

Seeing My World in a Million Little Pieces: Narcissism, Self-Construal, and Cognitive–Perceptual Style

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ABSTRACT In 4 studies we examine the association between narcissism, self-construal, and cognitive–perceptual style, hypothesizing that high self-focus in combination with low other-focus (i.e., social atomization) is related to an analytic cognitive–perceptual style. Participants completed the Narcissistic Personality Inventory, the Self-Construal Scale, and measures of cognitive–perceptual style such as the Analysis-Holism Scale, the Embedded Figures Test, a visual illusion test, and a measure of the representativeness heuristic. We found evidence for a decontextualized cognitive–perceptual style in socially atomized participants, which included those high in narcissism and also those who had a combination of high independent and low interdependent self-construal. A meta-analytic integration of our findings found that narcissism was positively related to independent and negatively related to interdependent self-construal, and mediation analyses found some evidence that the relationship between self-construal and cognitive–perceptual style is partially mediated by narcissism.

Individualism and collectivism are two types of self-orientations that exist at the cross-cultural level (Oyserman, Coon, & Kemmelmeier, 2002; Triandis, 1995); however, these orientations can also exist at the individual level, as people of any culture can vary in their levels of independent or interdependent self-construal (Gudykunst et al., 1996; Markus & Kitayama, 1991). People with independent self-construals think of themselves in terms of their separateness and uniqueness from others and act in accordance with their feelings and attributes, whereas people with interdependent self-construals think of themselves in terms of their connectedness and unity with others

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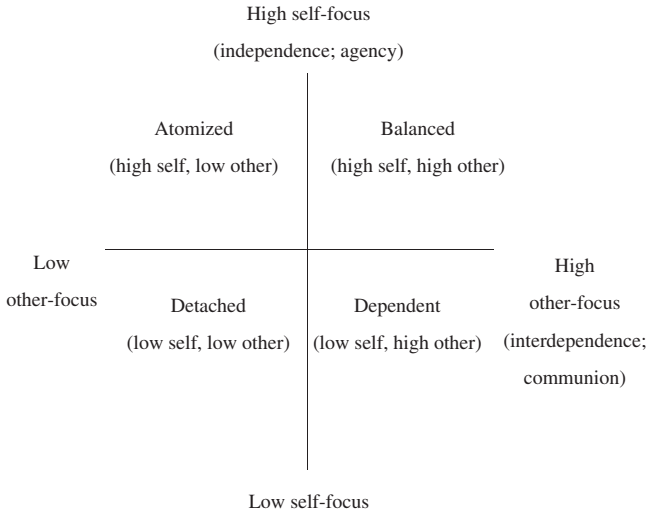


Figure 1
Quadrants of self-other-focus.

and act in accordance with their group roles, relationships, and status (Singelis, 1994; Singelis, Triandis, Bhawuk, & Gelfand, 1995).

Rather than being represented on a unipolar continuum starting from self-focus and ending at other-focus, there is accumulating research evidence that these two traits are best represented using two separate dimensions (Gudykunst et al., 1996; Oyserman et al., 2002; Singelis, 1994; Singelis & Brown, 1995; Triandis, Leung, Villareal, & Clack, 1985). This means that people can be high in one and low in the other, high in both, or low in both (see Figure 1). It is theoretically important to emphasize this orthogonality because we believe that the combination of high self-focus and low other-focus may be related to predictable interpersonal (see Bakan, 1966, for a review of what he called “unmitigated agency”) and intrapersonal outcomes, the latter of which we focus on in this paper. We call this combined state of high self-focus and low other-focus “social atomization,” because we believe it is related to decontextualized processing that perceives the self, social world, and physical environment as composed of many disconnected elements.

Narcissism is a personality trait that we think can be seen as one form of social atomization. (Throughout this article we will refer to people scoring high in the personality trait of narcissism as

“narcissists,” for convenience, although we are aware it is a continuous dimension; see Foster & Campbell, 2007). There is some evidence to suggest that narcissism is associated with a high self-focus and a simultaneous low other-focus. Narcissists have positive and inflated self-views related to uniqueness, superiority, entitlement, and authority (Campbell, Goodie, & Foster, 2004; Foster, Campbell, & Twenge, 2003). They have a tendency to boast about their achievements and, in general, have an arrogant attitude about their abilities (Paulhus, 1998).

Although narcissists make good first impressions, they are not well liked by others in the long term (Paulhus, 1998). Narcissists also have difficulty maintaining healthy interpersonal relationships (Campbell, 1999; Campbell, Bush, Brunell, & Shelton, 2005), perhaps because they demonstrate a lack of empathy (Watson, Biderman, & Sawrie, 1994; Watson, Grisham, Trotter, & Biderman, 1984) and are not committed to relationship partners (Campbell, Foster, & Finkel, 2002). Narcissists believe they are entitled to the admiration and respect of others, and, when they do not get it, they become aggressive (Baumeister & Bushman, 2002; Baumeister, Bushman, & Campbell, 2000; Baumeister, Smart, & Boden, 1996; Bushman & Baumeister, 1998).

Most research on narcissists has focused on their personal characteristics and relationship styles. There has been only a limited amount of work on how narcissists perceive their self-concepts in relation to others. Narcissism and *independent* self-construal should be positively related because they share similar core features of high self-focus. People with independent self-construals (or from individualistic cultures) lack modesty (Kurman & Sriram, 2002), think of well-being in terms of pride (Kitayama, Markus, & Kurokawa, 2000), think of past personal experiences from their own perspective rather than the perspective of others (Cohen & Gunz, 2002), are self-enhancing, especially on agentic traits like power and dominance (Kurman, 2001; Sedikides, Gaertner, & Toguchi, 2003), use more first person pronouns (Kashima & Kashima, 1998), attribute failure to situational factors and success to personal factors (Anderson, 1999), and score higher in extraversion (McCrae, Costa, & Yik, 1996; Shiota, Krauss, & Clark, 1996). This constellation of tendencies can also be found in narcissists (Campbell, Rudich, & Sedikides, 2002; Emmons, 1984; Paulhus & John, 1998; Raskin & Shaw, 1988; Rhodewalt & Morf, 1995). Indeed, by definition, narcissism involves a lack of modesty, strong feelings of pride, and

the inability to take another person's perspective (American Psychiatric Association, 1994).

Similarly, we expect that narcissism and *interdependent* self-construal should be negatively related. People with interdependent self-construals (or from collectivistic cultures) behave more cooperatively in social dilemma games (Utz, 2004; Wong & Hong, 2005), whereas narcissists behave less cooperatively in such games (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004; Campbell et al., 2005). Interdependent people value social harmony and treat relationships with others as primary (e.g., Gardner, Gabriel, & Lee, 1999), whereas narcissists have difficulty maintaining committed, long-term relationships (Campbell, 1999; Campbell et al., 2002, 2005).

Despite these apparent points of overlap, the link between self-construal (or individualism–collectivism) and narcissism has not received much attention from researchers. One large-scale study showed that people from more individualistic cultures were more narcissistic than those from less individualistic cultures (Foster et al., 2003). However, these researchers did not directly measure participants' own self-construals and instead grouped people into areas of the world that were high or low in individualism and compared their narcissism scores. Like many researchers, they also did not examine the effect of collectivism as a separate variable. Roberts and Helson (1997), like Foster et al. (2003), only focused on individualism and not collectivism. In their longitudinal study of women, they found that there was a strong positive correlation between scores on the California Personality Inventory's narcissism scale (Gough, 1987; Wink & Gough, 1990) and scores on the individualism items from the Secular Trends Index (Gough, 1991).

To date, there have not been any studies predominantly focused on the relationship between both types of self-construal and narcissism. One study examined the relationship between vertical individualism (i.e., a focus on inequality, competition, and status among autonomous individuals) and a ludic (game-playing) love style (Le, 2005). Vertical individualism is a measure of people's perceptions of equality and inequality in interpersonal relationships and is not related to independent self-construal (Singelis et al., 1995). As such, the author's main finding that narcissism mediated the relationship between vertical individualism and a ludic love style is not the primary reason we include this finding in the current article. More relevant is Le's peripheral finding that narcissism and inde-

pendent self-construal were positively related, $r(179) = .42, p < .001$, and narcissism and interdependent self-construal were negatively related, but not significantly, $r(179) = -.09, p > .05$.

From Le's (2005) study, we can be more confident that a link exists between independent self-construal and narcissism, even if the author did not directly focus on it. In the current studies we will try to replicate these preliminary findings, but we will also try to extend them by including a mediational analysis examining the relationships between self-construal, narcissism, and cognitive style as a first test of our theory of social atomization. Given the hardly superficial similarities between narcissism and individualism and given past research suggesting a link between narcissism and independence, we expect that there should be a strong positive relationship between the two constructs and perhaps a negative relationship between narcissism and interdependence. We present correlations from each individual study and also include a meta-analysis of the overall correlations across all four of our studies.

Social Atomization Theory and Cognitive Style

Cognitive–perceptual style is an individual differences variable that captures the way that people perceive their environment and organize information within it (Messick, 1984). In this article we suggest that social atomization, which we define as a high self-focus in combination with a low other-focus, is related to a more analytic and a less holistic cognitive–perceptual style. We hypothesize that socially atomized people have a cognitive style characterized by the ability to disembed information from its context. Although this type of cognitive style has been described using several different terms (Van Den Broeck, Vanderheyden, & Cools, 2003), we use the terms *holistic* and *analytic* cognitive style most frequently, although we also use the terms *field dependent* and *field independent* where appropriate. In line with past research, we define a holistic cognitive–perceptual style as one that is context dependent, focused on the whole or the “big picture,” and cognizant of how stimuli in the environment interrelate. In contrast, an analytic cognitive–perceptual style is one that is more context independent, in which individuals perceive objects as separate and distinct from their surroundings and thus easily disembedded. One style of thinking is not necessarily better than another style;

what matters most is goodness of fit between the thinking style and the cognitive task (e.g., Witkin, Moore, Goodenough, & Cox, 1977).

Narcissism is one example of a personality trait that is characterized by a high self-focus and low other-focus and thus would be considered a case of social atomization. Although high independent self-construal does not, in itself, fit our criteria for social atomization theory, when it is combined with low interdependence, we would expect it to be consistently associated with a number of similar outcomes as narcissism, including cognitive–perceptual style. Self-esteem, however, would not be considered a case of social atomization because it does not fit the definition of high self-focus in combination with low other-focus (see Campbell et al., 2002). Thus, we would not expect self-esteem to be related to a more analytic cognitive–perceptual style despite its modest relation to narcissism and individualism.

Cognitive–perceptual style can be measured with a number of different tests, some of which are more perceptual and some of which are more cognitive. In the Embedded Figures Task people are shown a complex picture and asked to find a simpler picture embedded within the larger one (Witkin, Oltman, Raskin, & Karp, 1971). People with a field-dependent or holistic style of thinking find this task challenging because the overall shape of the object distracts them from each individual component of it. People with a field-independent or analytic style of thinking, in contrast, are able to ignore the overall shape and focus on the small shapes that comprise it. Visual illusions are also more perceptually based tasks that may be affected by cognitive–perceptual style (e.g., see Happe, 1996). One relatively more cognitive task that we expect could be related to decontextualized information processing is the representativeness heuristic (Kahneman & Tversky, 1973; Tversky & Kahneman, 1974; see Study 3 for an explanation).

We expect that people who are better able to decontextualize information would perform better at any task, such as these, that penalized people for seeing important pieces of information as related. However, this is not to say that people with holistic cognitive–perceptual styles will always be subject to logical errors. Nor do we suggest that all heuristics and biases would follow this same pattern. What we are proposing is that more holistic people will succeed in tasks that require the preservation of contextual information, whereas more analytic people will succeed in tasks that require the separation and decontextualization of information. To the extent that a task from the heuristics and biases literature required

context-independent thinking in order for the person to be successful, we would expect socially atomized individuals to perform better on them and vice versa for people who are high in other-focus and low in self-focus (see Figure 1).

Cognitive-Perceptual Style and Self-Construal

Early research on field dependence and field independence was primarily focused on perceptual and intellectual tasks; however, field dependence/independence has also been shown to be relevant to the self and social behavior (Witkin & Goodenough, 1977). Early research provided evidence that field-independent people are higher in self-focus and lower in other-focus than are field-dependent people. Field-independent people make less use of other people's opinions and information (are less likely to be socially influenced) under ambiguous conditions, are less attentive to social cues, show more physical and emotional distance from others, and prefer solitary over interpersonal situations, as compared to more field-dependent people (Witkin & Goodenough, 1977).

Studies have found that field-independent people spend less time looking at peoples' faces and into their eyes (Ruble & Nakamura, 1972), sit further away from conversation partners (e.g., Holley, 1972; Justice, 1969), are more interested in jobs involving the use of analytic skills (for a review, see Witkin & Goodenough, 1977, pp. 676–677), are more likely to use first-person singular pronouns, and are less likely to use first-person plural pronouns (Dreyer, Dreyer, & Davis, 1987). Thus, individuals who perform better on analytic tasks also appear to be less social and more self-absorbed than those who perform poorly on analytic tasks, as we would predict from social atomization theory.

There has also been some evidence for social atomization theory in the individualism–collectivism and self-construal literature, although a key problem with the research thus far is that it does not treat self- and other-focus as orthogonal, as we do in this article. There is some research showing that the different social organizations in individualistic and collectivistic cultures covary with different cognitive styles. However, the fact that most researchers do not treat individualism and collectivism as separate dimensions makes it impossible to know whether high individualism itself (regardless of level of collectivism), low collectivism itself (regardless of level

of individualism), or their combination (i.e., social atomization) is related to an analytic cognitive–perceptual style. For example, one review found that cultures lower in “social conformity” were more likely to have a field-independent cognitive style (Witkin & Berry, 1975). Markus and Kitayama (1991) also note the connection between interdependence and context dependence suggesting that, “if one perceives oneself as embedded within a larger context of which one is an interdependent part, it is likely that other objects will be perceived in a similar way” (p. 246). Nisbett, Peng, Choi, and Norenzayan (2001) echo this sentiment in their review of cultures and systems of thought (see p. 294) and also suggest that if the self is viewed as independent of others, then objects will also be viewed as independent of one another (see p. 295).

We know of no studies, however, that examine relationships between the combination of *both* individualism and collectivism (or independence and interdependence) *and* cognitive style, at the same time. Most studies can only provide evidence that high self-focus is related to a more analytic cognitive–perceptual style *or* that high other-focus is related to a more holistic style. This is because they compare groups of people from different cultures on a single dimension that ranges from high collectivism to high individualism, and this makes it difficult to know whether collectivism, individualism, or the combination of being high in one and low on another is the most important predictor of cognitive–perceptual style (e.g., Ji, Peng, & Nisbett, 2000; Kühnen, Hannover, Roeder, et al., 2001).

Other studies prime participants with self- and other-focus and then measure cognitive–perceptual style (e.g., Kühnen & Oyserman, 2002; Kühnen, Hannover, & Schubert, 2001; Oyserman, Sorensen, Cha, & Schwarz, in press). However, this priming method, when considering the four quadrants of self and other-focus (Figure 1), may not be clarifying the effect of self- and other-focus on cognitive–perceptual style. When individuals are asked to circle first person singular pronouns in a paragraph (e.g., *I, me*; Brewer & Gardner, 1996; Gardner et al., 1999), it is likely that they are being put into the atomized state of high self-focus and low other-focus. However, when priming people to circle first person plural pronouns (e.g., *we, our*), they may be put into a state of high self-focus combined with high other-focus (i.e., balanced quadrant; Figure 1), because “we” by definition includes the self. High self-focus is primed in both priming groups, so the main difference between them is the

lower other-focus in the first person singular group. Without a control condition that is low in self-focus and low in other-focus (e.g., *it*), we cannot determine if it is high self-focus, high other-focus, or their combination that leads to the differences in cognitive-perceptual style.

In our theory of social atomization, we posit that the combination of high self-focus and low other-focus is related to a cognitive-perceptual style of decontextualization. In other words, in cases where the self is seen as separate and autonomous, with low consideration for relationships with others, objects in one's environment are also perceived as separate, autonomous, and unrelated.

Cognitive-Perceptual Style and Narcissism

Besides extending and replicating past findings on narcissism and self-construal and on self-construal and cognitive style, another important contribution of the current research is that it explores the cognitive-perceptual style of narcissists for the first time. Almost all research conducted on narcissism has focused on related personality characteristics and social behaviors. Although research has demonstrated a strong relationship between narcissism and negative interpersonal outcomes, one question that remains to be answered is how narcissists perceive and process information in general. As far as we know, no research has focused on the relationship between narcissism and cognitive-perceptual style, even though an understanding of cognitive-perceptual processes might have implications for better understanding the intrapersonal and interpersonal correlates of narcissism. Thus, the current studies will attempt to answer this important question directly by examining associations between narcissism and various measures of holistic and analytic cognitive-perceptual style.

The only speculation that we are aware of about what a narcissistic cognitive-perceptual style might look like is found in the early psychoanalytic literature where Walder (1925) suggested that narcissists might be highly analytic in their cognitive-perceptual style. He describes a case study of one of his narcissistic patients who was able to quickly "separate out the premises and from them conduct a subtle logical analysis" when presented with difficult problems and was "readily open to anything systematic" (p. 266).

Priming concepts of self has been shown to lead to greater field independence (e.g., Kuhnen et al., 2001), so it is possible that the excessive self-focus of narcissists would also be related to a perception

that objects in the environment are independent and disconnected from each other. Because the evidence we report in this study is correlational, we can only speculate on the causal direction of the relationship, and we do so in greater depth by presenting the results of a mediation analysis involving these three variables later in this article.

Overview

The purpose of these studies is to identify and measure a link between narcissism, self-construal, and cognitive–perceptual style. To date, there has been limited research on how narcissism, at the individual level, is related to self-construal; in addition, there is *no* empirical research that links narcissism with an analytic cognitive–perceptual style. Examining the relationships between them could also have applied significance, such as the development of techniques to reduce negative outcomes associated with narcissism.

In four studies, participants completed the Narcissistic Personality Inventory (Raskin & Hall, 1979; Raskin & Terry, 1988) and the Self-Construal Scale (Singelis, 1994). They also completed measures of cognitive–perceptual style. In Studies 1a and 1b we used the Analysis-Holism Scale (Choi, Koo, & Choi, 2007), which is a measure of holistic thinking. In Study 2 we used the Embedded Figures Test (Witkin et al., 1971), which is a measure of analytic cognitive–perceptual style. Finally, in Study 3 we examined narcissists' performance on a visual illusion task and a measure of the representativeness heuristic (Kahneman & Tversky, 1973; Tversky & Kahneman, 1974), both of which we chose to use for this task because they require decontextualization to be successful. Participants in all studies also completed a Self-Esteem Scale (e.g., Rosenberg, 1965; Robins, Hendin, & Trzesniewski, 2001). We included this measure to demonstrate that the most consistent predictors of cognitive style will be those which involve a simultaneous focus on the self with a low focus on others (i.e., social atomization).

We expected narcissism to correlate positively with independent self-construal across all four studies. In addition, we expected narcissism to correlate negatively with interdependent self-construal, based on our theoretical model of narcissism as a case of social atomization (i.e., high self- and low other-focus). We also expected that narcissists would score low on the holism measure (Study 1), high on the Embedded Figures Test (Study 2), and be less susceptible

to a visual illusion task and the representativeness heuristic (Study 3). Finally, we hoped to provide evidence for our theory of social atomization by showing that self-construal and narcissism are both independent, but related, predictors of cognitive style. To do so we conducted a mediation analysis that examined the role of narcissism as a possible mediator of the relationship between self-construal and cognitive style.

STUDIES 1A AND 1B: NARCISSISM AND HOLISM

In Studies 1a and 1b we use a recently developed personality scale that measures holism to examine the cognitive–perceptual style of narcissists. People who score high on this holism scale have been found to pay more attention to the whole field rather than individual objects, consider more information when explaining causality, categorize objects using relationships rather than categorical rules, and endorse cyclical views of change (Choi et al., 2007). We expected that narcissism would be negatively related to holistic thinking.

Method

Participants

In Study 1a, participants were 140 college students and community participants (78 women, 62 men) who received course credit or payment in exchange for their voluntary participation. Seventy-four participants were Caucasian, 48 were Asian American, 8 were Hispanic American, 5 were African American, and 3 were of mixed ethnicity. Their mean age was 23.06 years ($SD = 7.62$). In Study 1b, participants were 96 college students (73 women, 23 men) who received payment in exchange for their voluntary participation. Forty participants were Caucasian, 36 were Asian American, 3 were Hispanic American, 11 were African American, and 6 were of mixed ethnicity. Their mean age was 20.87 years ($SD = 2.32$).

Personality Questionnaire

The personality questionnaire contained measures of narcissism, self-esteem, self-construal, and holism. In Study 1a, narcissism was assessed using the 40-item Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988), whereas in Study 1b it was assessed using

the 16-item NPI (Ames, Rose, & Anderson, 2006). For each of the forced-choice dyads on the scale, participants chose either the narcissistic response (e.g., “If I ruled the world it would be a better place”) or the nonnarcissistic response (e.g., “The thought of ruling the world frightens the hell out of me”). The total number of narcissistic answers are summed together, with higher scores indicating higher levels of narcissism.

In Study 1a, self-esteem was assessed using the Self-Esteem Scale (Rosenberg, 1965), which consists of 10 items (e.g., “I take a positive attitude toward myself.” and “On the whole, I am satisfied with myself.”), that were scored using a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). In Study 1b we used the Single-Item Self-Esteem Scale (Robins et al., 2001), which consists of a single item: “To what extent do you agree with this statement: ‘I have high self-esteem’” (1 = *not very true of me*, 11 = *very true of me*).

In both studies, self-construal was assessed using the Self-Construal Scale (Singelis, 1994). It consists of 24 items, 12 that measure interdependent self-construal (e.g., “It is important to me to respect decisions made by the group.”) and 12 that measure independent self-construal (e.g., “I enjoy being unique and different from others in many respects.”). Items were rated using a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

In addition to measuring personality traits, we also measured self-reported holistic cognitive–perceptual style. Holism was measured in both studies using the Analysis-Holism Scale (AHS; Choi et al., 2007). Participants were asked to what extent they agreed with 24 statements endorsing holistic values (e.g., “It is more desirable to take the middle ground than go to extremes.” “It is more important to pay attention to the whole than its parts.”). Items were rated on a 7 point scale (1 = *strongly disagree*, 7 = *strongly agree*).

Results

Narcissism and Self-Construal

Correlations between the individual difference variables are given in Tables 1a and 1b. Across all analyses in this article we have controlled for gender and age, because both of these variables have been found to be associated with narcissism in past research (e.g., Foster et al., 2003) and neither are directly relevant to the key tenets of our current argument. As in past research (Singelis, 1994), independent

Table 1a
Relationship Between Narcissism and Other Individual Difference Measures in Study 1a

Measure	1	2	3	4	5
1. Narcissism	16.48 (7.10) $\alpha = .85$	-.04	.26**	-.22*	.38**
2. Interdependence		4.83 (0.80) $\alpha = .69$	-.12	.12	-.14
3. Independence			4.75 (0.79) $\alpha = .75$	-.16 ~	.34**
4. Holism scale overall				4.70 (0.66) $\alpha = .71$	-.06
5. Self-esteem					5.46 (0.97) $\alpha = .82$

Note. $N = 140$. Scale means, standard deviations (in parentheses), and Cronbach's α coefficients are on the diagonal. All results are controlling for participant gender (male = 1, female = 0) and age.

~ $p < .10$, * $p < .05$, ** $p < .01$.

and interdependent self-construal were orthogonal in both studies. Thus, we examine their relationships with narcissism separately. As expected based on past research (e.g., Le, 2005) narcissism was positively correlated with independent self-construals in both stud-

Table 1b
Relationship Between Narcissism and Other Individual Difference Measures in Study 1b

Measure	1	2	3	4	5
1. Narcissism (16-item scale)	5.36 (3.37) $\alpha = .75$	-.17	.42**	-.18 ~	.50**
2. Interdependence		4.99 (0.77) $\alpha = .74$	-.04	.42**	-.05
3. Independence			4.82 (0.98) $\alpha = .71$.00	.47**
4. Holism scale overall				5.03 (0.53) $\alpha = .74$	-.06
5. Self-esteem (single-item self-esteem scale)					7.62 (2.38)

Note. $N = 96$. Scale means, standard deviations (in parentheses), and Cronbach's α coefficients are on the diagonal. All results are controlling for participant gender (male = 1, female = 0) and age.

~ $p < .10$, ** $p < .01$.

ies. However, it was not related to interdependence in either study (see Tables 1a and 1b).

Narcissism and Holism

Confirming our hypotheses, there was a significant negative association between narcissism and holism on the overall Analysis-Holism Scale in Study 1a and a marginally significant association in Study 1b (see Tables 1a and 1b). We combined Studies 1a and 1b in order to examine overall patterns in the relationships between the variables. To do this, we first standardized self-esteem and narcissism in both studies, because we used shortened versions of each scale in Study 1b. We next combined the two files and examined the overall correlations. We found that narcissism was positively related to independence, $r(228) = .32, p < .001$, and was marginally negatively related to interdependence, $r(228) = -.11, p = .098$. Narcissism was also negatively related to holism overall, $r(228) = -.21, p = .001$.

Self-Construal and Holism

In Study 1a there was a marginal negative relationship between independent self-construal and holism and no relationship between interdependent self-construal and holism overall. Study 1b found no overall relationship between independence and holism, but found a positive relationship between interdependence and holism overall. Combining Studies 1a and 1b into one data file, we found that the consistent pattern across the two studies was a positive correlation between interdependence and holism overall, $r(232) = .24, p < .001$.

Mediation Analysis

Next, we wondered whether the relationship between self-construal and holism was mediated by narcissism using the methods of Baron and Kenny (1986). To test for this, we created a difference score measure for each study in this article by subtracting interdependence from independence. Lower numbers for this combined self-construal variable indicate that interdependence is higher relative to independence, and higher numbers indicate that independence is higher. We are aware that the use of difference scores is a subject of much debate (e.g., Bedeian, Day, Edwards, Tisak, & Smith, 1994); however, we have

an important theoretical reason to do so. To test our theory of social atomization, it is important to examine the effect of only two of the four self–other focus quadrants on cognitive style (see Figure 1). The two quadrants of interest are Atomized (high self-focus, low other-focus) and Dependent (low self-focus, high other-focus). We expect that people in the Atomized quadrant will have the most analytic cognitive–perceptual style and people in the Dependent quadrant will have the most holistic one, with the other two quadrants (Balanced: high self, high other, and Detached: low self, low other) somewhere in between. The important point is that the latter two quadrants should not vary in their levels of cognitive style because neither of them are on the Atomized–Dependent continuum. Thus, it is justifiable in terms of our theory if a difference score effectively equalizes them because they have similar *relative* levels of independence and interdependence. Because the difference between independence and interdependence is the critical variable of interest for social atomization theory, a difference score is appropriate to use in this case because it can capture the predominance of independent self-construal relative to interdependent self-construal in each person and vice versa.

In regression analyses, socially atomized self-construal (i.e., high independence, low interdependence) was positively related to narcissism and negatively related to holism. Narcissism was also negatively related to cognitive–perceptual style. However, when controlling for narcissism, the relationship between self-construal and cognitive–perceptual style was significantly reduced, which provided evidence for partial mediation (see Table 4).

Discussion

Across Studies 1a and Study 1b we found some evidence that narcissism is associated with a more independent and a somewhat less interdependent self-construal. That narcissism is related to independence is consistent with Le’s (2005) work, and our other studies will, we hope, provide more clarification as to the relationship between narcissism and interdependence, which we hypothesize should be negative. We also found that narcissism is negatively related to self-reported holistic thinking overall.

There was no relationship between independent self-construal and self-reported holism overall; however, there was a positive correlation between interdependence and holism. Across the two studies,

people with interdependent self-construals look like the opposite of narcissists in their approach to context: They report that they see the world as complexly interrelated parts that make up a larger whole.

Although self-esteem was related to narcissism and independence in both studies, it was not related to cognitive style in either of them. Self-esteem and narcissism both involve a focus on the positive aspects of the self; however, narcissism is also associated with lower empathy and interest in others (Campbell et al., 2002), so we would not expect self-esteem to be related to cognitive-perceptual style.

Another important finding was that the relationship between socially atomized self-construal and cognitive style was partially mediated by narcissism. This means that increasing social atomization (i.e., high independence, low interdependence) leads to increased narcissism, which leads to a less holistic cognitive style, with a remaining independent effect of social atomized self-construal on self-reported cognitive-perceptual style. Given the use of a self-report measure of cognitive-perceptual style and given that this is only a first test of our theory, we felt it was premature to make any conclusions without further evidence.

STUDY 2: NARCISSISM AND ANALYTIC COGNITIVE-PERCEPTUAL STYLE

Studies 1a and 1b can be seen as an initial test of our theory of social atomization, but they could be improved with the use of a standardized, more perceptual measure of cognitive-perceptual style rather than a self-report measure that is subject to the associated biases of such measures. Thus, in Study 2 we used the Embedded Figures Test, an established standardized test that measures analytic cognitive-perceptual style to assess whether (a) narcissism is related to self-construal and cognitive style, (b) self-construal is related to cognitive style, and (c) the relationship between socially atomized self-construal and cognitive style is partially mediated by narcissism.

Method

Participants

Participants were 111 college students (92 women, 19 men) who received course credit in exchange for their voluntary participation. Seventy-seven

participants were Caucasian, 17 were Asian American, 3 were Hispanic American, 5 were African American, and 9 were of mixed or unknown ethnic background. Their mean age was 18.67 years ($SD = 0.76$).

Procedure

Participants were told that the researchers were studying personality traits. After informed consent was obtained, participants completed the NPI (Raskin & Terry, 1988), the Self-Esteem Scale (Rosenberg, 1965), and the Self-Construal Scale (Singelis, 1994). Next, participants completed the Embedded Figures Test (Witkin et al., 1971), which measures field independence or analytic cognitive–perceptual style. The Embedded Figures Test contains 18 complex figures, each containing one simple embedded figure. After a 2-min trial block, the test is done in two separate 5-min blocks of nine shapes each. In each of the 5-min blocks, participants try to locate as many of the embedded simple figures as they can. Total scores can range from 0 to 18, with higher scores indicating higher levels of field independence.

Results

Correlations between the individual difference variables are given in Table 2. As expected, narcissism was positively correlated with independence and was negatively correlated with interdependence. As predicted, narcissism was positively correlated with performance on the EFT. This conceptually replicates the results reported in Studies 1a and 1b using a different cognitive style measure. Overall, those with more independent self-construals performed better on the Embedded Figures Task, indicating that they were more field independent, but there was no association between interdependent self-construal and performance on the EFT.

Mediation Analysis

In regression analyses, socially atomized self-construal (i.e., high independence, low interdependence) was again positively related to narcissism and a more analytic cognitive–perceptual style. Narcissism was again related to an analytic cognitive–perceptual style. However, when controlling for narcissism, the relationship between self-construal and cognitive–perceptual style was again reduced

Table 2
 Relationship Between Narcissism and Other Individual Difference Measures in Study 2

Measure	1	2	3	4	5
1. Narcissism	18.84 (6.66) $\alpha = .83$	-.45**	.31**	.19*	.24*
2. Interdependence		5.02 (0.71) $\alpha = .70$.04	-.09	-.15
3. Independence			5.02 (0.69) $\alpha = .67$.19*	.24*
4. Embedded Figures Test				10.75 (4.74) $\alpha = .82$.17 ~
5. Self-Esteem					5.83 (0.86) $\alpha = .85$

Note. $N = 111$. Scale means, standard deviations (in parentheses), and Cronbach's α coefficients are on the diagonal. All results are controlling for participant gender (male = 1, female = 0) and age.

~ $p < .10$, * $p < .05$, ** $p < .01$.

($p = .055$), which provided more evidence for partial mediation (see Table 4).

Discussion

As in Studies 1a and 1b, we found that narcissism is positively related to independent self-construal. However, unlike in the first two studies, Study 2 found that narcissism is also negatively related to interdependent self-construal. Given this inconsistency, we conducted a meta-analysis of all of our studies after Study 3 to determine the overall relationship between narcissism and self-construal. Although self-esteem was related to narcissism and independence, it was again not significantly related to cognitive style. In addition, we found, as predicted, that narcissism was associated with higher scores on the Embedded Figures Test, a test of analytic cognitive-perceptual style. This finding conceptually replicates the association between narcissism and lower holism found in Studies 1a and 1b. The correlations between narcissism and field independence appear to be small, but the effect in Study 2 appears to be of a similar

magnitude as the more established relationship between independent self-construal and field independence.

Study 2 highlights the usefulness of considering the social atomization quadrant when examining the relationship between self- and other-focus and cognitive style. Using very similar measures, in Study 1a and Study 1b, we found that in one case independence was the more important predictor of cognitive style and in the other case it was interdependence. In Study 2 we found that independent, but not interdependent, self-construal is related to cognitive style. When researchers use a single dimension to study self- and other-focus, they will likely end up with these kinds of inconsistent patterns. It is possible that with more studies we could understand why in each specific study one predictor is more prominent than another (e.g., demographic differences may influence this); however, across both studies we found that a consistent pattern emerges when examining the effect of socially atomized self-construal on cognitive-perceptual style.

STUDY 3: ADDITIONAL EVIDENCE FOR SOCIAL ATOMIZATION THEORY

In Study 3 we attempted to expand the idea of analytical cognitive-perceptual style by examining other, more exploratory, measures. For example, one item we included is a standard visual illusion. Highly analytic people should be less susceptible to such visual illusions because they can disembed visual information from its context. Because holistic people are more likely to process visual information embedded in its context, they should be especially susceptible to visual illusions. Thus, in this study we predict that narcissists should be less susceptible to visual illusions because their analytic cognitive-perceptual style allows them to easily disembed information from its context.

Another implication of narcissists' superior analytical abilities is that they should be less susceptible to heuristics that require a decontextualized thinking style to be successful. In the representativeness heuristic, people are given two pieces of information: a description of a highly stereotypical target and statistical data about the target's true likelihood of fitting the stereotype (Kahneman & Tversky, 1973; Tversky & Kahneman, 1974). If people process these two pieces of information as separate, they are likely to realize that the statistical information is more accurate than the written description. A more holistic approach that fuses these two aspects of the

question leads to an overestimation that the description is indeed from the stereotyped occupation. Thus, in Study 3 we examine whether narcissists are more accurate in using base rate information when given an example of the representativeness heuristic.

Method

Participants

Participants were 80 college students (49 women, 31 men) who received course credit in exchange for their voluntary participation. Fifty-five participants were Caucasian, 20 were Asian American, 3 were African American, and 2 were unknown. Their mean age was 18.82 years ($SD = 2.16$).

Procedure

Participants were told that the researchers were studying personality traits, and they completed a questionnaire that included the same measures as the previous studies (narcissism, self-construal, self-esteem). They were next shown a visual illusion that depicts a picture of two sets of apartment houses on a block with a street down the middle. In the picture there are two lines, AB and CD, which are actually identical in length but AB appears much longer because of distractor lines drawn in the middle. We first asked participants which line appeared to be longer, and then asked by how much longer the line was, giving them seven options ranging from 2 mm to more than 12 mm. Participants were told that they should write the word “seen” on the picture if they had previously seen this visual illusion.

Next, participants were asked to read the following paragraph which is a measure of the representativeness heuristic (Kahneman & Tversky, 1973; Tversky & Kahneman, 1974):

A panel of psychologists have interviewed and administered personality tests to 30 engineers and 70 lawyers, all successful in their respective fields. On the basis of this information, short descriptions of the 30 engineers and 70 lawyers have been written. Below you will find one description, chosen at random from the 100 available descriptions. For the description below, please indicate your probability that the person described is an engineer, on a scale from 0 to 100.

Description: Hans K. is 45 years old. He is married and has four children. Hans K. is generally conservative, careful, and ambitious. He shows no interest in social and political issues. He spends most of his time on his many hobbies, which include working on his house, sailing, and solving mathematical puzzles.

After reading these paragraphs participants were asked what the probability was that Hans K. was one of the 30 engineers in the sample of 100. The correct answer is 30 because the description clearly states that the description was chosen at random; however, past research has found that people tend to overestimate the probability that Hans is an engineer because Hans fits into their stereotypical idea of what an engineer would be like (Kahneman & Tversky, 1973; Tversky & Kahneman, 1974). We thought that people scoring high in narcissism, however, would be more accurate in their estimate because their analytic cognitive-perceptual style would lead to more attention to the given base rate.

Results

Narcissism and Self-Construal

Correlations between the individual difference variables are given in Table 3. Consistent with past research (Singelis, 1994), independent and interdependent self-construal were uncorrelated. As expected, narcissism was positively correlated with independence and negatively correlated with interdependence.

Narcissism and Visual Illusion

Three participants chose not to answer this question and 4 were excluded for failing to follow instructions. Although 2 participants said that they had previously seen this visual illusion, the results remained the same whether they were included or excluded, so we kept them in this analysis. We ran a correlation between narcissism and the length that participants thought that one line exceeded the other. A longer estimate represents more susceptibility to the visual illusion whereas a shorter one represents less susceptibility. We found that people scoring high in narcissism reported a smaller difference between the two line lengths. In other words, narcissists were less susceptible to the visual illusion.

Table 3
 Relationship Between Narcissism and Other Individual Difference Measures in Study 3

Measure	1	2	3	4	5	6
1. Narcissism	17.28 (6.77) $\alpha = .83$	-.35**	.45**	-.27*	-.23*	.26**
2. Interdependence		4.92 (0.74) $\alpha = .72$	-.02	.29*	.06	-.04
3. Independence			4.73 (0.83) $\alpha = .76$	-.23*	-.01	.39**
4. Visual illusion performance (higher numbers = more illusion)				3.46 (1.79)	-.01	.02
5. Engineering problem (higher numbers = more error)					34.43 (27.50)	-.08
6. Self-esteem						5.54 (0.86) $\alpha = .86$

Note. $N = 80$. Scale means, standard deviations (in parentheses), and Cronbach's α coefficients are on the diagonal. All results are controlling for participant gender (male = 1, female = 0) and age.

* $p < .05$, ** $p < .01$.

Self-Construal and Visual Illusion

Interestingly, we also found that people with a more interdependent self-construal were also more susceptible to this illusion, whereas people with a more independent self-construal were less susceptible to it.

Mediation Analysis

We again found that narcissism partially mediated the relationship between socially atomized self-construal and cognitive-perceptual style (see Table 4).

Narcissism and the Representativeness Heuristic

We first calculated an error score on the representativeness task by subtracting the correct score of 30 from participants' answers and

Table 4
Tests of Narcissism as a Mediating Variable in the Relationship
Between Social Atomization and Cognitive Style

	Studies 1a and 1b (Holism)	Study 2 (Embedded Figures Test)	Study 3 (Visual Illusion)	Study 3 (Engineering)
Social atomization with narcissism	$\beta = .297^{**}$	$\beta = .558^{**}$	$\beta = .548^{**}$	$\beta = .548^{**}$
Social atomization with cognitive style	$\beta = -.202^{**}$	$\beta = .203^*$	$\beta = -.341^{**}$	$\beta = -.120$
Narcissism with cognitive style	$\beta = -.201^{**}$	$\beta = .185^*$	$\beta = -.258^*$	$\beta = -.256^*$
Social atomization with cognitive style, controlling for narcissism	$\beta = -.154^*$	$\beta = .144$	$\beta = -.287^*$	$\beta = .030$
Sobel test	$Z = -2.63^{**}$			
Result	Partial mediation	$Z = 1.88 \sim$ Partial mediation	$Z = -2.17^*$ Partial mediation	$Z = -2.11^*$ No mediation (nonsignificant key relationship)

All results are controlling for participant gender (male = 1, female = 0) and age.
 $\sim p < .10$, $*p < .05$, $**p < .01$.

converting the score to its absolute value so that larger numbers represent more deviation (positive or negative) from the correct answer. Only 4 participants guessed that the probability of Hans being an engineer was below 30, and because the analyses were the same whether they were included or excluded, we included them in the analyses. Overall, we found, as predicted, that narcissists were more accurate in their estimates of the probability that Hans was an engineer.

Self-Construal and the Representativeness Heuristic

Independent and interdependent self-construal were not related to performance on the representativeness heuristic.

Mediation Analysis

Despite the null relationship between independent and interdependent self-construal and cognitive style, we still calculated the difference score to create the social atomization variable to test for mediation. Socially atomized cognitive style was not significantly related to performance on the representativeness heuristic; however, the small non-significant relationship that did exist was significantly reduced when controlling for narcissism (see Table 4). Even though the Sobel test was significant, the case of the representativeness heuristic did not meet the strict criteria for mediation, and caution is warranted in interpreting anything other than main effects of narcissism on this variable.

Discussion

As in the first two studies, we found that narcissism is positively related to independent self-construal and negatively related to interdependent self-construal. In addition, as predicted, narcissism is associated with less susceptibility to perceiving a visual illusion and less error on a task that measures the representativeness heuristic. We interpret these results as conceptually replicating the first two studies in providing additional evidence that narcissists have an analytical cognitive-perceptual style. In the visual illusion task, narcissists viewed the image components as distinct, unique, and easily separable from their context, whereas in the representativeness heuristic task, narcissists paid closer attention to base rates as compared to those scoring lower in narcissism. Self-esteem was related to narcissism and independence; however, it was again not significantly related to cognitive style, which provides evidence for social atomization theory.

The patterns for self-construal were less straightforward. Independent self-construal was related to less susceptibility to a visual illusion, and interdependent self-construal was related to more susceptibility, and the relationship between socially atomized self-construal and cognitive style was partially mediated by narcissism. However, independent self-construal was not significantly related to performance on the representativeness heuristic, and, as a result, we could not accurately interpret our mediation model. Still, we did find that narcissism significantly reduced the very small nonsignificant relationship between socially atomized self-construal and performance on the heuristic task. We are not sure how to interpret this finding in terms of our theory of social atomization, but it is possible

that the representativeness heuristic is not the most appropriate tool to use when measuring analytic or holistic cognitive–perceptual style. It is interesting, in itself, however, that narcissists performed well on this task, and perhaps that can be better explained by another variable (e.g., they are more likely to take statistics classes).

Meta-Analysis of Narcissism and Self-Construal

Meta-analytic procedures were used to combine effect-size estimates across the four studies. As expected, there was a significant positive relationship between narcissism and independence, $r+ = .35$ with a 95% confidence interval ranging from .26 to .43; the correlations were homogeneous, $\chi^2(3, N = 427) = 3.29, p = .35$. There was also a significant negative relationship between narcissism and interdependence, $r+ = -.24$ with a 95% confidence interval ranging from $-.33$ to $-.15$; the correlations, however, were not homogeneous, $\chi^2(3, N = 427) = 13.58, p = .0035$. This could be explained by the fact that in some studies (e.g., Le, 2005; the current Studies 1a and 1b) there is no relationship between interdependence and narcissism, but in other studies (e.g., Studies 2 and 3) there is. Future research that employs these three scales should examine whether demographic variables (e.g., percent male, percent Caucasian) affect the strength of this relationship.

GENERAL DISCUSSION

Across three studies we found that narcissism is negatively related to a more holistic style of thinking (Studies 1a and 1b) and positively related to a more analytic cognitive–perceptual style (Study 2). We also found that narcissists were less susceptible to a visual illusion and performed better on a measure of the representativeness heuristic (Study 3). We recommend additional research using other standardized tests of cognitive–perceptual style (e.g., Block Design Test, Rod and Frame Test) to be done in order to confirm these relationships. Across our studies we also replicated a past research finding (Le, 2005) that narcissists' self-construals are characterized by high independence, but found mixed results for its relationship to interdependence, with an overall negative association likely.

The pattern of relationships was less clear for the relationship between independent and interdependent self-construal and cognitive–

perceptual style. Studies 1b and 3 (visual illusion) found that *interdependence* was related to cognitive–perceptual style, whereas Study 1a (marginal), Study 2, and Study 3 (visual illusion) found that *independence* was related to cognitive–perceptual style. Self-construal, however, was not related to the representativeness heuristic in Study 3. Taken together our results suggest that the simple correlational relationship between narcissism and cognitive–perceptual style may be more consistently predictable than the relationship between self-construal and cognitive–perceptual style, but perhaps a meta-analytic examination of the latter relationship in the past literature would help uncover higher-level patterns of association.

The already established relationship between self-construal and cognitive style is somewhat tenuous and difficult to consistently predict when not considering the relative dominance of self- and other-focus. Thus we conducted mediation analyses to consider this relative dominance, and they generally supported a partial mediation explanation. Increasing independence (with interdependence subtracted out) leads to increasing narcissism, which in turn leads to increases in analytic and decreases in holistic cognitive–perceptual style. Although we found this consistent pattern in three out of four of our measures, caution should still be used in interpreting these results, as with any correlational data. We recommend that this pattern of results be taken more seriously only when it is verified by experimental research. Future researchers should use different analytic or holistic cognitive–perceptual style measures and perhaps other measures of cognitive ability to rule out the possibility that intelligence might play a role in explaining these relationships. Although our data do point to a possible structural relationship between independence, narcissism, and cognitive–perceptual style, they cannot address why self-construal might lead to increasing narcissism, and we can only speculate as to why this may be the case. Other theorists have also seen a link between increases in individualism and narcissism; for example, Lasch (1979) argued that capitalism created an individualistic focus on personal consumption that, when rampant, would lead to increased narcissism.

Limitations

There are several important limitations to these studies, most notably, the samples themselves. Two of the four studies (Studies 2 and 3)

recruited students for credit from classes at a single university, and, as a result, the generalizability of our findings is questionable. In Studies 1a and 1b, the majority of participants were recruited for pay from advertisements posted on the college campus. These latter samples were more ethnically diverse (only 53% and 42% White, respectively); however, the majority of these samples were also college students. Another problem with the samples was that two of them (Study 1b and Study 2) were relatively unbalanced in terms of gender, with only 24% and 17% male participants, respectively. Given that the constructs we study are of theoretical interest to culture and gender, future studies should examine these relationships across cultures and take care to include a more equal number of men and women. Another limitation of this research is that we only used a single measure of self-construal, and future studies attempting to conceptually replicate our findings should use different measures.

Future Directions and Implications

Future studies could test the causal links hypothesized between variables in this article using experimental methods. For example, it would be interesting to examine the effects of training people to see the world more holistically, for example, through Oriental medicine training (see Koo & Choi, 2005). Would this holism training lead to reduced narcissism or socially atomized self-construal? There is some evidence for the opposite direction of causality, that lowered other-focus leads to increases in analytic cognitive–perceptual style (e.g., Kühnen et al., 2001); however, as we point out, more research is needed.

This research has implications for understanding the lack of empathy and aggression that are characteristic of narcissists. It suggests that narcissists may perceive their environment and other people in terms of separateness and difference, and thus perhaps one way to treat their lack of empathy and other negative interpersonal outcomes would be to address their socially atomized self-construals and their analytical cognitive–perceptual styles. For example, a manipulation of self-construal could allow narcissists to form a shared sense of connection with others that would otherwise be inhibited by their own feelings of separation and distinction from others. This sense of shared connection with another could possibly reduce narcissists' aggressive behavior toward another, even if this person has

threatened the narcissist's ego (Konrath, Bushman, & Campbell, 2006). Research like this that explores the role of cognitive-perceptual style and self-construal in narcissism could perhaps lead narcissists to one day see *our* world as a million little bridges to each other, rather than a million little pieces.

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