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Hypervigilance to Self-Threat:

Further Experimental Evidence for the Mask Model of Narcissism

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Abstract

What is it like to be a narcissist? According to the mask model, narcissists portray a hard exterior, but possess a soft core. The narcissistic self is fragile. This presumed fragility has been typically operationalized as a discrepancy between explicit and implicit self-esteem, producing inconsistent findings. A reason for the inconclusiveness of over two decades of research may be that narcissism has been tested *in situ*. An important exception is experiments by Horvath and Morf (2009), who obtained support for the mask model under conditions of *self-threat* in a sequential priming task followed by a lexical decision task. We report an experiment (*N* = 209) where we test the replicability of their findings with a larger sample and several methodological alterations. In replication, narcissists manifested hypervigilance or defensiveness: faster reaction times to self-threatening stimuli when their fragility was subliminally exposed. However, given ampler time (235 ms as opposed to 149 ms), narcissists switched from defensiveness to self-regulation: equivalent reaction times to those of non-narcissists. This switch, being rapid and difficult to detect, may explain at least in part the prior inconclusive findings. Despite transient intrapersonal turbulence in the face of self-threat, narcissists quickly regain their composure and re-establish their granite exterior.

*Keywords*: narcissism, the mask model of narcissism, self-threat, narcissistic fragility, defensiveness

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Agentic narcissism involves a self-lionizing, entitled, vain, and conniving interpersonal orientation in the domain of agency (e.g., competence, intelligence, achievement). Although accumulated evidence over the last two decades has clarified the consequences of narcissists’ interpersonal orientation for individuals, groups or organizations, and society (Hermann, Brunell, & Foster, 2018; Roberts, Woodman, & Sedikides, 2018; Sedikides & Campbell, 2017), the fundamental question of “what is it like be a narcissist” remains elusive. This question is the purview of the mask model.

**The Mask Model of Narcissism**

The mask model originates in psychodynamic theorizing (Freud, 1914/1957; Kernberg, 1975; Kohut, 1966). Narcissists, according to this model, may boast a hard exterior, but actually have a soft core. Narcissists are characterized by inner fragility (Kernis, 2003; Westen, 1990). How to operationalize fragility is a challenge. Most typically (but see Mota et al., 2019, for variants), the construct has been operationalized in terms of a discrepancy between explicit self-esteem (as assessed, for example, by the Rosenberg Self-Esteem Scale [RSES]; Rosenberg; 1965) and implicit self-esteem (as assessed, for example, by the self-esteem Implicit Association Test; Greenwald & Farnham, 2000): Narcissists have high explicit, but low implicit, self-esteem.

The bulk of research has tested the mask model assessing narcissism *in situ*. The evidence has been mixed. Some studies obtained support for narcissistic fragility ([Di Pierro](http://www.frontiersin.org/people/u/358322), [Mattavelli](http://www.frontiersin.org/people/u/365748), & [Gallucci](http://www.frontiersin.org/people/u/27190), 2016; Gregg & Sedikides, 2010; Jordan, Spencer, Zanna, Hoshino-Browne, & Correll, 2003; Zeigler-Hill, 2006), but others (Brown & Brunell, 2017; Marissen, Brouwer, Hiemstra, Deen, & Franken, 2016), including an early meta-analysis (Bosson et al., 2008), obtained no support for it even when focusing exclusively on the agentic domain (rather than the communal domain—i.e., warmth, cooperation, relatedness; Campbell, Bosson, Goheen, Lakey, & Kernis, 2007; Fatfouta & Schröder-Abé, 2018). A recent and comprehensive approach, applying an information-theoretic and Response Surface Analysis to data from 18 samples, yielded inconsistent findings (Mota et al., 2019).

**Self-Threat as a Criterion for Testing the Mask Model of Narcissism**

A reason for this inconclusiveness may be the conspicuous absence of *self-threat*. The rationale for this claim is as follows (Morf, Horvath, &Torchetti, 2011; Morf & Rhodewalt, 2001; Myers & Zeigler-Hill, 2012). Given their chronic insecurity, and especially when this insecurity is rendered momentarily accessible via priming, narcissists will be on alert for self-threatening stimuli, detecting them expeditiously. Narcissists’ quick responses (i.e., reaction times) to such stimuli, then, are indicative of defensiveness. These responses serve to fend off self-threat at an early information processing stage (Gebauer, Göritz, Hofmann, & Sedikides, 2012). However, although narcissists will be initially hypervigilant to self-threatening stimuli, they will subsequently self-regulate (i.e., evince reaction times similar to those of non-narcissists) masking their vigilance and, by correspondence, brittleness. By doing so, they will manage to preserve their steely exterior, a puffed up persona. In fact, given the passage of time, narcissists may go as far as masking their vigilance by inhibiting their responses (i.e., slowing down their reaction times) in an avoidance or self-protection maneuver. Non-narcissists, on the other hand, will evince a steady pattern of responses (i.e., equivalent reaction times) to self-threatening stimuli regardless of shorter versus longer exposure to them. Taken together, rapid and hard to detect re-establishment of narcissists’ intrapsychic equilibrium, following defensiveness, would provide an explanation for why the literature has failed to document the mask model at least in its classic, psychodynamic version.

Horvath and Morf (2009) tested directly, and supported, the version of the mask model. Their paradigm involved a sequential priming task succeeded by a lexical decision task. The logic behind these tasks follows the theoretical rationale outlined above. Narcissists (compared to low narcissists) are assumed to have a deep-seated sense of insecurity or inadequacy (e.g., worthlessness). The narcissistic core is brittle. This brittleness will become acute under subliminal exposure to a negative and self-relevant prime (e.g., “failure”) as opposed to a neutral prime (e.g., “note”). Hypervigilance will ensue, with narcissists being particularly quick in reacting to briefly presented worthlessness-denoting words (but not other kinds of words) that entail self-threat. Put otherwise, activation of “failure” will automatically spread to “worthlessness” (Collins & Loftus, 1975). Faster reaction times to worthlessness-denoting words reflect defensiveness. However, when presentation of worthlessness-denoting words lengthens, narcissists will regulate (or inhibit) their defensiveness, manifesting reaction times that are equal to those of non-narcissists (or slower).

Let us describe the paradigm and findings of Horvath and Morf (2009, Study 1) in more detail. First, participants are exposed subliminally either to a negative and self-relevant prime (i.e., failure) or a neutral prime (i.e., note). Subsequently they decide, as fast as they can, if a string of letters is each a word or non-word. Some of these letter strings are prototypic of worthlessness (e.g., stupid, incompetent, useless), some are neutral (e.g., glass, diagonal, violet), some are fillers (all negative; e.g., nasty), and some are non-words (e.g., fiee). As such, the primes can be congruent with the word (e.g., failure-stupid) or incongruent with the word (e.g., failure-glass). It is in the case of prime-word congruence (where narcissistic fragility has become momentarily accessible and self-threat is clear and present) that reaction times are expected to be faster, signifying defensiveness. Critically, the letter strings are presented at two stimulus-onset asynchronies (SOA): short (150 ms) and long (2000 ms). Narcissists (compared to non-narcissists) demonstrate heightened responsivity to worthlessness-denoting words (but not to other types of words) presented after a congruent (vs. incongruent) prime in the short SOA, but not in the long SOA. Instead, in the long SOA, narcissists demonstrate inhibition, that is, slower reaction times (see also Horvath & Morf, Study 2). Narcissists, then, are hypervigilant for self-threat in their social environment, leading to defensiveness, but, following a brief passage of time, inhibit their responses to self-threat—precisely as predicted by the mask model.

**Replicating and Extending the Horvath and Morf (2009) Findings**

The pioneering work of Horvath and Morf (2009) has not been replicated with healthy adults. We aimed to test its replicability with a larger sample (i.e., *N* = 209 vs. *N* = 64 of Horvath & Morf’s [2009] Study 1). We also made two classes of changes to their experimental paradigm.

First, we altered slightly and expanded the pool of stimuli. In particular, we used “humiliation” (rather than “failure”) as the negative and self-relevant prime, assuming that the unfavorable connotation and accompanying emotional implications of “humiliation” are stronger than that of “failure” (Berkovski, 2016; [Otten](https://www.ncbi.nlm.nih.gov/pubmed/?term=Otten%20M%5BAuthor%5D&cauthor=true&cauthor_uid=24215103) & Jonas, 2014). Indeed, the former seems to imply more directly social disapproval to which narcissists are particularly aversive (Morf et al., 2011; Sedikides & Campbell, 2017). Further, although we still used 16 worthlessness-denoting words (as Horvath & Morf [2009] did), we included achievement failures, interpersonal rejections, and private as well as public setbacks in an effort to expand the meaning of “worthlessness.” Lastly, we used different sets of neutral, filler-negative, and non-words, following validational procedures (see Method section), as the Horvath and Morf (2009) experiment was conducted in German.

Second, and more important, although we kept the duration of the short SOA at 149 msec (same as Horvath and Morf, 2009), we shortened the duration of the long SOA to 235 ms (compared to Horvath & Morf’s [2009] 2000 ms). We did so for exploratory purposes, wanting to know if narcissists move from defensiveness to self-regulation or inhibition faster than previously thought. In general, SOAs less than 500 msec allow for facilitation effects (i.e., spreading activation) of prime-to-word via automatic processes, whereas SOAs at 700 msec and 2000 msec allow for facilitation effects via controlled processes such as laboratory-based expectations (Blair & Banaji, 1996; Neely, 1977a). It follows that the inhibition observed in Horvath and Morf (2009) is likely due to controlled processes. Can inhibition be due to automatic processes? Can narcissists override the association between the negative/self-relevant prime and worthlessness-denoting words (i.e., self-threat) in the compressed interval of 235 msec?

We had a reason for setting our long SOA at 235 msec. Manipulating the proportion of related prime/word pairs (relatedness proportion) in priming experiments produces facilitation effects (Tweedy, Lapinski, & Schvaneveldt, 1977). As relatedness proportion and SOA increase, participants adopt a strategy of using the prime to generate expectancies concerning the identity of related words (Neely, 1977): They identify related words faster than unrelated ones (Hutchison, Neely, & Johnson 2001; Tweedy et al., 1977). Expectancies take time to unfold. In masked priming, facilitation effects begin to emerge at SOAs starting between 167 and 300 ms and at relatedness proportion over .25 (de Groot, 1984; Hutchison et al., 2001). As our relatedness proportion was .50 (16 prime/related-word pairs over 32 prime/unrelated-word pairs, for each SOA), to maximize the possibility that our facilitation effects would be automatic (i.e., due to automatic spreading activation; de Wit & Kinoshita, 2014) we fixed our long SOA roughly at the midpoint between these two estimates. We note that shorter (< 250) SOAs are robust (Jiang et al., 2016; Perea & Gotor, 1997) and less vulnerable to processing delays (Kazanas & Altarriba, 2016) or phasic affective modulation (Topolinski & Deutsch, 2013).

Our SOA temporal breakdown was as follows. For the short SOA: prime = 35 ms; second mask = 24 ms; target letter string = 90 ms. For the long SOA (again): prime = 35; second mask = 24; target letter string = 176. Finally, we controlled for self-esteem given its known positive association with narcissism (Brummelman, Gürel, Thomaes, & Sedikides, 2018; Brummelman, Thomaes, & Sedikides, 2016), as Horvath and Morf (2009) did.

**Method**

**Participants and Design**

We tested 209 University of Roehampton psychology students (178 women, 31 men), ranging in age from 18 to 55 years (*M* = 21.81, *SD* = 5.26). The sample comprised 177 undergraduate and 32 graduate students. The basis for determining our sample size was Horvath and Morf (2009, Study 1, *N* = 64), who reported an effect size of  = .07. Using this as a guide, we conducted a G\*Power analysis (f ² = .075; = .05; β = .95; 2 predictors), which yielded an *N* of 209 (Faul, Erdfelder, Lang, & Buchner, 2007). We report all measures, conditions, and data exclusions. The data are available at <https://osf.io/7rxae/>.

**Procedure**

We tested participants individually in an enclosed cubicle. We seated them in front of a 21-inch CRT monitor set at an 85 Hertz refresh rate, and gave them verbal instructions regarding the task along with a 1-min practice trial. Then, we asked them to complete 384 pseudo-randomized test trials, which were divided into two blocks of 192. Each trial began with the presentation of a fixation cross, which remained on the screen for 505 ms. This was immediately followed by (1) a brief flickering of letters that contained the first mask (KQHYTPDQFPBYL) for 153 ms, (2) one of two primes (HUMILIATION or NOTE) for 35 ms, and (3) the second mask (FYVDLTMHQWSPW) for 24 ms. We used sandwich masking to prevent prime afterimages (Draine & Greenwald, 1998). We asked participants to concentrate on the fixation cross, and mentioned (ostensibly) that the flickering of letters was due to the program software randomly selecting either a word or a non-word.

 Following the masking procedure, we displayed a blank screen for either 90 ms (resulting in a short SOA of 149 ms) or 176 ms (resulting in a long SOA of 235 ms), and then presented participants with one of the 96 letter strings (Appendix A). (We re-primed participants after presenting them with each letter string.) We instructed them to decide if each letter string was a word or non-word, and to respond by pressing the appropriate button on a response box. The letter strings belonged to one of three categories (16 each): worthlessness (e.g., LOSER, FOOL, INCOMPETENT), neutral (e.g., FOLLOW, LOWER, USUAL), and filler-negative (e.g., ATTACK, HARM, OFFENSIVE), with the last category aiming to distract participants from the worthlessness adjectives. We selected the worthlessness words from an online thesaurus (Bargh & Chartrand, 2000), selected the neutral and filler-negative words from the Harvard Word Database list of words (Stone, Dunphy, & Smith, 1966), and matched all words for Soundex using the Litscape online database (Bargh & Chartrand, 2000). Further, we created 48 orthographically legal non-words by replacing one letter with a vowel in each word of the worthlessness, neutral, and filler-adjective categories (e.g., LOEER, FOLAOW, AETACK), resulting in an equal number of words and non-words (Perea & Gotor, 1997). E-prime presented all letter strings at random four times, once after each prime (negative, neutral) x for each SOA (short, long) combination. We gave participants a response window of 1500 ms and asked them to respond as speedily and accurately as possible; we did not record reaction times outside the 1500 ms window.

Lastly, and after probing participants for suspicion (none expressed it), we requested completion of two scales in a different room. We assessed narcissism with the 40-item Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988; = .89, *M* = 10.48, *SD* = 5.18). For each item, participants chose between two statements, a narcissistic (e.g., “I think I am a special person”) and a non-narcissistic (e.g., “I am no better or worse than most people”) one. We assessed self-esteem with the 10-item Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965;  = .91, *M* = 18.74, *SD* = 5.46). A sample item is: “I feel that I’m a person of worth, at least on an equal plane with others” (1 = *strongly disagree*, 5 = *strongly agree*). We note that Horvath and Morf (2009) administered the NPI and RSES at the beginning, rather than the end, of their experiment. However, we consider it unlikely that the measures were affected by the experimental task, given that (a) we used a within-subjects design in regards to the SOAs, (a) the two measures are stable, and (c) the measures were completed in a different context than the experimental task.

**Results**

We present (a) reaction times (means and standard deviations) as a function of primes (negative, neutral), words (worthlessness-denoting, neutral, filler-negative, non-words), and SOAs (short, long) in Table 1, (b) correlations between narcissism and reaction times to words (worthlessness-denoting, neutral, filler-negative) at short SOA in Table 2, and (c) correlations between narcissism and reaction times to words (worthlessness-denoting, neutral, filler-negative) at long SOA in Table 3.

**Analyses on Worthlessness-Denoting Words**

We proceeded to calculate difference scores, following the exclusion of wrong answers. In particular, we subtracted mean reaction times to worthlessness-denoting words on neutral-prime trials from mean reaction times to worthlessness-denoting words on negative-prime trials. Thus, negative scores reflect faster responding as a function of the negative prime, whereas positive scores reflect slower responding as a function of the negative prime, relative to the neutral prime.

To begin, and in replication of prior findings (Brummelman et al., 2016, 2018), we obtained a positive relation between narcissism and self-esteem, *r*(207) = .18, *p* = .009. We present correlations between narcissism, self-esteem, and difference scores at short and long SOAs, along with descriptive statistics, in Table 4.

A regression analysis on the difference scores showed that narcissism predicted reaction times (Figure 1): Higher levels of narcissism were associated with faster reaction times at short SOA (*F*[1, 207] = 7.66, *p* = .006; *b* = -.02, *t*[207] = -2.77, *p* = .006; *R²* = .04), but not at long SOA (*F*[1, 207] = .76, *p* = .38). The results are consistent with the possibility of defensiveness at short, but not long, SOA. We conducted an additional and exploratory test, assessing the difference in magnitude of correlations between narcissism on the one hand and difference scores on the other at short and long SOAs. (As shown in Table 4, this correlation was negative and significant at short SOA, but was not significant at long SOA.) The narcissism-difference scores correlation tended to be stronger in the short SOA than the long SOA, *z* = -1.37, *p* = .09, a pattern generally consistent with the possibility of defensiveness at short, but not long, SOA.

We followed up with a hierarchical regression analysis on the difference scores, entering self-esteem in the first step and narcissism in the second step. As before, narcissism predicted reaction times: Higher levels of narcissism were associated with faster reaction times at short SOA (*F*[1, 207] = 4.14, *p* = .017; *b* = -1.88, *t*[207] = -2.86, *p* = .005; *R*² = .04), but not at long SOA (*F*[1, 207] = .43, *p* = .65). Again, the results are compatible with the possibility of defensiveness at short, but not long, SOA. As before and compatible with this possibility, an additional and exploratory test assessing differences in the magnitude of correlations revealed that the narcissism-difference scores correlation tended to be stronger at short SOA than long SOA, *z* = -1.45, *p* = .07.

In contrast to narcissism, self-esteem did not predict reaction times at either short SOA (*F*[1, 207] = .08, *p* = .78) or long SOA (*F*[1, 207] = .03, *p* = .87).[[1]](#footnote-1)

**Subsidiary Analyses**

We carried out new regression analyses, replacing the worthlessness-denoting words with the filler-negative words and neutral words. Differences scores in both cases were normally distributed. A regression analysis on the filler-negative word difference scores indicated that narcissism did not predict reaction times: Higher levels of narcissism were unassociated with faster reaction times both at short SOA (*F*[1, 207] = .86, *p* = .36) and at long SOA (*F*[1, 207] = .43, *p* = .51). Further, a regression analysis on the neutral word difference scores revealed that narcissism did not predict reaction times: Higher levels of narcissism were unassociated with faster reaction times both at short SOA (*F*[1, 207] = .91, *p* = .34) and at long SOA (*F*[1, 207] = .43, *p* = .52). These results reinforce the notion that narcissistic defensiveness occurs only in the case self-threatening stimuli.

We implemented an alternative analytic approach, besides using difference scores, to control for neutral prime trials. In particular, we conducted a hierarchical regression analysis on the negative prime/worthlessness-denoting words reaction times, with neutral prime/worthlessness-denoting words reaction times entered in the first step and narcissism in the second step. Reinforcing the prior results, higher levels of narcissism were associated with faster negative prime/worthlessness-denoting words reaction times at short SOA (*F*[2, 206] = 196.08, *p* = .001; *b* = -1.39, *t*(206) = -2.24, *p* = .026; *R2* = .66), but not at long SOA (*F*[2, 206] = 162.37; *p* = .001; *b* = -.37, *t*(206) = -.54, *p* = .59; *R2* = .61).

**Discussion**

Two decades of research on the mask model have produced inconclusive findings. A reason for this inconclusiveness is because relevant studies tested narcissism in situ. An important exception, Horvath and Morf’s work (2009), did obtain support for the classic, psychodynamically-based mask model. This investigation did so by manipulating self-threat. Here, we tested its replicability with a larger sample and in a different culture. Also, we examined whether their results would withstand the test of time by introducing technical alterations, such as (a) a different negative/self-relevant prime, (b) new sets of neutral words, filler-negative words, and no-words), (d) minor procedural changes (i.e., administering the NPI and RSES at the end rather than the beginning of the experiment), and, most importantly, (d) shortening the long SOA considerably: from 2000 ms to 235 ms.

In our experiment, as in Horvath and Morf (2009), a negative and self-relevant prime (here: “humiliation”) rendered accessible the presumed chronic fragility of narcissists. Presentations of various types of stimuli followed, one of which was self-threatening (i.e., worthlessness-denoting words). Narcissists exhibited hypervigilance or defensiveness (i.e., speedier reactions) to self-threatening stimuli, but not to other kinds of stimuli. Narcissists rushed to fend off against self-threat. However, given sufficient time (i.e., 235 ms as opposed to 149 ms), narcissists switched from defensiveness to self-regulation: their reaction times became equivalent in speed to those of non-narcissists. This avoidance or self-protection move masked their initial hyperviligance. In all, the rapid and difficult to detect switch might provide one explanation for why prior research has found inconsistent evidence for the mask model. Despite some transient intrapsychic turbulence in the face of self-threat, narcissists swiftly manage to regain their composure and maintain their steely exterior.

As noted throughout, a key difference between Horvath and Morf’s (2009, Study 1) experimental task and ours concerned the duration of the long SOA: 2000 msec versus 235 msec. Horvath and Morf observed inhibition: following faster reaction time (i.e., defensiveness) at short SOA, narcissists manifested slower reaction times (i.e., inhibition) at long SOA in the face of self-threat. However, we observed self-regulation, but not inhibition: following faster reaction time at short SOA, narcissists exhibited reaction times on par with their less narcissistic counterparts. Future research will do well to vary the range of SOAs from 235 msec to 2000 msec (and perhaps beyond) in order to test the Horvath and Morf inhibition effect or to pinpoint temporally the point of transition from self-regulation to inhibition. In addition, follow-up research would need include a negative prime to complement the negative/self-relevant and neutral primes. Finally, future investigations could balance the gender composition of participants (in the current experiment, it was 85.2% female).

Our research, along with that of Horvath and Morf (2009), constitutes direct support for the classic mask model. Indirect support can be gleaned from three other research streams. First, narcissists display higher variability in daily affect or affect intensity as well as self-esteem, especially in response to dissatisfying (than satisfying) life events that involve achievement (Bogart, Benotsch, & Pavlovic, 2004; Emmons, 1987; Rhodewalt, Madrian, & Cheney, 1988; Zeigler-Hill, 2006; Zeigler-Hill, Myers, & Clark, 2010). Second, narcissists show greater changes in anger, anxiety, hostility, aggression, and self-esteem, especially in response to failure (than success) feedback (Bushman & Baumeister, 1998; Konrath, Bushman, & Campbell, 2006; Rhodewalt & Morf, 1998; Twenge & Campbell, 2003). Finally, narcissists manifest physiological reactivity—as indicated by cortisol and alpha-amylase—to daily emotionally distressing events (Cheng, Tracy, & Miller, 2013), as well as physiological reactivity—as indicated by cardiovascular indices and cortisol levels—to laboratory induced stress (i.e., the Trier Social Stress Test; Edelstein, Yim, & Quas, 2010; Kelsey, Ornduff, McCann, & Reiff, 2001; Sommer, Kirkland, Newman, Estrella, & Andreassi, 2009).

We focused on the classic mask model, on agentic narcissism, and on healthy adults. We did not address variants of the model (Kuchynka & Bosson, 2018; Mota et al., 2019), other types of narcissism (e.g., communal—Gebauer & Sedikides, 2018; vulnerable—Weiss & Miller, 2018), or the break-down of agentic narcissism into the admiration and rivalry components (Back, 2018; Geukes et al., 2017). Finally, we did not examine pathological narcissism (Weiss & Miller, 2018). Future research would do well to extend the current experimental paradigm to these domains. Regardless, and in closing, we emphasize our key point: Narcissistic fragility, however minimal, is best detected under conditions of self-threat.

References

Back, M. D. (2018). The narcissistic admiration and rivalry concepts. In A. D. Herman, A. B. Brunel, & J. D. Foster (Eds.), *Handbook of trait narcissism*. *Key advances, research methods, and controversies* (pp. 57-67). New York, NY: Springer.

Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. T. Reis & C. M. Judd (Eds.), Handbook of research methods in social and personality psychology (pp. 253-285). New York, NY: Cambridge University Press.

Berkovski, S. (2016). A naturalistic view of humiliation. *Phenomenology and Mind*, 11, 79-87.

Blair, I. V., & Banaji, M. R. (1996). Automatic and controlled processes in stereotype priming. Journal of Personality and Social Psychology, 70, 1142-1163. [doi:10.1037/0022-3514.70.6.1142](https://psycnet.apa.org/doi/10.1037/0022-3514.70.6.1142)

Bogart, L. M., Benotsch, E. G., & Pavlovic, J. D. (2004). Feeling superior but threatened: The relation of narcissism to social comparison. *Basic and Applied Social Psychology, 26*, 35-44. [doi:10.1207/s15324834basp2601\_4](http://psycnet.apa.org/doi/10.1207/s15324834basp2601_4)

Bosson, J. K., Lakey, C. E., Campbell, W. K., Zeigler-Hill, V., Jordan, C. H., & Kernis, M.H. (2008). Untangling the links between narcissism and self-esteem: A theoretical and empirical review. *Social and Personality Psychology Compass, 2*, 1415-1439. doi:10.1111/j.1751-9004.2008.00089.x

Brown, A. A., & Brunell, A. B. (2017). The “modest mask”? An investigation of vulnerable narcissists’ implicit self-esteem. *Personality and Individual Differences, 119*, 160-167. doi:10.1016/j.paid.2017.07.020

Brummelman, E., Gürel, C., Thomaes, S., & Sedikides, C. (2018). What separates narcissism from self-esteem? A social-cognitive analysis. In A. D. Herman, A. B. Brunel, & J. D. Foster (Eds.), *Handbook of trait narcissism*. *Key advances, research methods, and controversies* (pp. 47-56). New York, NY: Springer.

Brummelman, E., Thomaes, S., & Sedikides, C. (2016). Separating narcissism from self-esteem. *Current Directions in Psychological Science, 25*, 8-13. doi:10.1177/0963721415619737

Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? *Journal of Personality and Social Psychology, 75,* 219-229. doi:10.1037/0022-3514.75.1.219

Campbell, W. K., Bosson, J. K., Goheen, T. W., Lakey, C. E., & Kernis, M. H. (2007). Do narcissists dislike themselves ‘‘deep down inside”? *Psychological Science, 18*, 227-229. doi:10.1111/j.1467-9280.2007.01880.x.

Cheng, J. T., Tracy, J. L., & Miller, G. E. (2013). Are narcissists hardy or vulnerable? The role of narcissism in the production of stress-related biomarkers in response to emotional distress. *Emotion, 13*, 1004-1011. doi:10.1037/a0034410

Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review, 82*, 407-428. [doi:10.1037/0033-295X.82.6.407](https://psycnet.apa.org/doi/10.1037/0033-295X.82.6.407)

de Groot, A. M. (1984). Primed lexical decision: Combined effects of the proportion of related prime-target pairs and the stimulus-onset asynchrony of prime and target. *The Quarterly Journal of Experimental Psychology Section A*, 36, 253-280. [doi:10.1080/14640748408402158](https://doi.org/10.1080/14640748408402158)

de Wit, B., & Kinoshita, S. (2014). Relatedness proportion effects in semantic categorization: Reconsidering the automatic spreading activation process. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *40*, 173301744. [doi:10.1037/xlm0000004](https://doi.org/10.1037/xlm0000004)

[Di Pierro](http://www.frontiersin.org/people/u/358322), R., [Mattavelli](http://www.frontiersin.org/people/u/365748), S., & [Gallucci](http://www.frontiersin.org/people/u/27190), M. (2016). Narcissistic traits and explicit self-esteem: The moderating role of implicit self-view. *Frontiers in Psychology, 7*: 1815. [doi:10.3389/fpsyg.2016.01815](https://doi.org/10.3389/fpsyg.2016.01815)

Draine, S. C., & Greenwald, A. G. (1998). Replicable unconscious semantic priming. *Journal of Experimental Psychology: General, 127*, 286-303. doi:[10.1037/0096-3445.127.3.286](http://psycnet.apa.org/doi/10.1037/0096-3445.127.3.286)

Edelstein, R. S., Yim, I. S., & Quas, J. A. (2010). Narcissism predicts heightened cortisol reactivity to a psychosocial stressor in men. *Journal of Research in Personality, 44,* 565-572. doi:10.1016/j.jrp.2010.06.008

Emmons, R. A. (1987). Narcissism: Theory and measurement. *Journal of Personality and Social Psychology, 52*, 11-17.

Fatfouta, R., & Schröder-Abé, M. (2018). Agentic to the core? Facets of narcissism and positive implicit self-views in the agentic domain. *Journal of Research in Personality, 74*, 78-82. doi:10.1016/j.jrp.2018.02.006

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*, *39*, 175-191. doi:10.3758/BF03193146

Freud, S. (1957). On narcissism: An introduction. In J. Strachey (Ed. and Trans.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 14, pp. 67-105). London: Hogarth Press. (Original work published 1914)

Gebauer, J. E., Göritz, A. S., Hofmann, W., & Sedikides, C. (2012). Self-love or other-love? Explicit other-preference but implicit self-preference. *PLoS One, 7,* e41789. doi:10.1177/0956797611427045

Gebauer, J. E., & Sedikides, C. (2018). Communal narcissism: Theoretical and empirical support. In A. D. Herman, A. B. Brunel, & J. D. Foster (Eds.), *Handbook of trait narcissism*. *Key advances, research methods, and controversies* (pp. 69−78). New York, NY: Springer.

Geukes, K., Nestler, S., Hutteman, R., Dufner, M., Küfner, A. P., Egloff, B., & ... Back, M. D. (2017). Puffed-up but shaky selves: State self-esteem level and variability in narcissists. *Journal of Personality and Social Psychology, 112*, 769-786. doi:10.1037/pspp0000093

Greenwald, A. G., & Farnham, S. D. (2000). Using the implicit association test to measure self-esteem and self-concept. *Journal of Personality and Social Psychology, 76*, 1022-1038. doi:10.1037/KK122-3514.79.6.10?2

Gregg, A. P., & Sedikides, C. (2010). Narcissistic fragility: Rethinking its links to explicit and implicit self-esteem. *Self and Identity, 9,* 142-161. doi:10.1080/15298860902815451

Hermann, A. D., Brunell, A. B., & Foster, J. D. (Eds.). (2018). *Handbook of trait narcissism: Key advances, research methods, and controversies*. New York, NY: Springer.

Horvath, S., & Morf, C. C. (2009). Narcissistic defensiveness: Hypervigilance and avoidance of worthlessness. *Journal of Experimental Social Psychology, 45*, 1252-1258. doi:10.1016/j.jesp.2009.07.011

Hutchison, K. A., Neely, J. H., & Johnson, J. D. (2001). With great expectations, can two "wrongs" prime a “right”? Journal of Experimental Psychology: Learning, Memory, and Cognition, 27, 1451-1463. [doi:10.1037/0278-7393.27.6.1451](https://psycnet.apa.org/doi/10.1037/0278-7393.27.6.1451)

Jiang, Z., Qu, Y., Xiao, Y., Wu, Q., Xia, L., Li, W., & Liu, Y. (2016). Comparison of affective and semantic priming in different SOA. *Cognitive Processing, 17*, 357-375. doi:10.1007/s10339-016-0771-8

Jordan, C. H., Spencer, S. J., Zanna, M. P., Hoshino-Browne, E., & Correll, J. (2003). Secure and defensive high self-esteem. *Journal of Personality and Social Psychology, 85*, 969-978. doi:10.1037/0022-3514.85.5.969

Kazanas, S. A., & Altarriba, J. (2016). Emotion word type and affective valence priming at a long stimulus onset asynchrony. *Language and Speech, 59*, 339-352. doi:10.1177/0023830915590677

Kelsey, R. M., Ornduff, S. R., McCann, C. M., & Reiff, S. (2001). Psychophysiological characteristics of narcissism during active and passive coping. *Psychophysiology, 38,* 292-303. doi:10.1111/1469-8986.3820292

Kernberg, O. F. (1975). *Borderline conditions and pathological narcissism.* New York, NY: Jason Aronson.

Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry, 14*, 1-26.

Kohut, H. (1966). Forms and transformations of narcissism. *Journal of the American Psychoanalytic Association, 14*, 243-272. doi:10.1177/000306516601400201.

Konrath, S., Bushman, B. J., & Campbell, W. K. (2006). Attenuating the link between threatened egotism and aggression. *Psychological Science, 17,* 995-1001. doi:10.1111/j.1467-9280.2006.01818.x

Kuchynka, S. L., & Bosson, J. L. (2018). The psychodynamic mask model of narcissism: Where is it now? In A. D. Herman, A. B. Brunel, & J. D. Foster (Eds.), *Handbook of trait narcissism*. *Key advances, research methods, and controversies* (pp. 89-95−78). New York, NY: Springer.

Marissen, M. A. E., Brouwer, M. E., Hiemstra, A. M. F., Deen, M. L., & Franken, I. H. A. (2016). A masked negative self-esteem? Implicit and explicit self-esteem in patients with Narcissistic Personality Disorder. *Psychiatry Research, 242*, 28-33. doi:10.1016/j.psychres.2016.04.070.

Morf, C. C., Horvath, S., & Torchetti, L. (2011). Narcissistic self-enhancement: tales of (successful?) self-portrayal. In M. D. Alicke & C. Sedikides (Eds.), *Handbook of self-enhancement and self-protection* (pp. 399-424). New York, NY: Guilford.

Morf, C. C., & Rhodewalt, F. (2001). Unravelling the paradoxes of narcissism: A dynamic self-regulatory processing model. *Psychological Inquiry, 12*, 177-196.

Mota, S., Humberg, S., Krause, S., Fatfouta, R., Geukes, K., Schröder-Abé, N., & Back, M. D. (2019): Unmasking Narcissus: A competitive test of existing hypotheses on (agentic, antagonistic, neurotic, and communal) narcissism and (explicit and implicit) self-esteem across 18 samples. *Self and Identity*. Advance online publication. doi:10.1080/15298868.2019.1620012

Myers, E. M., & Zeigler-Hill, V. (2012). How much do narcissists really like themselves? Using the bogus pipeline procedure to better understand the self-esteem of narcissists. *Journal of Research in Personality*, *46*, 102-105. doi:10.1016/j.jrp.2011.09.006

[Otten, M](https://www.ncbi.nlm.nih.gov/pubmed/?term=Otten%20M%5BAuthor%5D&cauthor=true&cauthor_uid=24215103)., & [Jonas, K. J](https://www.ncbi.nlm.nih.gov/pubmed/?term=Jonas%20KJ%5BAuthor%5D&cauthor=true&cauthor_uid=24215103). (2014). Humiliation as an intense emotional experience: evidence from the electro-encephalogram. *Social Neuroscience, 9*, 23-35. doi:10.1080/17470919.2013.855660

Neely, J. H. (1977). Semantic priming and retrieval from lexical memory: Roles of inhibitionless spreading activation and limited-capacity attention. *Journal of Experimental Psychology: General*, *106*, 226–254. [doi:10.1037/0096-3445.106.3.226](https://doi.org/10.1037/0096-3445.106.3.226)

Perea, M., & Gotor, A. (1997). Associative and semantic priming effects occur at very short stimulus-onset asynchronies in lexical decision and naming. *Cognition, 62*, 223-240.

Raskin, R., & Terry, H. (1988). A principal-components analysis of the narcissistic personality inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology, 54*, 890-902.

Rhodewalt, F., Madrian, J. C., & Cheney, S. (1998). Narcissism, self-knowledge organization, and emotional reactivity: The effect of daily experiences on self-esteem and affect. *Personality and Social Psychology Bulletin, 24*, 75-87. doi:10.1177/0146167298241006

Rhodewalt, F., & Morf, C. C. (1998). On self-aggrandizement and anger: A temporal analysis of narcissism and affective reactions to success and failure. *Journal of Personality and**Social Psychology, 74*, 672-673.

Roberts, T., Woodman, T., & Sedikides, C. (2018). Pass *me* the ball: Narcissism in performance settings. *International Review of Sport and Exercise Psychology, 11*, 190-213. doi:10.1080/1750984X.2017.1290815

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Sedikides, C., & Campbell, W. K. (2017). Narcissistic force meets systemic resistance: The Energy Clash Model. *Perspectives on Psychological Science, 12*, 400-421. doi:10.1177/1745691617692105

Sommer, K. L., Kirkland, K. L., Newman, S. R., Estrella, P., & Andreassi, J. L. (2009). Narcissism and cardiovascular reactivity to rejection imagery. *Journal of Applied Social Psychology, 39,* 1083-1115. doi:10.1111/j.1559-1816.2009.00473.x

Stone, P. J., Dunphy, D. C., & Smith, M. S. (1966). *The general inquirer: A computer approach to content analysis*. Oxford, UK: MIT Press.

Thomaes, S., Brummelman, E., & Sedikides, C. (2018). Narcissism: A social-developmental perspective. In V. Zeigler-Hill & T. K. Shackelford (Eds.), *The SAGE Handbook of Personality and Individual Differences* (pp. 377-396). New York, NY: Sage.

Topolinski, S., & Deutsch, R. (2013). Phasic affective modulation of semantic priming. Journal of Experimental Psychology: *Learning, Memory, and Cognition, 39*, 414-436. doi:10.1037/a0028879

Tweedy, J. R., Lapinski, R. H., & Schvaneveldt, R. W. (1977). Semantic-context effects on word recognition: Influence of varying the proportion of items presented in an appropriate context. *Memory & Cognition, 5*, 84-89. [doi:10.3758/BF03209197](https://doi.org/10.3758/BF03209197)

Twenge, J. M., & Campbell, W. K. (2003). “Isn’t it fun to get the respect that we’re going to deserve?”: Narcissism, social rejection, and aggression. *Personality and Social Psychology Bulletin, 29,* 261-272. doi:10.1177/0146167202239051

Weiss, B., & Miller, J. D. (2018). Distinguishing between grandiose narcissism, vulnerable narcissism, and narcissistic personality disorder. In A. D. Herman, A. B. Brunel, & J. D. Foster (Eds.), *Handbook of trait narcissism*. *Key advances, research methods, and controversies* (pp. 3-13). New York, NY: Springer.

Westen, D. (1990). The relations among narcissism, egocentrism, self-concept, and self-esteem: Experimental, clinical, and theoretical considerations. *Psychoanalysis and Contemporary Thought, 13,* 183-239.

Zeigler-Hill, V. (2006). Discrepancies between implicit and explicit self-esteem: Implications for narcissism and self-esteem instability. *Journal of Personality, 74*, 119-144. doi:10.1111/j.1467-6494.2005.00371.x.

Zeigler-Hill, V., Myers, E. M., & Clark, C. B. (2010). Narcissism and self-esteem reactivity: The role of negative achievement events. *Journal of Research in Personality*, *44*, 285-292. doi:10.1016/j.jrp.2010.02.005

Table 1. *Reaction Time Means in ms (Standard Deviations) as a Function of Primes, Words, and SOAs*

|  |  |  |
| --- | --- | --- |
|  | Negative Prime  | Neutral Prime  |
| Words  | Short SOA (SD) | Long SOA (SD) | Short SOA(SD) | Long SOA (SD) |
| Worthlessness-Denoting  | 566.83 (78.14) | 558.85 (80.83) | 561.64 (77.67) | 558.40 (78.02) |
| Neutral | 599.16 (86.85) | 591.79 (87.35) | 588.92 (87.87) | 585.5 (85.33) |
| Filler-Negative  | 598.83 (80.70) | 586.17 (82.55) | 585.05 (88.54) | 581.64 (81.04) |
| Non-Word  | 621.19 (85.7) | 613.62 (80.47)  | 611.28 (82.95) | 608.52 (83.39) |
|  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Table 2. *Correlations Between Narcissism and Reaction Times to Words at Short SOA*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Narcissism | - |   |   |   |   |   |
| 2 | Negative prime/Worthlessness-denoting words | .01 |   |   |   |   |   |
| 3 | Negative prime/Neutral words | .06 | .85\*\* |   |   |   |   |
| 4 | Negative prime/Filler-negative words | .04 | .85\*\* | .86\*\* |   |   |   |
| 5 | Neutral prime/Worthlessness-denoting words | .12 | .81\*\* | .78\*\* | .77\*\* |   |   |
| 6 | Neutral prime/Neutral words | .10 | .79\*\* | .77\*\* | .76\*\* | .86\*\* |   |
| 7 | Neutral prime/Filler-negative words | .08 | .74\*\* | .76\*\* | .77\*\* | .81\*\* | .79\*\* |
|   | \*\* *p* < .01 |

 |
|  |  |

Table 3. *Correlations Between Narcissism and Reaction Times at Long SOA*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Narcissism | - |   |   |   |   |   |
| 2 | Negative prime/Worthlessness-denoting words | .05 |   |   |   |   |   |
| 3 | Negative prime/Neutral words | .05 | .80\*\* |   |   |   |   |
| 4 | Negative prime/Filler-negative words | .09 | .82\*\* | .86\*\* |   |   |   |
| 5 | Neutral prime/Worthlessness-denoting words | .09 | .78\*\* | .73\*\* | .71\*\* |   |   |
| 6 | Neutral prime/Neutral words | .08 | .75\*\* | .75\*\* | .77\*\* | .83\*\* |   |
| 7 | Neutral prime/Filler-negative words | .12 | .78\*\* | .78\*\* | .78\*\* | .86\*\* | .84\*\* |
|   | \*\* *p* < .01 |

Table 4. *Correlations Among Narcissism, Self-Esteem, and Difference Scores on Worthlessness-denoting Words at Short and Long SOAs, Along with Descriptive Statistics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Measure | *1* | *2* | *3* | *M* | *SD* |
| 1. Narcissism | - |  |  | 10.84 | 5.18 |
| 2. Self-esteem | .18\* | - |  | 18.74 | 5.46 |
| 3. Short SOA | -.20\* | .02 | - | 5.41 | 48.97 |
| 4. Long SOA | -.06 | .01 | .08 | .45 | 52.53 |

*Note*: \**p* < .05

Figure 1. *Reaction Time Differences (in msec) to Worthlessness-Denoting Words as a Function of Short and Long SOAs at Varying Levels of Narcissism*

**Appendix A**

*Words Used in the Experiment*

**Non-Words**

ABRAEIVE

AETACK

BRAIEN

DEOASTATE

EAIL

ERUSH

FIEE

GUERRILLO

HAAM

INHIOIT

INIERFERE

NEUARALISE

OFFENSIOE

PROUIBIT

REAULSE

UXPLOSIVE

BOAFIN

CHEEOAH

UOX

FEASK

FLUFFE

FOLAOW

INOUBATION

INCONCLUSIOE

INEAITABLE

LOEER

LIEUOR

AITFALL

OTOPPED

USEAL

ONSECURE

WORALESS

AEATEUR

EHEAT

FAOE

EALSE

FLEP

FOOB

ANCAPABLE

INCOOPETENT

ENEPT

LAAR

EOSER

OITFALL

STAUPID

UGOY

UNSUCCESSFAL

WOROLESS

**Filler-Negative Words**

ABRASIVE

ATTACK

BRAZEN

CRUSH

DEVASTATE

EXPLOSIVE

FIRE

GUERRILLA

HARM

INHIBIT

INTERFERE

JAIL

NEUTRALISE

OFFENSIVE

PROHIBIT

REPULSE

**Neutral Words**

BOFFIN

CHEETAH

FLASK

FLUFFY

FOLLOW

FOX

INCONCLUSIVE

INCUBATION

INEVITABLE

LIQUOR

LOWER

PITFALL

STOPPED

UNSECURE

USUAL

WORDLESS

**Worthlessness-Denoting Words**

AMATEUR

CHEAT

FAKE

FALSE

FLOP

FOOL

INCAPABLE

INCOMPETENT

INEPT

LIAR

LOSER

PITIFUL

STUPID

UGLY

UNSUCCESSFUL

WORTHLESS

1. The reaction time variables were normally distributed. The difference scores for the short SOA were also normally distributed, but the difference scores for the long SOA were slightly negatively skewed. We winsorized the long SOA data and repeated the analyses on them. We obtained similar results. In a regression analysis, narcissism did not predict reaction times: Higher levels of narcissism were unassociated with faster reaction times, *F*(1, 207) = .40, *p* < .53. In a hierarchical regression analysis, narcissism did not predict reaction times, *F*(1, 207) = .18, *p* = .82. Self-esteem did not predict reaction times either, *F*(1, 207) = .01, *p* = .93. [↑](#footnote-ref-1)