept clarity, $r(123) = -.13$, $p = .16$, grandiose narcissism, $r(126) = .05$, $p = .61$, or vulnerable narcissism, $r(123) = .09$, $p = .29$. Similarly, in male sample, participants' scores on willingness to change one's dating profile was not significantly correlated with the scores on self-concept clarity, $r(57) = -.04$, $p = .78$, the scores on grandiose narcissism, $r(57) = -.01$, $p = .94$, or vulnerable narcissism, $r(57) = .008$, $p = .95$.

To test this prediction, I conducted a Multiple Linear Regression (MLR). In this model, condition was entered in Step 1 of the model, R = .35, $R^2 = .12$, $\Delta R = .12$, $F(1, 119) = 1.96$, $p = .05$. In Step 2, the main effects of grandiose narcissism, vulnerable narcissism and self-concept clarity were entered, R = .38, $R^2 = .15$, $\Delta R = .06$, $F(3, 112) = .99$, $p = .39$. In Step 3, the two-way interactions were entered, R = .39, $R^2 = .15$, $\Delta R = .02$, $F(5,107) = .08$, $p = .97$. In the Step 4 of the model, all the higher-order interactions were entered, R = .43, $R^2 = .19$, $\Delta R = .04$, $F(1, 105) = 2.45$, $p = .09$. The only significant result was related to the main effect of manipulation condition, $\beta = -.24$, $t(119) = -.2.57$, $p = .02$, such that the participants in the *ego-threatening*

manipulation condition were more willing to make changes in their dating profile after

receiving romantic rejection (Table 28)[26].

Table 28. Multiple Linear Regression predicting willingness to make change in one's
dating profile in female sample

| Variable | ß(SE) | ß | t | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Condition | -.70(.27) | -.24 | -2.57* | .05 | [-1.24, -.16] |
| **Step 2** | | | | | |
| Self-concept clarity | -.20(.19) | -.12 | -1.04 | .008 | [-.58,.18] |
| Vulnerable | .13(.20) | .07 | .64 | .001 | [-.27, .53] |
| Grandiose | 1.17(1.07) | .12 | 1.09 | .009 | [-.94, 2.39] |
| **Step 3** | | | | | |
| Condition × self-concept clarity | -.08(.37) | -.03 | -.22 | .0004 | [-.82, .66] |
| Condition × grandiose | .17(1.99) | .01 | .09 | .0006 | [-3.78,4.11] |
| Condition × vulnerable | .02(.40) | .009 | -.77 | .00003 | [-.77, .82] |
| Self-concept clarity × grandiose | .43(.98) | .04 | .44 | .002 | [-1.50,2.37] |
| Self-concept clarity × vulnerable | -.07(.19) | -.04 | -.37 | .001 | [-.45,.31] |
| **Step 4** | | | | | |
| Condition × self-concept clarity × grandiose | -4.27(2.04) | -.31 | -2.09 | .03 | [-8.32, -.22] |
| Condition × self-concept clarity × vulnerable | .39(.41) | .12 | .94 | .007 | [-.41,1.20] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

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[26] Statistical observed power to detect the effects in all steps of the model with an alpha of .05 was equal or greater than .94

Likewise, in male sample, I conducted a Multiple Linear Regression (MLR). In this model, condition was entered in Step 1 of the model, R = .41, $R^2$ = .17, $\Delta R$ = .17, $F(1, 57)$ = 1.28 , $p$ = .27. In Step 2, the main effects were entered, R = .43, $R^2$ = .19, $\Delta R$ = .02, $F(3, 57)$ = .34 , $p$ = .78. In Step 3, the two-way interactions were entered, R = .56, $R^2$ = .31, $\Delta R$ = .12, $F(5,52)$ = 1.51 , $p$ = .21. In the final Step of the model, all the other higher-order interactions were entered, R = .56, $R^2$ = .31, $\Delta R$ = .001, $F(2, 40)$ = 2.45 , $p$ = .96. Similar to the results obtained from the female sample, the main effect of manipulation condition was the only significant effect, $\beta$ = -.32, $t(57)$ = -.2.36, $p$ = .03, suggesting that the participants in the *ego-threatening* manipulation condition were more willing to make changes in their dating profile after receiving romantic rejection (Table 29)[27].

Table 29. Multiple Linear Regression predicting willingness to make change in one's dating profile

| Variable | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| **Step 1** | | | | | |
| Condition | -.89(.38) | -.32 | -2.36* | .09 | [-1.66, -.13] |
| **Step 2** | | | | | |
| Self-concept clarity | -.006(.25) | -.005 | -.024 | .000009 | [-.51, .50] |
| Vulnerable | -.03(.33) | -.02 | -.09 | .0001 | [-.69,.63] |
| Grandiose | -1.44(1.50) | -.17 | -.96 | .02 | [-4.47,1.59] |
| **Step 3** | | | | | |
| Condition × self-concept clarity | .42(.48) | .21 | .88 | .01 | [-.54,1.38] |

[27] Statistical observed power to detect the effects in all steps of the model with an alpha of .05 was equal or greater than .86.

| | | | | | |
|---|---|---|---|---|---|
| Condition × grandiose | 3.06(2.52) | .25 | 1.22 | .02 | [-2.02, 8.13] |
| Condition × vulnerable | -.35(.62) | -.13 | -.56 | .005 | [-1.60,.91] |
| Self-concept clarity × grandiose | .78(1.04) | .12 | .76 | .009 | [-1.31,2.87] |
| Self-concept clarity × vulnerable | -.355(.62) | -.13 | -.56 | .02 | [-1.60, .91] |
| **Step 4** | | | | | |
| Condition × self-concept clarity × grandiose | -.22(2.16) | -.02 | -.10 | .0001 | [-4.59,4.15] |
| Condition × self-concept clarity × vulnerable | -.02(.51) | -.007 | -.04 | .00004 | [-1.06,1.02] |

*Note.* ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

Chapter 4

The personality constructs of narcissism and self-concept clarity are important topics in

courtship behavior and online dating. Meanwhile, the current knowledge about how these

personality constructs, separately or in combination with each other can influence people's

behaviors in online dating is lacking. The current study aimed to understand better how

narcissism (grandiose and vulnerable) in conjunction with self-concept clarity predict a number

of online dating behaviors on a sample of university students. Perhaps, the most interesting

findings in this study are the results obtained from examining the associations between the

primary personality variables and participants' verbal behaviors when creating online dating

profiles. I hereby summarize and discuss the main findings of the current study.

## 4.1 Discussion

### 4.1.1 Photographic self-presentation

Online daters usually use various behaviors to form and create desirable impressions for

potential romantic partners. I hypothesized that grandiose narcissism would predict participants'

scores on photographic self-presentation. Results partially supported this prediction. Behavioral

photographic self-presentation, but not self-reported photographic self-presentation, was

positively correlated with grandiose narcissism. However, this significant association

disappeared after considering the effect of other variables in multiple regression analysis.

Additionally, gender was a significant predictor of photographic self-presentation such

that female participants scored higher than male participants in both self-reported and

behavioral photographic self-presentation. Results are consistent with the literature emerging

from online dating studies suggesting that women tend to present their physical appearance as

more favorable than it really is, whereas men are more willing to use deception to appear more dominant and assertive (Guadagno, et al., 2012). From an evolutionary psychological standpoint, physical attractiveness in women, is an indicator of health and fertility, increasing their mating chances (e.g., Shackelford, & Larsen, 1999). On the other hand, the covariate of profile importance was a positive predictor of self-reported photographic self-presentation.

In regard to behavioral coding of photographic self-presentation, low levels of vulnerable narcissism, combined with low levels of self-concept clarity, predicted higher behavioral photographic self-presentation. The results are unexpected but can be interpreted in light of current knowledge about these two personality constructs. In fact, both vulnerable narcissism and self-concept clarity are related to higher neuroticism and self-focused ruminations (Miller, et al., 2018; Ritchie, et al., 2011). In other words, individuals with higher vulnerable narcissism are higher in shame proneness, neuroticism, and a fearful or anxious attachment style (Miller, Dir, Gentile, Wilson, Pryor, & Campbell, 2010). Vulnerable narcissistic individuals also strive for opportunities for image cultivation, but they tend to use self-presentation strategies which do not threatening their low self-esteem (e.g. Hart, et al., 2017). On the other hand, low self-concept clarity is associated with a more effortful self-presentation (Duffy, 2014), and higher visibility on social media, perhaps as a means of shaping identity or enhancing self-esteem (Emery et al., 2014). In fact, the online context gives these people the opportunity to experiment with different versions of the self. As the current data suggests, when people are low on both vulnerable narcissism and self-concept clarity, they tend to use more photographic self-presentation in online dating.

### 4.1.2 Inauthentic self-presentation

Authentic self-presentation refers to a form of behavior when people authentically share their real and honest selves, including their accurate feelings and thoughts, in their online interactions (Wang, et al., 2018). Authentic self-presentation is in contrast with ideal self-presentation when people present versions of self that are not real but desirable for others. I predicted that low levels of self-concept clarity and high levels of vulnerable narcissism and high levels of grandiose narcissism would predict lower scores on inauthentic self-presentation scale. These predictions were supported at the zero-order correlation level, but the significant associations disappeared in the multiple regression model after removing the variance related to the covariates and other primary personality variables. Moreover, the extent to which participants had previous experience with online dating appeared to be the only significant predictor of inauthentic self-presentation. Perhaps, greater experience with online dating gives people a certain form of ability or intention to conceal some aspects of their real self; a behavior which is perhaps rewarding for the purpose of successful short-term mating in online dating.

### 4.1.3 Self-reported assertive self-presentation

According to the Conceptual Model of Romantic Relationship Initiation (Bredow et al. 2008), centering on strategic self-presentation, people attempt to make themselves more attractive to others in initial interactions through three types of self-presentation (a) appearing likable, (b) appearing competent/capable, and (c) appearing morally virtuous. Moreover, grandiose narcissism is marked with exacerbated level of assertive self-enhancement, which is responsible for overstating agentic attributes such as intelligence, creativity, scholastic and aptitude (Hart, et al., 2017). Assertive self-presentation also accounts for how grandiose narcissist individuals subjectively justify or rationalize their global self-evaluations by exalting

a sense of self-importance, entitlement, and social power. I predicted that higher levels of grandiose narcissism would predict higher assertive self-presentation. The results did not support this prediction. One possible explanation for lack of support of this prediction is the self-reported nature of the data that was used to test this prediction. Future research would benefit from making comparisons between participants' actual qualifications and the self-presentation behaviors which are for the purpose of showing higher status during initial online interactions.

### 4.1.4 Self-disclosure

Multiple studies over the past decade have shown that self-disclosure, or the act of revealing personal information about self to others, increases likability and is also a central component of developing intimate relationships (Collins & Miller 1994). In computer-mediated interactions (e.g., online dating), self-disclosure is a self-presentation strategy that allows people to create an online dating persona to obtain maximum results (Ellison, Heino, & Gibbs, 2006). This online self-disclosure seems to be as effective as face-to-face self-disclosures (e.g., Walther, 2011). According to Bredow, et al. (2008) conceptual model of romantic relationship initiation, the build-up of rapport or the act of self-disclosure is an important behavior in order to increase the chances of responsiveness.

I predicted that high levels of grandiose narcissism and high levels of self-concept clarity would significantly predict self-disclosure behavior. The results partially confirmed these predictions. First, grandiose narcissism was associated with behavioral self-disclosure, an effect that disappeared after controlling for the variance related to other variables in the study. Further, self-concept clarity emerged as a significant predictor of the scores on self-reported self-

disclosure. These results are supported by previous research (Tajmirriyahi & Ickes, 2020), such that those with a more clear and coherent self-concept usually feel more comfortable with disclosing intimate information about themselves to others, whereas those with low self-concept clarity struggle with self-disclosure and tend to focus on hiding their perceived flaws (e.g., Baumeister, Tice, & Hutton, 1989).

Interestingly, self-concept clarity interacted with vulnerable narcissism to predict higher self-reported self-disclosure, such that high self-concept clarity combined with high levels of vulnerable narcissism predicted higher self-reported self-disclosure. The fact that this marginally significant interaction was only observed for self-reported self-disclosure, but not behavioral self-disclosure, needs special attention.

Vulnerable narcissism, similar to grandiose narcissism, is related to a heightened impression motivation and therefore, more use of self-presentation tactics. However, vulnerable narcissists come across as neurotic, shy, and somewhat introverted in their initial interactions (Miller, et al., 2011). Vulnerable narcissism has been called *closet narcissism* (Masterson, 1993; Zeigler-Hill, Clark & Pickard, 2008). Those with higher vulnerable narcissism rely more on gaining the approval of others and tend to conceal their feelings and behavioral tendencies beneath a façade of inhibition, modesty, and concern for others (Zeigler-Hill, et al., 2008). The present findings suggest that perhaps those with high levels of vulnerable narcissism report to use self-disclosure as a controlled strategy to self-present themselves in the online dating.

### 4.1.5 Personal dating desirability (PDD)

I predicted that high levels of grandiose narcissism would predict higher scores on the personal dating desirability scale. The results confirmed this prediction. Recently, Zeigler-Hill

& Trombly (2018) examined the relationship between narcissism and mate value using the Narcissistic Admiration and Rivalry Concept (NARC) model (Back et al., 2013). They found that individuals with high levels of narcissistic admiration viewed themselves as possessing relatively high levels of self-perceived mate value, in contrast, narcissistic rivalry was related to lower self-perceived mate value. Narcissistic individuals tend to have an overly positive evaluation of their physical attractiveness (Bleske-Rechek, Remiker, & Baker, 2008; Gabriel, Critelli, & Ee, 1994). Meanwhile, it seems that there is only a modest association between narcissism and actual physical attractiveness (e.g., Holtzman & Strube, 2010). Moreover, there is a positive association between narcissism and grooming behaviors such as wearing fashionable clothes (e.g., Back, Schmukle, & Egloff, 2010; Davis, Dionne, & Shuster, 2001; Holtzman & Strube, 2013; Vazire et al., 2008).

### 4.1.6 Preference for a short-term relationship partner

I predicted that participants with higher levels of grandiose narcissism would report more interest in dating partners for short-term relationships. Results confirmed this prediction. In addition, the association between grandiose narcissism and preference for short-term relationship partner was moderated by gender, such that male participants with higher levels of grandiose narcissism reported to have more interest in short-term relationship partners.

These results are supported by Holtzman and Strube (2011)'s evolutionary model suggesting that because narcissistic individuals tend to show a strong interest in short-term, opportunistic mating, they often try to make themselves more attractive for these sorts of encounters (e.g., Dufner, Rauthmann, Czarna, & Denissen, 2013; Foster et al., 2006; Jonason, Valentine, Li, & Harbeson, 2011; Oltmanns, Friedman, Fiedler, & Turkheimer, 2004).

Interestingly, gender also moderated the association between self-concept clarity and preference for short-term relationship partners, such that male participants with low levels of self-concept clarity reported being more interested in short-term relationship partners. To my knowledge, no previous study explored the association between self-concept clarity and preference for short-term and long-term romantic partners. However, previous work has linked increased levels of self-concept clarity to higher quality and satisfaction in romantic relationships (e.g., Lewandowski, Nardone, & Raines, 2010), longer duration in romantic relationships (e.g., Mattingly et al., 2016), and better dyadic adjustment (e.g., Gurung et al., 2001). These findings suggested that people who hold more clearly and confidently defined self-views should also be more consistent in their thoughts, opinions, and behaviors (e.g., Campbell et al., 1996). This consistency must be an important factor for their interest in more long-term romantic relationships. On the other hand, those with lower self-concept clarity suffer from low self-esteem or emotional instability, low self-worth, which all can predispose them to be more interested in having a larger number of sexual partners, engaging in one-night stands, and possessing more parsimonious attitudes toward casual sex (e.g., Brennan & Shaver, 1995; Cooper, Shaver, & Collins, 1998; Feeney, Noller, & Patty, 1993; Gentzler & Kerns, 2004).

## 4.1.7 Use of first-person singular

I predicted that high levels of grandiose narcissism should predict more frequent use of first-person singular pronouns when creating online dating profiles. The results did not confirm this prediction. This association is highly intuitive because of the more general pattern of attention-seeking behaviors in individuals with grandiose narcissism, yet not all studies consistently replicated this association (see Carey, et al., 2015). One explanation for the lack of

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support for this prediction was that participants were explicitly asked to describe themselves in their dating profiles. In contrast, in natural conversations, a different parent of word choice should be observed.

Furthermore, the results of the current study indicated that self-concept clarity emerged as the only significant predictor of more frequent use of first-person singular pronouns. This could simply mean that those with higher levels of self-concept clarity tend to be more elaborative when describing themselves to the potential romantic partners. Various researchers have examined the use of first-person singular pronouns in the context of romantic relationship functioning. For example, Slatcher, Vazire, and Pennebaker (2008) found that more frequent use of first-person singular pronouns was positively correlated with higher satisfaction in romantic relationships. Future research should use language processing approaches such as Language Style Matching (LSM, Niederhoffer & Pennebacker, 2002), to calculate the difference between two speakers in terms of function words, and their association with self-concept clarity.

4.1.8 Usage of Sexual Words as a Cue for Interest in Sexual Intimacy

Online dating self-presentation strategies rely on both verbal and non-verbal cues (Walther, 2009). Also, narcissistic people are more impulsive and seek short-term relationships (e.g., Vazire & Funder, 2006); thus, I predicted that higher level of grandiose narcissism would be related to more frequent use of sexual word use in online dating. Result confirmed this prediction. Moreover, gender moderated the association between grandiose narcissism and sexual word use, such that female participants with a higher level of grandiose narcissism used a higher number of sexual words. These findings are supported by previous research. For

example, in one study, Holtzman, et al. (2010) found that narcissism was uniquely related to sexualized language use even after controlling for the potential overlap with the anger and swear words in everyday language.

More frequent use of sexual words in online dating can be an indicator of sexual self-presentation, which is a strategy with which individuals utilize sexuality to promote themselves in the online environment. According to both self-presentation theory (e.g., Baumeister & Hutton, 1987) and sexual strategy theory (Buss & Schmitt, 1993), some people use sexual talk to facilitate short-term relationships, which eventually increases the direct and indirect benefits of engaging in short-term mating relationships such as higher reproductivity. Furthermore, narcissistic individuals have been shown to actively pursuing short-term mating strategies (e.g., unrestricted socio-sexuality, mate poaching). The behavior of sexual self-presentation in grandiose narcissistic individuals can be demonstrated in their more frequent use of sexual words.

On the other hand, I found that female participants with higher levels of grandiose narcissism used more sexual words in their online dating profiles. These findings are consistent with an increasing body of research which emphasized on women's sexualized behaviors on social networking sites in order to attract potential sexual partners (Baumgartner, Sumter, Peter, & Valkenburg, 2015; van Oosten & Vandenbosch, 2017). These results suggested that narcissistic women may use sexualized language as a means for self-presentation in online dating.

### 4.1.9 Affective words as a Cue for Emotional Intimacy

More frequent use of positive and negative words increases emotional intimacy and closeness in romantic relationships (e.g., Slatcher, & Pennebaker, 2006), as well as triggering feedback and increases the likelihood of receiving a response from potential romantic partners. Thus, I expected that individuals with high levels of self-concept clarity and high levels of grandiose narcissism, although for different relational goals, tend to use the affective words more frequently when creating their online dating profiles. Results confirmed this prediction. As previously stated, self-concept clarity has been documented to be associated with high quality romantic relationships. In addition, Slatcher and Pennebaker (2006) found that those who use positive emotional words when communicating were more likely to be in stable romantic relationships. These researchers argued that words such as "happy" and "love" as emotion-based words are more effective in social relationships and accordingly increases emotional intimacy. However, grandiose narcissism is characterized by romantic relationships with are low intimacy and affection (e.g., Wurst, et al., 2017). Therefore, it can be concluded that in participants with high grandiose narcissism, the more frequent use of affective words is a self-presentation strategy for obtaining short-term mating purposes.

### 4.1.10 Use of achievement related words

I expected that high levels of self-concept clarity and high levels of grandiose narcissism would predict more frequent use of achievement-related words. Results indicated that self-concept clarity could significantly predict more frequent use of achievement-related words when creating their online dating profiles. Self-concept clarity has reliably been associated with goal striving and achievement (e.g., Fite, et al. 2017). Participants with higher levels of self-concept clarity are more likely to have a clear vision of who they are and what they want (e.g.,

Campbell, et al. 1996), which is manifested in their word choice in their online dating profiles. Possibly, the more clear and well-defined self-concept is, the more willing people are to talk about their goals and achievements in their online dating profiles.

4.1.11 Use of social processes words

I expected both self-concept clarity and grandiose narcissism to be positively correlated with more frequent usage of social words in one's online dating profile. Results showed that grandiose narcissism significantly predicted the use of social processes words when creating online dating profiles. Further, self-concept clarity moderated the association between grandiose narcissism and the frequency of social processes words. Similar to the affective words, high levels of grandiose narcissism combined with a high level of self-concept clarity positively predicted a higher frequency of social processes when creating online dating profiles. Previous work has linked social processes word use to social relationships and positive psychological outcomes (Pressman & Cohen, 2007).

4.1.12. Derogatory behavior toward other daters

Previous research (e.g., Ng, et al., 2013; Stucke & Sporer, 2002) found that narcissistic people have unstable and inflated self-esteem, and thus are predisposed to aggressive reactions after receiving ego-threatening feedbacks. I expected grandiose narcissism combined with low self-concept clarity to predict higher levels of derogatory behavior toward other dates when receiving rejection. Results of the current study partially support these predictions. Female participants showed more derogatory behavior after receiving rejection from other daters in the study. Although, no evidence was found on whether grandiose narcissism might affect this behavior.

### 4.1.13. Derogatory behavior toward the experiment/er

One of the ways people with high grandiose narcissism tend to maintain a positive self-view following negative feedback is by reducing the task importance (Crocker, Brook, Niiya, & Villacorta, 2006; Nicholls & Stukas, 2011; Morf & Rhodewalt, 2001). Thus, I expected grandiose narcissism to predict greater derogatory behavior toward the experiment/er after receiving rejection. Results of the current study indicated that female participants evaluated the study more negatively when receiving ego-threatening manipulation. However, no evidence was found for the effect of grandiose narcissism on derogatory behavior toward the experiment/er. Thus, the results did not support my prediction and hence, did not replicate the previous findings.

### 4.1.14 Change in self-perceived mate value

Previous work (e.g., Besser & Priel, 2010) has shown that people with high vulnerable narcissism react to ego-threatening situations by devaluating themselves, which stands in sharp contrast with high grandiose narcissism. Furthermore, when the self-structure is fragile, the person experiences more difficulty maintaining a sense of comfort and self-esteem, is more easily wounded or hurt and is more dependent on the confirmation and comforting of others. Thus, I expected higher vulnerable narcissism in combination with lower self-concept clarity to predict higher change in self-perceived mate value after receiving romantic rejection from other daters. Results only partially supported these predictions. First, ego-threatening manipulation resulted in a decrease in self-perceived mate value in female participants. On the other hand, in female participants with low levels of self-concept clarity, a positive association was observed

between vulnerable narcissism and self-perceived change after receiving a highly positive feedback from other daters in the study.

Also, in female participants with high levels of self-concept clarity, a positive association was observed between vulnerable narcissism and experience in self-perceived mate value after receiving highly negative feedback from other daters in the study. Perhaps high self-concept clarity buffers against the impact of rejection on vulnerable narcissism. This set of findings cumulatively suggest the complex interplay between vulnerable narcissism and self-concept clarity in self-evaluating after receiving rejection or acceptance from potential romantic partners. These self-evaluations could differ based on not just how much vulnerable narcissistic the person is but also on the clarity and consistency of self. Vulnerable narcissism has been characterized by low self-esteem and hypersensitivity to other people's evaluation, but self-concept clarity has been associated with highly consistent positive self-image and self-evaluation (Wong, et al., 2014).

4.1.15 Willingness to make changes in one's dating profile after receiving romantic rejection

I expected high levels of vulnerable narcissism to be a significant predictor of willingness to make a change in one's dating profile after receiving ego-threatening manipulation. Results of the current study showed that participants in ego-threatening manipulation condition were more willing to make changes in their dating profiles after receiving romantic rejection from potential romantic partners. However, there was no evidence of the effect of vulnerable narcissism on this association.

One of the concerns that should be discussed about the set of analyses conducted is that the inclusion of the higher-order interactions for all dependent measures regardless of the

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specific hypotheses. The reason for this exploratory approach was the hope to present "everything" to be consistent and transparent for the potential readers. However, it should be noted that running so many models and including all the higher-order interactions can inflate the chances of committing "Type I" error. Type I error happens when we reject a null hypothesis when it is actually true (for a discussion on Type I error in regression models see, Durand, 2013). Another source of Type I error is when independent variables are measured with even small amounts of error (Brunner & Austin 2007). Because of these two concerns, future readers should interpret the results with caution.

<div align="center">4.2 Strengths, Limitations, and Future Research</div>

The current investigation has a number of strengths. First, I examined the interplay between narcissism and self-concept clarity, in predicting a number of online dating behaviors. Second, unlike previous studies, I excluded the variance related to Big Five personality traits in all the analyses, hoping that the results illustrate a better understanding of how the primary personality variables can affect online dating behavior. Third, I explored online dating behavior using different methods, including self-reported, behavioral, and verbal indicators. Finally, I found that vulnerable and self-concept clarity might work together to predict self-evaluations after receiving romantic rejection.

The current study also suffers from a number of limitations. The first major limitation of the current study was that the participants were not real users of online dating apps. Instead, participants were university students with perhaps very limited experience with online dating, who took part in this study and were motivated by other purposes (e.g., completing course requirements) rather than actually finding a romantic/sexual partner. Consequently, the

experimental nature of the study might have distorted some of the findings. This claim is supported by some of the findings in this study. For example, the extent to which participants reported to have experience with online dating was a strong predictor of some of the online dating behaviors including inauthentic self-presentation, personal dating desirability and interest in short-term relationship partner. In other words, greater previous experience with online dating significantly predicated the extend of inauthentic self-presentation in online dating profiles, the extent to which participants found their dating profiles desirable for other daters and a greater interest in short-term mating relationships. Furthermore, participants who invested more in their dating profiles showed more behavioral self-disclosure, while those who considered their dating profile as more important scored higher in self-reported photographic self-presentation. Future research is suggested to try to replicate these findings with real users of online dating apps. The second limitation of the current study was the variability in the sample size for each gender, when in fact the gender differences in both narcissism (e.g., Grijalva, et al., 2015; Richman, & Flaherty, 1988) as well as courtship and romantic behaviors (Dhir, et al., 2016; Hiller, 2005) are well documented. In addition, the ineffectiveness of ego-treatening manipulation on the male participants was a major limitation of the current study, which restricted making inferences based on comparisons. Future research might focus on replicating these results with a larger sample size.

Chapter 5

Conclusions

The current investigation combined personality theories with those of online behaviors to investigate how narcissism and self-concept clarity influence a number of online dating behaviors. Results replicated several well-established findings in previous research. First, I found that grandiose narcissistic are more interested in short-term relationship partners. Second, I found that self-concept clarity can predict higher self-reported self-disclosure. Third, grandiose narcissism emerged as a significant predictor of self-perceived mating desirability.

Furthermore, the findings of the current study also contributed to the existing knowledge regarding how narcissism and self-concept clarity influence online dating behaviors in at least three ways. First, results indicated that personality traits manifest themselves in the word choice in dating profiles. For example, both grandiose narcissism and self-concept clarity significantly predicted more frequent use of social and affective words. These findings are interesting and deserve more attention in future research because they emphasize the importance of verbal behavior as self-enhancement strategies. In fact, using certain words can be an intelligent and creative way for online daters to mold the desired image in others. Previous work has only focused on the photographic self-presentation of individuals with high grandiose narcissism, whereas verbal self-presentation might also be an important strategic way to make the desired first impression. While deciding how to present themselves in their profiles, grandiose narcissistic people tend to engage in a pattern of deceptive communication by using affective and social words more frequently. This is particularly important because using these words for

deception purposes is an implicit and indirect self-image manipulation that other data cannot easily detect.

Second, a significant empirical finding in this study has been the identification of complex interplay between self-concept clarity and both sub-types of narcissisms in predicting various online dating behaviors including behavioral photographic self-presentation and self-evaluations after receiving the romantic rejection. Third, I found some interesting results about gender moderating the relationship between primary personality variables and online dating behaviors. For example, I found that female participants with higher grandiose narcissism tend to use more sexual words in their online dating. Also, I found that male participants with lower self-concept clarity were more interested in short-term relationship partners. Finally, future research might examine whether the interactive effects of narcissism and self-concept clarity can be expanded to other domains of interpersonal relationships.

Appendix A

Phase 1 Material

## Social Desirability scale Crowne & Marlowe (1960)

1. I like to gossip at times.
2. There have been occasions when I took advantage of someone.
3. I'm always willing to admit it when I make a mistake.
4. I always try to practice what I preach.
5. I sometimes try to get even rather than forgive and forget.
6. At times, I have really insisted on having things my own way.
7. There have been occasions when I felt like smashing things.
8. I never resent being asked to return a favor.
9. I have never been irked when people expressed different ideas very different from my own.
10. I have never deliberately said something that hurt someone's feelings.
11.

## Big Five Inventory-10

(1 = Strongly disagree, 7 = Strongly agree)

I see myself as someone who is.

1. is reserved
2. is generally trusting
3. tends to be lazy
4. is relaxed, handles stress well
5. has few artistic interests
6. is outgoing, sociable
7. tends to find fault with others
8. does a thorough job
9. gets nervous easily
10. has an active imagination

## Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988)

1.     A. I have a natural talent for influencing people.
       B. I am not good at influencing people.
2.     A. Modesty doesn't become me.
       B. I am essentially a modest person.
3.     A. I would do almost anything on a dare.
       B. I tend to be a fairly cautious person.
4.     A. When people compliment me I sometimes get embarrassed.

B. I know that I am good because everybody keeps telling me so.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

26.  A. Compliments embarrass me.
     B. I like to be complimented.
27.  A. I have a strong will to power.
     B. Power for its own sake doesn't interest me.
28.  A. I don't care about new fads and fashions.
     B. I like to start new fads and fashions.
29.  A. I like to look at myself in the mirror.
     B. I am not particularly interested in looking at myself in the mirror.
3.   A. I really like to be the center of attention.
     B. It makes me uncomfortable to be the center of attention.
31.  A. I can live my life in any way I want to.
     B. People can't always live their lives in terms of what they want.
32.  A. Being an authority doesn't mean that much to me.
     B. People always seem to recognize my authority.
33.  A. I would prefer to be a leader.
     B. It makes little difference to me whether I am a leader or not.
34.  A. I am going to be a great person.
     B. I hope I am going to be successful.
35.  A. People sometimes believe what I tell them.
     B. I can make anybody believe anything I want them to.
36.  A. I am a born leader.
     B. Leadership is a quality that takes a long time to develop.
37.  A. I wish somebody would someday write my biography.
     B. I don't like people to pry into my life for any reason.
38.  A. I get upset when people don't notice how I look when I go out in public.
     B. I don't mind blending into the crowd when I go out in public.
39.  A. I am more capable than other people.
     B. There is a lot that I can learn from other people.
4.   A. I am much like everybody else.
     B. I am an extraordinary person.

The Hypersensitive Narcissism Scale (HSNS)

(1 = Strongly disagree, 7 = Strongly agree)

1. I can become entirely absorbed in thinking about my personal affairs, my health, my cares or my relations to others.
2. My feelings are easily hurt by ridicule or the slighting remarks of others.
3. When I enter a room I often become self-conscious and feel that the eyes of others are upon me.

4. I dislike sharing the credit of an achievement with others.
5. I feel that I have enough on my hands without worrying about other people's troubles.
6. I feel that I am temperamentally different from most people.
7. I often interpret the remarks of others in a personal way.
8. I easily become wrapped up in my own interests and forget the existence of others.
9. I dislike being with a group unless I know that I am appreciated by at least one of those present.
10. I am secretly "put out" or annoyed when other people come to me with their troubles, asking me for my time and sympathy.

Self-Concept Clarity Scale (Campbell. 1996)

(1 = Strongly disagree, 7 = Strongly agree)

1. My beliefs about myself often conflict with one another.
2. On one day I might have one opinion of myself and on another day I might have a different opinion.
3. I spend a lot of time wondering about what kind of person I really am.
4. Sometimes I feel that I am not really the person that I appear to be.
5. When I think about the kind of person I have been in the past, I'm not sure what I was really like.
6. I seldom experience conflict between the different aspects of my personality.
7. Sometimes I think I know other people better than I know myself.
8. My beliefs about myself seem to change very frequently.
9. If I were asked to describe my personality, my description might end up being different from one day to another day.
10. Even if I wanted to, I don't think I could tell someone what I'm really like.
11. In general, I have a clear sense of who I am and what I am.
12. It is often hard for me to make up my mind about things because I don't really know what I want.

Self-perceived mate value scale (Edlund & Sagarin, 2014)

1. Overall, how would you rate your level of desirability as a partner for other daters in this study?
2. Overall, how would other daters of the opposite sex in this study rate your level of desirability as a partner?
3. Overall, how do you believe you compare to other daters in this study in desirability as a partner?
4. Overall, how good of a catch are you as a dating partner?

Appendix B

Phase 2 Material

Self-presentation Scale (adopted from Michikyan, Dennis, and Subrahmanyam, 2014)

(1 = Strongly disagree, 7 = Strongly agree)

*Photographic self-presentation items*

1.  I edited one or more of my dating profile photos on my dating profile to impress other daters.
2.  I used photo editing to make myself look more attractive.
3.  I used my best photos to impress others.
4.  I used photos with attractive clothes on to impress others.
5.  I used sexy/arousing photos.

*Assertive self-presentation*

1.  I describe myself as more successful than I actually am on my dating profile.
2.  I presented myself as being more assertive and charming than I actually am.
3.  On my dating profile, I presented only positive aspects of myself.

*Real/Inauthentic self-presentation*

4.  I presented myself as being more assertive and charming than I actually am.
5.  On my dating profile, I presented only positive aspects of myself.
6.  I posted some information about myself on my dating profile that is not true.
7.  Who I am on my dating profile is the same as who I am offline.
8.  The way I present myself on my dating profile is somewhat different from how I am in real life.
9.  I tried to be someone other than my true self on my dating profile.
10. My self-presentations on my dating profile were completely accurate reflections of who I am.

Self-disclosure Scale

(1 = Strongly disagree, 7 = Strongly agree)

1.  I rarely presented intimate, personal things about myself.
2.  I disclosed who I really was.
3.  I intimately revealed myself.

Personal dating desirability (PDD)

1.  Overall, how would you rate your level of desirability as a partner for other daters in this study?
    Extremely undesirable                                                                 Extremely desirable

2. Overall, how would other daters of the opposite sex in this study rate your level of desirability as a partner?
Extremely undesirable                                      Extremely desirable
3. Overall, how do you believe you compare to other daters in this study in desirability as a partner?
Very much lower than average                            Very much higher than average
4. Overall, how good of a catch are you as a dating partner?

Not at all a good catch                                       An excellent catch
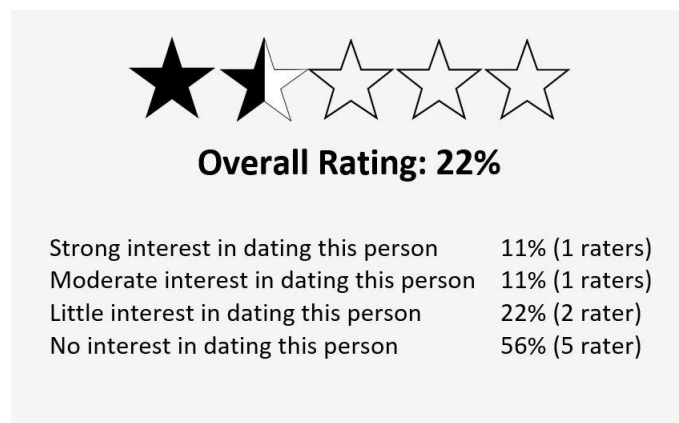
Appendix C

Phase 3 Material

Participants in *ego-threatening* condition, were prompted with the following message:

*Hi (name of the participant). Welcome to phase 3 of the UT Arlington Online Dating project. Over the past days, we created a standard-format dating profile for you based on the data you provided for us in Phase 2 of this project. After doing that, we asked a random sub-sample of opposite-gender participants in this project to rate your dating profile on how much they are willing to date you. Please continue to see the results and they were randomly assigned to either low threat condition or to high threat condition.*

In the high threat condition, participants were prompted with the following message:

*Based on the data we received, about 22% of the participants reported to be willing to date you and find you attractive as a date. See a summary of the ratings below.*



**Overall Rating: 22%**

| | |
|---|---|
| Strong interest in dating this person | 11% (1 raters) |
| Moderate interest in dating this person | 11% (1 raters) |
| Little interest in dating this person | 22% (2 rater) |
| No interest in dating this person | 56% (5 rater) |

*Here are some of the comments on your dating profile:*

*"This is not a person I would be interested in dating".*

*"Doesn't look promising--isn't someone I might want to date".*

Participants in *non-ego-threatening* condition, were prompted with the following

message:

*Based on the data we received, about 78% of the participants reported to be willing to*

*date you and find you attractive as a date. See a summary of the ratings below.*



Here are some of the comments on your dating profile:

*"This is a person I would be interested in dating".*

*"Looks promising--is someone I might want to date".*

Samples of researcher-made dating profiles



Please rate this profile by answering to the following question
1. I have...

a) Strong interest in dating this person.
b) Moderate interest in dating this person.
c) Little interest in dating this person.
d) No interest in dating this person.

2. How positively would you rate this person as a potential dating partner for yourself?
a) Extremely positive
b) Moderately positive
c) Slightly positive
d) Neither positive nor negative
e) Slightly negative
f) Moderately negative
g) Extremely negative

3. How desirable would you find this person as a dating partner?
a) Extremely desirable
b) Moderately desirable
c) Slightly desirable
d) Neither desirable nor undesirable
e) Slightly undesirable
f) Moderately undesirable
g) Extremely undesirable

4. How much would you actually like to date this person?
a) Definitely yes
b) Probably yes
c) Might or might not
d) Probably not
e) Definitely not

5. How would you feel about yourself if you were dating this person?
a) Extremely good
b) Moderately good
c) Slightly good
d) Neither good nor bad
e) Slightly bad
f) Moderately bad
g) Extremely bad

Please leave your comments about this profile below (optional).

Appendix D

Data collection process and participation attrition

314 female participants and 140 male participants completed Phase 1 of the data collection

173 female participants and 88 male participants completed Phase 2 of the data collection

126 female participants and 59 male participants completed Phase 3 of the data collection
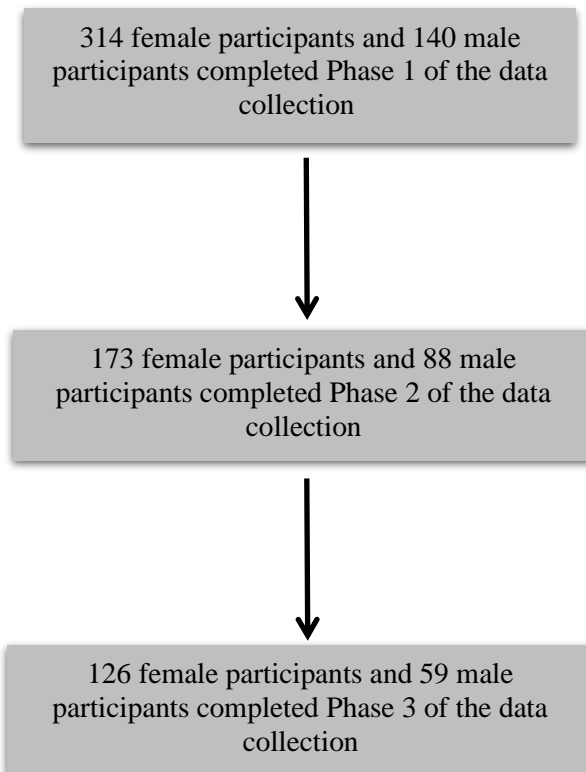
Figure S1. Flow diagram for the data collection process with number of participants in each phase of the study

Appendix E

Supplementary data analysis

**Preference in short-term relationship partner as the outcome variable**

Previous experience with online dating seems to be an important predictor of mating behavior such as preference in short-term relationship partner (e.g., Haslam, & Montrose, 2015). Thus, I tested how "previous experience" variable interact with the primary personality variables in the study to predict the most relevant outcome variables. Because there is a significant gender difference in previous experience with online dating, $t(9.3) = 2.01$, $p = .04$, with men (M = 3.88, SD = 1.04) scored higher than women (M = 3.57, SD = .84).

A three-step Multiple Linear Hierarchical Regression model was conducted to examine whether "previous experience with online dating" would interact with primary personality variables to predict the scores on the interest in short term relationship partner. Also, gender was included to examine whether it can moderate these associations. The main variables were entered in the Step 1, R = .52, $R^2$ = .27, $\Delta R$ = .27, $F(5,176) = 13.19$, $p < .001$. The two-way interactions were entered in Step 2, R = .57, $R^2$ = .32, $\Delta R$ = .05, $F(4,172) = 3.18$, $p = .02$. All the higher order interaction were entered in the Step 3, R = .57, $R^2$ = .33, $\Delta R$ = .007, $F(3,169) = .56$, $p = .64$.

Results indicate that the main effect of gender, $\beta = -.35$, $t(176) = -5.28$, $p < .001$, the main effect of previous experience, $\beta = .26$, $t(176) = 3.74$, $p < .001$, and the main effect of grandiose narcissism, $\beta = .23$, $t(176) = 3.68$, $p = .001$, was significant. Two significant two-interactions emerged.

Table S1. Multiple Linear regression with preference for short-term relationship partner as the outcome variable

| Step 1 | ß(SE) | ß | $t$ | $sr^2$ | 95% CI |
|---|---|---|---|---|---|
| Gender | -.83 (.16) | -.35 | -5.28*** | .01 | [-1.14, -.52] |
| Previous experience | .31(.08) | .26 | 3.74*** | .06 | [.15, .48] |
| Grandiose | 1.63(.49) | .23 | 3.23** | .04 | [.65, 2.62] |
| Vulnerable | -.08(.11) | -.06 | -.74 | .002 | [-.29,.13] |
| Self-concept clarity | -.13(.09) | -.12 | -1.45 | .009 | [-.31,.05] |
| **Step 2** | | | | | |
| Previous experience × gender | -.35 (.16) | -.21 | -2.15* | .02 | [-.67,-.03] |
| Previous experience × grandiose | 1.11(.50) | .15 | 2.23* | .02 | [.13, 2.08] |
| Previous experience × vulnerable | -.03(.11) | -.02 | -.26 | .0003 | [-.25,.19] |
| Previous experience × self-concept clarity | -.19 (.10) | -.16 | -1.88 | .01 | [-.39,.01] |
| **Step 3** | | | | | |
| Gender × Previous experience × grandiose | -.91(1.04) | -.09 | -.88 | .003 | [-2.96,1.14] |
| Gender × Previous experience × vulnerable | .23(.23) | .13 | .99 | .004 | -.23, .69 |
| Gender × Previous experience × self-concept clarity | .12(.22) | .07 | .06 | .09 | [-.30,.55] |

*Note*. ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

First, the two -way interaction between previous experience and gender was significant, β = -.21, $t(172) = -2.15$, $p = .03$. Moderation analysis indicate that the effect of previous experience on interest in short-term relationship partner was significant among men, b = .49, se = .12, $t(172) = 4.06$, $p = .0001$, [.25, .72] , but not women, b = .14, se = .11, $t(172) = 1.19$, $p = .23$, [-.09, .36].
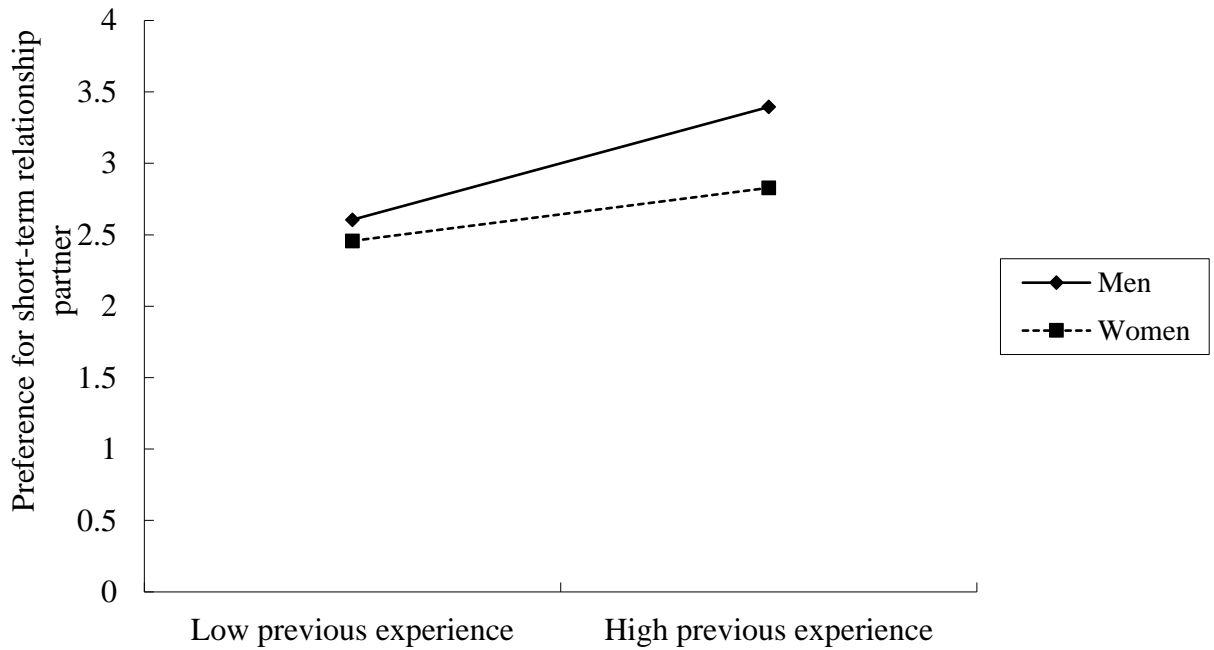
Figure S2. The two-way interaction between gender and previous experience predicting the preference for short-term relationship partner

The second significant two-way interaction was between grandiose narcissism and previous experiences, $\beta = .15$, $t(172) = 2.23$, $p = .03$. Moderation analyses indicated that the effect of grandiose narcissism on preference for short-term mating was significant at average level of experience, b = 2.38, se = .85, $t(169) = 2.80$, $p = .005$, [.7045. 4.0534], and at high level of experience, b = 3.22, se = .88, $t(169) = 3.67$, $p = .0003$, [1.4900, 4.9561].
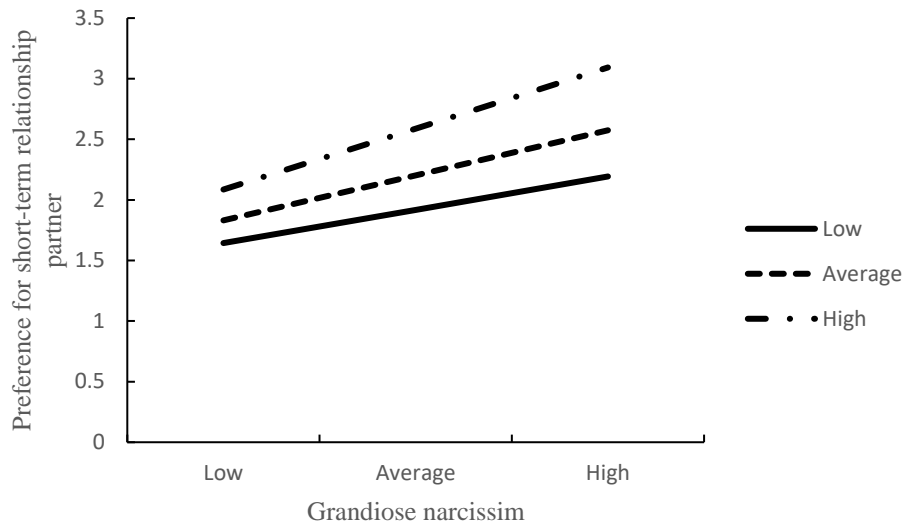
Figure S3. The two-way interaction between grandiose narcissism and previous experience predicting the preference for short-term relationship partner

**Inauthentic self-presentation as the outcome variable**

A two-step Multiple Linear Hierarchical Regression model was conducted to examine whether "previous experience with online dating" would interact with primary personality variables to predict the scores on the inauthentic self-presentation. It is hypothesized that grandiose narcissism should interact with previous experience to predict higher levels of inauthentic self-presentation. The main variables were entered in the Step 1, $R = .36$, $R^2 = .13$, $\Delta R = .13$, $F(4,178) = 6.72$, $p < .001$. The two-way interactions were entered in Step 2, $R = .39$, $R^2 = .16$, $\Delta R = .03$, $F(43,175) = 1.83$, $p = .14$. Results indicated that the main effect of self-concept clarity, $\beta = -.23$, $t(178) = -2.63$, $p = .009$, and previous experience, $\beta = .20$, $t(178) = 2.83$, $p = .006$. The two-way interaction between previous experience and grandiose narcissism was also significant, $\beta = .16$, $t(178) = 2.17$, $p = .03$.

Table S2. Multiple Linear regression with preference for short-term relationship partner as the outcome variable

| Step 1 | ß(SE) | ß | t | sr² | 95% CI |
|---|---|---|---|---|---|
| Previous experience | .21(.07) | .20 | 2.83* | .04 | [.06, .35] |
| Grandiose | .67(.43) | .12 | 1.54 | .01 | [-.19, 1.53] |
| Vulnerable | .09 (.10) | .08 | .99 | .005 | [-.09, .28] |
| Self-concept clarity | -.21(.08) | -.23 | -2.68*** | .03 | [-.37, -.05] |
| **Step 2** | | | | | |
| Previous experience × grandiose | .97(.45) | .16 | 2.17* | .02 | [.09, 1.83] |
| Previous experience × vulnerable | .07(.10) | .06 | .70 | .002 | [-.13, .28] |
| Previous experience × self-concept clarity | .02(.09) | .02 | .25 | .0003 | [-.16,.20] |

*Note*. ß = standardized coefficient; * = $p < .05$; ** = $p < .01$, *** = $p < .001$.

To investigate the significant two-way interaction between grandiose narcissism and previous experience, I conducted moderation analysis. Results indicated that only in individuals with higher levels of previous experience with online dating, the effect of grandiose narcissism on inauthentic self-presentation was significant, b = 1.48, se = .57, $t(175) = 2.58$, $p = .01$, [.35 2.61] (Figure S4). Thus, when grandiose narcissistic people have more experience with online dating, they tend to show a less authentic version of self in online dating context.
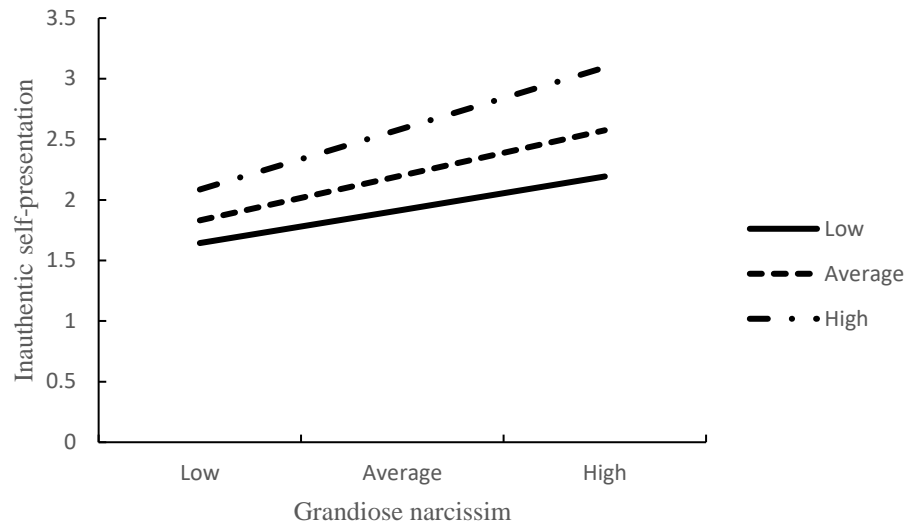
Figure S4. The two-way interaction between grandiose narcissism and previous

experience predicting the inauthentic self-presentation

No other significant results were found.

Appendix F

Multicollinearity analyses

Table S3. Multicollinearity statistics in Female sample

| Parameter | VIP | Increased SE |
|---|---|---|
| Age | 1.20 | 1.10 |
| Extraversion | 1.41 | 1.19 |
| Conscientiousness | 1.17 | 1.08 |
| Manipulation condition | 8.94 | 2.99 |
| Level of profile attractiveness | 2.65 | 1.63 |
| Self-concept clarity | 21.07 | 4.59 |
| Grandiose narcissism | 20.32 | 4.51 |
| Vulnerable narcissism | 19.21 | 4.38 |
| Condition × self-concept clarity | 18.60 | 4.31 |
| Condition × grandiose narcissism | 19.84 | 4.45 |
| Condition × vulnerable narcissism | 17.94 | 4.24 |
| Condition × self-concept clarity × grandiose narcissism | 19.13 | 4.37 |
| Condition × self-concept clarity × vulnerable narcissism | 13.12 | 3.62 |
| Condition × level × Self-concept clarity × grandiose narcissism | 19.11 | 4.37 |
| Condition × level × self-concept clarity × vulnerable narcissism | 13.22 | 3.64 |

Table S4. Multicollinearity statistics in Male sample

| Parameter | VIP | Increased SE |
|---|---|---|
| Extraversion | 1.01 | 1.05 |
| Manipulation condition | 11.29 | 3.36 |
| Level of profile attractiveness | 2.22 | 1.49 |
| Self-concept clarity | 22.69 | 4.76 |
| Grandiose narcissism | 14.54 | 3.81 |
| Vulnerable narcissism | 24.56 | 4.96 |
| Condition × self-concept clarity | 22.95 | 4.79 |
| Condition × grandiose narcissism | 17.68 | 4.21 |
| Condition × vulnerable narcissism | 22.88 | 4.78 |
| Condition × self-concept clarity × grandiose narcissism | 15.90 | 3.99 |
| Condition × self-concept clarity × vulnerable narcissism | 15.50 | 3.94 |
| Condition × level × Self-concept clarity × grandiose narcissism | 16.00 | 4.00 |
| Condition × level × self-concept clarity × vulnerable narcissism | 15.75 | 3.97 |

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