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DOI: https://doi.org/10.1037/pspp0000463

Age and Gender Differences in Narcissism: A Comprehensive Study Across Eight Measures and Over 250,000 Participants

Rebekka Weidmann
Michigan State University
University of Basel

William J. Chopik
Michigan State University

Robert A. Ackerman
The University of Texas at Dallas

Marc Allroggen
University Hospital Ulm, Ulm, Germany

Emily C. Bianchi
Emory University

Courtney Brecheen
The University of Texas at Dallas

W. Keith Campbell
University of Georgia

Tanja M. Gerlach
Queen's University of Belfast
Georg August University Göttingen

Katharina Geukes
University of Münster

Emily Grijalva
University at Buffalo

Igor Grossmann
University of Waterloo

Christopher J. Hopwood
University of Zurich

Roos Hutteman
Utrecht University

Sara Konrath

Indiana University–Purdue University Indianapolis

Albrecht C. P. Küfner
University of Münster

Marius Leckelt
University of Münster

Joshua D. Miller
University of Georgia

Lars Penke
Georg August University Göttingen

Aaron L. Pincus
The Pennsylvania State University

Karl-Heinz Renner
Bundeswehr University Munich

David Richter
German Institute for Economic Research, Berlin, Germany

Brent W. Roberts
University of Illinois at Urbana-Champagne

Chris G. Sibley
University of Auckland

Leonard J. Simms
University at Buffalo

Eunike Wetzel
University of Koblenz-Landau

Aidan G.C. Wright
University of Pittsburgh

Mitja D. Back
University of Münster

This paper was accepted for publication in the Journal of Personality and Social Psychology (01/31/2023).

Author Note

Corresponding author's contact information: Rebekka Weidmann, Department of Psychology, Michigan State University, 316 Physics Rd, East Lansing, MI 48823, USA. weidma12@msu.edu. Rebekka Weidmann is also an Adjunct Senior Researcher at University of Basel, Switzerland.

Study 1 and 2 were not preregistered. The data, syntax, and materials for Study 1 are provided on the Open Science Framework: https://osf.io/gp6a4/?view_only=9e33468ea1fb447388eada970681add2

Due to the sensitivity of some of the data collections/participant samples and data use access agreements restricting their public dissemination (e.g., clinical samples, proprietary samples, NIH's NESARC-III study), we were unable to share all data of Study 2. However, all sharable data can be found on the Open Science Framework (OSF): https://osf.io/gp6a4/?view_only=9e33468ea1fb447388eada970681add2. However, this means that the results based on this shared subset might will not fully match the overall results in the manuscript (e.g., Sample 40's data could not be shared publicly).

This research was supported in part by the National Institute of Mental Health (L30 MH101760), the University of Pittsburgh's Clinical and Translational Science Institute, which is funded by the National Institutes of Health (NIH) Clinical and Translational Science Award (CTSA) program (UL1 TR001857), and grants from the University of Pittsburgh Central Research Development Fund and a Steven D. Manners Faculty Development Award from the University of Pittsburgh University Center for Social and Urban Research granted to Aidan G. C. Wright. The present research was also funded by the Social Sciences and Humanities Research Council of Canada Insight Grants (435-2014-0685), Early Researcher Award from the Ontario

Ministry of Research, Innovation, and Science (ER16-12-169), and Templeton Pathways to Character Award granted to Igor Grossmann. The New Zealand Attitudes and Values Study is supported by a grant from the Templeton Religion Trust (TRT0196) granted to Chris G. Sibley. This research was further supported by a Postdoc.Mobility Fellowship (P400PS_186724) of the Swiss National Science Foundation granted to Rebekka Weidmann. Sara Konrath was supported by grants from AmeriCorps (formerly, the Corporation for National and Community Service: 17REHIN002), the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R25-HD083146), and Heterodox Academy, while writing this manuscript.

Abstract

Age and gender differences in narcissism have been studied often. However, considering the rich history of narcissism research accompanied by its diverging conceptualizations, little is known about age and gender differences across various narcissism measures. The present study investigated age and gender differences and their interactions across eight widely used narcissism instruments (i.e., Narcissistic Personality Inventory, Hypersensitive Narcissism Scale, Dirty Dozen, Psychological Entitlement Scale, DSM-IV NPD, Narcissistic Admiration and Rivalry Questionnaire-Short Form, Single Item Narcissism Scale, and brief version of the Pathological Narcissism Inventory). The findings of Study 1 (N = 5,736) revealed heterogeneity in how strongly the measures correlated. Some instruments loaded clearly on one of three factors proposed by previous research (i.e., neuroticism, extraversion, antagonism), while others cross-loaded across factors and in distinct ways. Cross-sectional analyses using each measure and meta-analytic results across all measures (Study 2) with a total sample of 270,029 participants suggest consistent linear age effects (random effects meta-analytic effect of r = -.104), with narcissism being highest in young adulthood. Consistent gender differences also emerged (random effects meta-analytic effect was -.079), such that men scored higher in narcissism than women. Quadratic age effects and age x gender effects were generally very small and inconsistent. We conclude that despite the various conceptualizations of narcissism, age and gender differences are generalizable across the eight measures used in the present study. However, their size varied based on the instrument used. We discuss the sources of this heterogeneity and the potential mechanisms for age and gender differences.

Keywords: narcissism; age differences; assessment; adult development; cohort differences

Age Differences in Narcissism:

A Comprehensive Study Across Eight Measures and Over 250,000 Participants

The perception that younger people are more self-involved and narcissistic than older people has been long prevailing. Indeed, longitudinal evidence suggests that as people age, they become less narcissistic (e.g., Wetzel et al., 2020). In addition to age differences, gender differences in narcissism have also been a popular research topic. Previous research suggests that women and men differ in their narcissism levels in that men show on average higher narcissism compared to women (e.g., Grijalva et al., 2015). Less is clear, however, how gender differences map unto the lifespan of individuals and how gender differences might persist across the lifespan or wane at certain life stages. In addition, what researchers and the public mean by "narcissism" undoubtedly varies considerably. This is also evident when viewing the psychological history of studying narcissism. Within social, personality, developmental, and clinical psychology, there is a proliferation of measures of individual differences in narcissism. Some measures focus on the grandiose aspects of narcissism, while others focus on the vulnerable aspects of narcissism. These different conceptualizations might have implications for the conclusions about whether and how much younger and older as well as female and male people differ from each other with respect to narcissism. Research on cross-sectional age and gender differences is sparsely available for many of the narcissism measures; are similar lifespan differences seen across different conceptualizations and measurements of narcissism? Do men and women equally differ across measures, and across the lifespan? The present study uses data from over 250,000 people across eight different measures to examine cross-sectional age and gender differences and their interactions in narcissism.

The Definition of Narcissism

A portion of the history of narcissism research is characterized by a series of defining, re-defining, and circumscribing the nature of narcissism. However, in a recent preliminary synthesis of the construct's definitions, narcissism was described as "*entitled self-importance*" (Krizan & Herlache, 2018, p. 8; see also Krizan, 2018) encompassing the core psychological aspect of ascribing more importance and specialness to oneself and one's needs compared to others. Narcissism is a multidimensional construct that embodies a broad range of characteristic expressions, behaviors, and self-regulatory tendencies (e.g., Aslinger et al., 2018; Back et al., 2013; Holtzman et al., 2010; Morf & Rhodewalt, 2001; Roche et al., 2013).

In more recent years, a preliminary consensus has been reached among scholars that individual differences in narcissism can be understood from a trifurcated perspective (Ackerman et al., 2019; Back, 2018; Crowe et al., 2019; Krizan & Herlache, 2018; Miller et al., 2017, 2021). As such, narcissism includes agentic (also called narcissistic admiration), antagonistic (also called narcissistic rivalry), and neurotic (or vulnerable) aspects of narcissism (Back, 2018; Crowe et al., 2019; Miller et al., 2021). These three aspects can be situated in the Five Factor Model of Personality, in that the agentic aspect is associated with higher extraversion, the antagonistic aspect is associated with lower agreeableness, and the neurotic aspect with higher neuroticism (e.g., Miller et al., 2017; Miller & Maples, 2011; Weiss & Miller, 2018). The former two (i.e., agentic and antagonistic narcissism) also represent more overt forms of narcissism and can be subsumed into a grandiosity factor of narcissism (e.g., Wink, 1991). Grandiose narcissism reflects a tendency toward thoughts and behaviors characterized as egotistical, assertive, dominant, and self-enhancing (i.e., agentic narcissism), and manipulative, malignant, self-protective, and arrogant aspects of behavior (i.e., antagonistic narcissism) (Akhtar & Anderson Thomson, 1982; Back, 2018; Cain et al., 2008; Gabbard, 1989; Wink, 1991). Neurotic narcissism

(also referred to as vulnerable narcissism) reflects a tendency toward being anxious, defensive, contact-shunning, hypersensitive, discontent, and stems from a concern with one's adequacy (Akhtar & Anderson Thomson, 1982; Cain et al., 2008; Gabbard, 1989; Wink, 1991). Using this broad definition, researchers have worked using these distinctions to try to characterize how narcissism might differ across the lifespan.

Theoretical Assumptions and Longitudinal Evidence of Age Differences in Narcissism

Theoretical Approaches to Understanding the Lifespan Development of Narcissism

To understand how age differences in narcissism emerge, we draw upon several theoretical postulations. For instance, narcissism has been implicated in the evolutionary psychology literature, specifically how its variation is associated with functioning in long-term romantic relationships, optimal parenting practices, or productive work behavior (e.g., Grijalva & Newman, 2015; Hart et al., 2017; Wurst et al., 2017). Further, narcissism is linked to short-term mating strategies, social status, and dominant behaviors (e.g., Cheng et al., 2010; Grapsas et al., 2020; Holtzman & Donnellan, 2015). The adaptive nature of narcissism at various points of the life course is a little more controversial (Hill & Lapsley, 2011). Ostensibly, narcissism is seen as unproductive for pursuing long-term relationships and organizational citizenship behavior. However, narcissism during young adulthood could have evolutionary adaptive benefits as it may increase agency, guide calculated social risk taking, help with identity formation, and scaffold self-esteem during difficult transitions (Hill & Lapsley, 2011; Hill & Roberts, 2012). Likewise, the domain-level adaptation of narcissism enables individuals to acquire resources and status and survive—concerns that may be particularly crucial among younger adults (Holtzman & Strube, 2011).

In addition, people's social goals shift as they age—which is in line with socioemotional

selectivity theory (Carstensen, 1995)—in that personal growth and status goals decrease across the adult lifespan while prosocial-engagement goals increase (Bühler et al., 2019) and that increases in social dominance start to stagnate at the age of 40 (Roberts et al., 2006). It could therefore be expected that narcissism would decline with increasing age as people strive to meet the expectations of long-term social roles.

This thinking is in line with principles put forth by the social investment theory (Roberts et al., 2005, 2008; Roberts & Wood, 2006) and developmental task theories (Havighurst, 1972; Hutteman et al., 2014) postulating that investing in social roles stimulates development in people's personality toward a mature direction—potentially marked with decreases in narcissism. This means that people transitioning into these roles likely become more conscientious, agreeable, and emotionally stable (e.g., Bleidorn et al., 2013). Given that antagonistic narcissism is related to lower levels of agreeableness, agentic narcissism linked to higher levels of extraversion, and vulnerable narcissism associated with higher neuroticism (e.g., Du et al., 2021; Paulhus & Williams, 2002; Miller et al., 2018), it is likely that narcissism might also decrease during young adulthood through similar processes of adopting and investing in social roles.

In addition, opportunities to fail—and the actual number of failures—increases with age. These challenges and potential failures might accumulate and reduce narcissism over time (Foster et al., 2003). Additionally, psychological disorders, such as depression, anxiety, and personality disorders, have been found to be less likely with older age (Jorm, 2000; Kessler et al., 2010; Samuels et al., 2002). This abatement of mental illness and antagonistic characteristics has also been labeled "disorder burnout" (Foster et al., 2003) and might also apply to narcissism as an individual difference characteristic. These theoretical postulations would be reflected in cross-

sectional age differences in which middle-aged and older-aged adults are lower in narcissism compared to younger adults.

Evaluating the Current Generational and Longitudinal Evidence of Lifespan Differences in Narcissism

It needs to be acknowledged, however, that age differences in narcissism could also stem from generational (i.e., cohort) effects (Schaie, 1965). Such cohort effects could emerge because the socio-cultural context of younger cohorts has shifted to a more self-centered culture. The use of social media among younger generations (e.g., Van Volkom et al., 2013) with its consistent link to narcissism (McCain & Campbell, 2018) as well as a cultural shift in the USA towards an increase in individualistic tendencies (Twenge & Foster, 2010) have been proposed as reasons why birth cohorts differ in narcissism. A handful of longitudinal studies have examined age changes across several years or even the entire adult life span. Carlson and Gjerde (2009) using the California Child (or Adult) Q-set, found that narcissism increases between the age of 14 and 18 and stabilizes (i.e., non-significantly decline) until the age of 23. Wetzel and colleagues (2020) using the Narcissistic Personality Inventory found likewise that narcissism and its facets (i.e., leadership, vanity, and entitlement) decreases across 23 years from young adulthood to midlife. Chopik and Grimm (2019) studied six different longitudinal datasets and found decreases across the lifespan in a California Adult Q-set-derived hypersensitivity (i.e., defensive narcissism) and willfulness (i.e., grandiose narcissism), while they found increases in autonomy (i.e., adaptive narcissism) (see also Edelstein et al., 2012; note, this Q-set measure was yet different than the one used in Carlson and Gjerde, [2009]). Finally, Grosz and colleagues (2019) found stable levels of narcissistic admiration across two samples spanning ages 19.5 and 29.5 using six items of the NPI.

Even from these few longitudinal studies, it is evident that many different instruments and conceptualization of narcissism have been used to study age differences in ostensibly the same phenomenon. However, these measures are only the tip of the iceberg when it comes to measuring narcissism. This variety in narcissism instruments is in part because the definition of narcissism has diverged across research groups, methodological approaches, historical time period, and clinical diagnosis. Thus, the corresponding measures that researchers often use do not necessarily cover the three narcissism dimensions of the current definition of narcissism equally. Some measures focus on agentic or antagonistic forms of grandiose narcissism, while others measure entitlement or neurotic narcissism, or general narcissism. Having an understanding about the heterogeneity of how narcissism is measured can provide a more complete picture of how narcissism differs across adult life stages.

Cross-Sectional Age Differences in Narcissism across Instruments

Using the above-mentioned narcissism measures, previous studies have formally examined age differences with cross-sectional data. An overview of the measures and their respective cross-sectional studies on age differences can be found in Table 1. Age has been found to have a negative association with narcissism when measured with the NPI (e.g., Cai et al., 2012; Carter et al., 2012; Foster et al., 2003; Hill & Roberts, 2012; Roberts et al., 2010; Wilson & Sibley, 2011, Study 2), the HSNS (Barlett & Barlett, 2015), the PES (Wilson & Sibley, 2011, Study 1), and the DSM-IV NPD (Pulay et al., 2011; Stinson et al., 2008). These studies represent efforts to formally examine age differences (and moderators of age differences) in narcissism, but there are likely others that report bivariate correlations (i.e., linear associations) between age and narcissism (or have this information but do not report it).

What becomes evident from Table 1 is that previous studies have most notably focused

on understanding age differences in the NPI, a measure for grandiose narcissism. However, a formal examination of age differences across all those measures is absent in the literature. Furthermore, whether age differences generalize across shorter scales (e.g., SINS, B-PNI) and across different facets of grandiose narcissism (i.e., NARQ-S) in a comparable way has not been investigated either. Thus, to provide narcissism researchers with a comprehensive picture of the age differences across these commonly adopted measures, it is one goal of the present article to provide a clearer understanding of how age differences generalize or differ across instruments and different narcissism facets with a large, age-heterogenous sample. We also meta-analyze across these instruments to better understand how age is linked to narcissism on average—across all measures. Worth noting, some of the data sets included in the current investigation have been used in previously published work on age differences (e.g., Foster et al., 2003; see Tables 1 and 3). However, these studies varied in whether they considered non-linear age differences, whether they examined gender differences (and age x gender interactions), and their general analytic approach (e.g., simple bivariate correlations, sub-setting the sample by gender, or moderated regressions). Examining such individual samples in isolation likely does not provide enough statistical power to reliably detect two-way interactions. In the current study, we aggregated these data sets to provide a more robust examination of age and gender differences (and their interactions) and draw preliminary comparisons across different inventories.

Gender Differences in Narcissism across Instruments

It could also be theorized that narcissism differs across female and male people. Social role theory is one potential explanation for gender differences in narcissism. Social role theory is based on beliefs about gender roles, which are assumed to be established by observing men and women in their behaviors and different gendered roles and attributing the different behaviors to

intrinsic trait dispositions. Gender role beliefs are then internalized as normative gender stereotypical behaviors and traits, which serve as the standards to which individuals compare their own behavior (Eagly, 1987; Eagly & Wood, 1999, 2011). Generally, more agentic traits, such as being self-assertive, dominant, and confident are ascribed to a male gender stereotype; more communal traits, such as being warm, nurturing, and helpful are ascribed to a female gender stereotype (e.g., Bakan, 1966; Deaux & LaFrance, 1998; Martin, 1987). Thus, given that narcissism—especially grandiose narcissism—embodies several agentic characteristics, social role theory could be one potential explanation why men display higher narcissism levels compared to women. Another explanation for the gender differences suggests that men are more likely to receive admiration for themselves while women might be more likely to receive admiration by associating themselves with admirable persons (Philipson, 1985), which might be another potential reason for disparities in narcissism across gender.

Previous research paints a consistent picture of gender differences in narcissism: Men tend to report higher levels of narcissism compared to women (for a meta-analysis, see Grijalva et al., 2015). This is also in line with gender differences found for the Big Five trait agreeableness: men generally report lower levels of agreeableness (i.e., the antagonistic part of narcissism; Schmitt et al., 2008). Even though the meta-analysis of Grijalva and colleagues is very comprehensive and included a variety of different narcissism scales, some scales included in the present study were not examined in the meta-analysis (e.g., PES, DSM-IV NPD, SINS) or only their longer-format predecessors have been included (e.g., NARQ, PNI). Nevertheless, these scales are also increasingly used among researchers and learning more about the gender differences across these scales helps complete the picture of how narcissism levels vary across women and men.

Age x Gender Interactions in Narcissism across Instruments

The meta-analysis of Grijalva et al. (2015) also suggests that there is little to no evidence for variation in gender differences across the lifespan and across cohorts. And thus, the gender differences seem to be comparable in magnitude across a large portion of the lifespan. However, as the authors lamented themselves, the study results cannot speak to gender differences in middle age and later adulthood (ages 55+ years). It therefore remains unclear to what extent gender differences remain constant or vary across the entire adult life span. Are older men and women as different as younger men and women in their narcissism?

During some life stages, gender differences in narcissism could be more pronounced, leading to the prediction that age might moderate gender differences in narcissism. For instance, during the reproductive years, women who have children are more involved in childcare responsibilities than men (Orloff, 2002) and participate less in the workforce (e.g., Gibb et al., 2014). Furthermore, women generally work less in STEM fields (Okrent & Burke, 2021) and more in occupations like nursing (WHO, 2022) or teaching (National Center of Education Statistics, 2018) — jobs that require high agreeableness levels. Hence, during the reproductive and working years, a larger gender gap in narcissism could be possible given that women are more likely to find themselves, on average, in roles and work positions that require agreeableness (and less antagonism and narcissism). Altogether, it is possible that socialization experiences—or the accumulation or abatement of their influences over time—might manifest themselves as smaller or larger gender differences in narcissism across age. But the exact pattern for how gender differences might vary by age is a bit unclear, and there are a few reasons to expect particular patterns. For example, there is some evidence to suggest that engagement in sustained career success leads to increases in agency and autonomy (Abele, 2003), and women's increases

in autonomy—a close correlate of grandiose narcissism—are more dramatic than men's increases in young adulthood and middle age (Chopik & Grimm, 2019). Thus, it could be expected that women and men differ in their narcissism levels during the reproductive and working years. In contrast, smaller gender differences could be observed after middle adulthood due to hormonal changes or after retirement due to changes in the gendered division of labor (Grijalva et al., 2015). Lastly, gender differences could also remain constant across the lifespan given the continual status and socialization experiences of women and men across the entire lifespan (Philipson, 1985; Stewart & Healy, 1989; Tschanz et al., 1998; Twenge, 2009). Thus, the present study examines gender differences across the adult lifespan to answer the question if the differences between women and men in narcissism are shaped similarly or differently at different life ages.

The Present Study

No previous study has undertaken a concerted effort to examine cross-sectional age and gender differences in narcissism across various narcissism measures. Specifically, no studies have applied a consistent analytic approach using large samples of participants to test linear and quadratic associations between age and narcissism, associations between gender and narcissism, and age x gender interactions. Further, although gender differences in narcissism have been the subject of previous research, the extent to which gender moderates age differences in narcissism across the entire adult lifespan—and the degree to which these moderating effects are consistent across measures is unclear.

More broadly, examining the consistency of age and gender differences in narcissism using different measures might have the following implications for the field. First, if the present study finds significant variations in the age and gender differences across measures, previous and

future research needs to be interpreted in the light of these instrument-dependent differences. Furthermore, such variation in age and gender differences might spur further research that examines why some instruments and conceptualizations find age and gender differences in narcissism and its facets while others do not, given that age and gender differences could also depend heavily on a particular facet or subscale used. Second, if the present study finds uniform age and gender differences across measures or if the age and gender effects between measures are minimal, age and gender-related differences reported for one measure in past and future research likely generalizes across instruments. This raises confidence in how age/gender and narcissism are associated, regardless of the particular way in which narcissism is operationalized.

In addition, the present study also uses a large sample to examine the age x gender interactions of narcissism across different measures. The present study will use a sample with a larger age range (15-99 years) to describe how gender differences are the same or differ across young, middle, and late adulthood. These findings might provide a first steppingstone in describing the developmental and cohort differences that might occur between women and men's narcissism across the adult lifespan and might spur theorizing about their developmental and cohort differences.

It is thus the goal of the present article to examine age and gender differences in eight prominently used narcissism measures across 42 large data sets including over 250,000 participants. Before doing that, however, we first establish that the different measures show sufficient independence. This provided us with the justification for studying age differences across different narcissism measures as they tap into different domains and facets of the same construct but do not uniformly measure the same construct. In line with theory and previous longitudinal and cross-sectional evidence, we expect to see a negative link between age and

narcissism, in that younger adults would report higher levels of narcissism compared to older adults. These age differences are not only expected on the level of narcissism or its composite score (depending on the instrument used) but also on the level of narcissism facets or subscales. We also expect to find gender differences, in that men show higher levels of narcissism compared to women.

Study 1

The goal of Study 1 was to provide descriptive information about the empirical overlap between the measures of narcissism used in Study 2. Prior to proceeding with Study 2 (which examines the measures in different samples separately), we wanted to quantify how highly correlated the ostensible measures of narcissism were within one sample. This serves two purposes. First, with Study 1, we could establish if measures were multicollinear ($r \geq .80$) or not. If they were multicollinear, testing different samples and instruments would likely lead to very similar age and gender differences. If they are not multicollinear, Study 2 has a stronger justification as it examined age and gender differences in measures that do not depict the exact same narcissism construct but slightly deviating narcissism facets (or other, narcissism-adjacent characteristics, depending on how poorly correlated they are). Second, defining the degree of correlation between the different measures aided in interpreting the results of Study 2. If the overlap was high ($r \geq .80$; i.e., the measures being multicollinear), it would suggest that the different instruments measure the same construct (i.e., narcissism). If the age and gender differences obtained in Study 2 were very similar, we can conclude that (a) it is because they likely measure a highly similar construct. If the age and gender differences diverged and are nothing alike, that might indicate that (b) heterogeneity might be attributable to sampling variability. If the overlap is moderate ($r > .30$ and $< .80$), it suggests that the different instruments

measure similar constructs that are closely related to each other (but may not necessarily be "narcissism" in the way that each scale defines it).

More simply, similar age and gender differences across measures in Study 2 could occur because of the high correlation between measures (i.e., narcissism). Differing age and gender differences across measures in Study 2 could occur because these measures also cover different aspects of narcissism (e.g., vulnerable vs. grandiose narcissism) but could potentially mean they cover different constructs. Lastly, if the overlap is small ($r \leq .30$), it suggests that the different instruments tap into different constructs that have been misleadingly labeled narcissism (i.e., jingle fallacy). Thus, depending on how the sex and gender differences emerge across the different measurements in Study 2, knowing how strongly the instruments overlap will inform the interpretation of these findings and strengthen the guidance provided for future research (Study 1).

We recruited a sample of 5,736 participants who completed the eight different narcissism measures, and then we examined correlations between them and their subscales. Ethical approval for this study was granted from the Institutional Review Board of the [blinded] University (x16-1291e).

Method

Participants

Participants were 5,736 students and community members (66.1% female, 33.5% male, .4% other; M_{age} = 21.84, *SD* = 7.64, range = 18-75) recruited through the subject pool at a large university (89.5%) and from Amazon Mechanical Turk (10.5%; compensated $3.00). All respondents were from the United States and were English speakers (and received English versions of the scales). The racial/ethnic breakdown of the sample was 68.1% White/Caucasian,

12.3% Asian, 9.2% Black/African American, 3.9% Hispanic/Latino, 4.0% multiracial, and 2.5% other races/ethnicities. Participants were recruited from May 2017 until April 2021. The HSNS and DDN measures were added late to Study 1 as it became apparent that data in Study 2 could be available. In addition, the DDN, PES, DSM-IV, NPD, and NARQ-S were randomly assigned to reduce participant burden. The participants were assigned to four of the five surveys (see Little & Rhemtulla, 2013; Revelle et al., 2016; Zhang & Yu, 2021 for more ideal approaches). As a result, the valid *N*s for the bivariate correlations ranged from 2,721 to 4,838. A sample size of 2,721 enabled us to detect effect sizes as small as $r = .05$ at 83% power at $\alpha = .05$.

Measures

Narcissistic Personality Inventory (NPI)

The Narcissistic Personality Inventory (NPI) is a 40-item, forced-choice, self-report measure of grandiose narcissism (Raskin & Terry, 1988). Participants chose between one of two options for 40 pairs (sample item: "The thought of ruling the world frightens the hell out of me v. If I ruled the world, it would be a better place"). We also computed three NPI subscales (LA: Leadership/authority, GE: Grandiose exhibitionism, and EE: Entitlement/Exploitativeness) identified by Ackerman and colleagues (2011).

Hypersensitive Narcissism Scale (HSNS)

Hypersensitive narcissism (i.e., a vulnerable form of narcissism that exists in the context of self-absorption; derived from writings of Murray, 1938) was measured with the HSNS (Hendin & Cheek, 1997). Participants responded with the agreement to 10 items (e.g., "My feelings are easily hurt by ridicule or the slighting remarks of others.") on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Dirty Dozen Narcissism (DDN)

The Dark Triad is a framework that conceptualizes individual differences in three malevolent personality traits—narcissism, Machiavellianism, and psychopathy (Paulhus & Williams, 2002). There have been a number of psychometric efforts to make abbreviated forms of the Dark Triad measure. In the current studies, we focused on the short-form scale of narcissism from the Dirty Dozen (DD; Jonason & Webster, 2010). *DD narcissism* is a 4-item measure (e.g., "I tend to want others to admire me."). Participants responded to each question indicating their agreement on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Psychological Entitlement Scale (PES)

The two highest-loading items from the Psychological Entitlement Scale (PES; Campbell et al., 2004) were administered. Participants rated the two items ("Feel entitled to more of everything" and "Deserve more things in life") on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Two items were chosen to maximize the participant response rate for such a large survey in Sample 36. Worth noting, this shorter form correlates highly with the longer form measures (r = .86; see Supplemental Excel Table 1 on the OSF page)[1].

Narcissistic Personality Disorder Symptoms from the Diagnostic and Statistical Manual of Mental Disorders, version IV (DSM-IV NPD)

Narcissism as conceptualized in the DSM-IV was measured via 18 forced-choice items to gauge nine subdimensions of narcissistic personality disorder (Stinson et al., 2008). Sample items include, "Have you felt that you were the kind of person who deserves special treatment?" As in previous research (e.g., Bianchi, 2014), we used a continuous measure of narcissism by averaging the number of symptoms across the items.

[1] Similarly high overlap is found between all short forms used for the present article and their long-form counterparts. Worth noting, however, is that independent administrations are necessary to see if short and long-forms indeed have sufficient overlapping variance so that one could reasonably take the place of the other.

Narcissistic Admiration and Rivalry Questionnaire-Short Form (NARQ-S)

The NARQ-S is a 6-item measure that taps into narcissistic admiration and rivalry (Back et al., 2013; Leckelt et al., 2018). The 3-item admiration subscale assesses the agentic parts of grandiose narcissism (sample item: "I manage to be the center of attention with my outstanding contributions."). The 3-item rivalry subscale assesses the antagonistic parts of grandiose narcissism (sample item: "I want my rivals to fail."). Participants indicated the degree to which they agree with each item ranging on a scale from 1 (*not agree at all*) to 6 (*agree completely*). A composite measure of NARQ-Narcissism was also calculated by averaging all six items (ω_hs > .63; αs > .61). Each subscale can be further divided into subcomponents (affective-motivational, behavioral, and cognitive), but we focus the current investigation on comparing age differences across the broader subscales of each measure.

Single Item Narcissism Scale (SINS)

The Single Item Narcissism Scale (SINS; Konrath et al., 2014) assesses narcissism via the item, "To what extent do you agree with this statement: I am a narcissist. (Note: The word 'narcissist' means egotistical, self-focused, and vain.)" on a scale ranging from 1 (*not very true of me*) to 7 (*very true of me*). The SINS has undergone extensive validity efforts—the SINS correlates well with the NPI and other related constructs (self-esteem, empathy, self-focus, personality), demonstrates high test-retest reliability (r = .79 over an 11-day period), and was associated with both self-report and behavioral measures (e.g., sexual behavior, aggression).

Brief version of the Pathological Narcissism Inventory (B-PNI)

The B-PNI is a 28-item measure of seven different facets (and two superordinate facets of Grandiosity and Vulnerability) (Schoenleber et al., 2015). Participants were instructed to indicate the degree to which each statement described them on a scale ranging from 1 (*not at all like me*)

to 6 (*very much like me*). Additional details about the full measure and operationalization of narcissism is reported elsewhere (Pincus, 2009; Wright et al., 2010).

Regarding the subscales of the B-PNI, *exploitativeness* reflects a manipulative interpersonal orientation; *self-sacrificing self-enhancement* reflects the use of ostensibly altruistic acts to portray an inflated self-image; *grandiose fantasy* reflects engagement in compensatory fantasies of gaining success, admiration, and recognition. Grandiosity as operationalized by the B-PNI is an aggregate of exploitativeness, self-sacrificing self-enhancement, and grandiose fantasy.

Contingent self-esteem reflects a precarious and fluctuating experience of self-esteem and acknowledgement of dysregulation in the absence of external sources of admiration and recognition; *Hiding the self* reflects an unwillingness to show others one's faults and needs; *Devaluing* reflects a disinterest in others who do not provide needed admiration and shame over needing recognition from disappointing others; *Entitlement rage* reflects angry affects when entitled expectations are not met. Vulnerability as operationalized by the B-PNI is an aggregate of contingent self-esteem, hiding the self, devaluing, and entitlement rage.

Study 1 was not preregistered. The data, syntax, and materials for Study 1 are provided on the Open Science Framework (OSF): https://osf.io/gp6a4/?view_only=9e33468ea1fb447388eada970681add2

Results

Correlations

Correlations, descriptive statistics, and Cronbach's alphas for each scale can be seen in Table 2. As expected, the highest correlations present were between subscales from the same measure. DD narcissism (*r*s ranged from .15 to .56; r_{mean} = .42) and DSM-IV NPD (*r*s ranged

from .18 to .54; r_{mean} = .40) were most strongly related to the various measures of narcissism. The NARQ scales (*r*s ranged from .08 to .59; r_{mean} = .38), hypersensitive narcissism (*r*s ranged from .00 to .62; r_{mean} = .34), and the PES (*r*s ranged from .12 to .51; r_{mean} = .34) all had comparable levels of associations with the other measures of narcissism. Finally, the NPI scales (*r*s ranged from -.11 to .57; r_{mean} = .27), B-PNI scales (*r*s ranged from -.10 to .62; r_{mean} = .29), and the SINS (*r*s ranged from .10 to .41; r_{mean} = .29) were related in a similar magnitude across measures.[2]

Altogether, all the measures of narcissism did not display multicollinearity among each other, which justified Study 2 to model age and gender differences separately by narcissism inventory. Further, the range of the size of correlations between different measures was substantial, suggesting large heterogeneity in the overlap of the different narcissism measures. Correlations between different measures vary from *r* = .000 between the HSNS and the NPI Leadership/Authority facet to *r* = .615 between the PNI Vulnerability facet and the HSNS. These results indicate that while some measures more closely depict similar narcissism facets, other instruments are unrelated to each other and might be measuring unassociated constructs.

Post-Hoc Factor Analysis

To examine whether the narcissism measures could be more parsimoniously grouped and to guide our discussion and interpretation of the results, we followed the practice of Crowe et al. (2019) and a recommendation from a reviewer by subjecting the data in Study 1 to a factor

[2] A reviewer recommended that we examine careless/insufficient effort responding across the narcissism scales (Curran, 2016). In a long-string analysis, we found that men (compared to women) produced longer strings for the NPI (*r* = -.065, *p* < .001), HSNS (*r* = -.049, *p* = .006), PES (*r* = -.089, *p* < .001), and the B-PNI (*r* = -.048, *p* = .002). Older adults (compared to younger adults) produced longer strings for the DDN (*r* = .060, *p* = .001), PES (*r* = .034, *p* = .028), and the DSM measure (*r* = .035, *p* = .028). Long-string tendencies for age and gender for the other measures were not significant (*p*s > .069). Although age and gender differences were not the main focus of Study 1, it is worth noting that the age and gender differences only changed negligibly after controlling for long-string tendencies (e.g., sometimes controlling for IER resulted in minor increases or decreases in the magnitude of the difference [often to the hundredth or thousandth decimal], but no changes in significance became evident).

analysis. Crowe and colleagues used a similar approach, having participants complete multiple measures of narcissism, with some scales overlapping between their study and the present study (but not all). The authors found that a three-factor solution—one that includes agentic extraversion, narcissistic neuroticism, and self-centered antagonism (similar to the trifurcated model introduced earlier) —could parsimoniously explain variation across these scales, a major boon for organizing variation across so many different inventories that claim to measure narcissism.

As seen in Table 3, the results of the factor analysis from our study suggest only partial support for the three-factor model suggested by Crowe et al. (2019). Indeed, many of the scales fell along the lines of the three-factor model. However, there were some notable areas of departure. First, cross-loadings were high (which they also were in Crowe et al), suggesting that, occasionally, some narcissism measures loaded just as highly on one factor as another. Second, some factor loadings were higher on a factor *inconsistent* with the original solution (i.e., PNI-ER and HSNS highly loaded on self-centered antagonism instead of the proposed narcissistic neuroticism). And finally, some scales (e.g., the Dirty Dozen, NARQ) loaded equally well on one factor as another, introducing some confusion about exactly how these measures should be categorized according to the three-factor model.

In sum, the results of the correlations between instruments and the post-hoc factor analysis across measures draw an inconclusive picture about the conceptual overlap between scales and the underlying concept(s) that they are measuring. We return to this Discussion later for making sense of heterogeneity in Study 2's findings.

Study 2

Study 2 examined age differences in narcissism across the inventories included in Study

1. The data from Study 2 come from a consortium of individual difference and narcissism researchers who contributed data they had been collecting throughout the years.

Based on previous research, we hypothesized that age would be negatively associated with narcissism, such that younger adults would be higher in narcissism compared to older adults (e.g., Barlett & Barlett, 2015; Foster et al., 2003; Hill & Roberts, 2012; Roberts et al., 2010; Wilson & Sibley, 2011). We also examined whether age differences were consistent across the various subscales of each inventory. We drew on 42 large data sets of individuals of different ages who filled out different measures of narcissism. Ethical approval for Study 2 was granted from the Institutional Review Board of the [blinded] University (STUDY00002967).

Method

Participants

Data from the current project comes from a large consortium of individual difference researchers who contributed 42 different data sets that each contained at least one measure of narcissism. The data sets comprised of 270,029 unique individuals recruited from representative and convenience online surveys, panel studies, student subject pools, and community/clinical samples (see Table 4 for a summary of each data set). Because some data sets contained multiple measures of narcissism (often with a planned missingness design), the data were restructured to form separate data sets for each measure (e.g., a NPI data set). This involved combining all the data containing a particular measure across the data sets to yield 8 data sets (one for each measure), some of which had overlapping participants (n = 49,744). Information on education and race/ethnicity was inconsistently collected or was relatively homogenous across a particular sample. Thus, we were unable to report or model differences according to these characteristics.

These 42 data sets were rearranged and combined to yield 8 data sets. The 42 samples

were combined into 8 samples (denoted by the 8 different measures) to run more highly powered analyses and reduce the number of tests rather than testing our question on several smaller samples (Schimmack, 2012). A summary of these data can be found in Table 5.

Measures

The eight measures used in Study 1 were identical to those used in Study 2[3].

Analytic Approach

To make the results more interpretable, we used a *T*-score metric to index effect sizes across each narcissism measure (see Soto & John, 2012 for a similar approach). *T* scores are standard units with a mean of 50 and standard deviation of 10. Following Cohen's (1988) recommendations, we interpreted age differences as small ($T \sim 2$), medium ($T \sim 5$), and large effects ($T \sim 8$). *T* scores were calculated within each sample by adding 50 to the product between 10 and the *z*-standardized narcissism score. Worth noting, recent discussions on how to interpret effect sizes suggest that Cohen's (1988) interpretation of effect sizes may be too stringent, considering the size and distribution of effects in the literature and how they translate to real-world outcomes (Funder & Ozer, 2019). Thus, the effect size standards may inadvertently characterize robust effects as small. Throughout the paper, we use a careful eye in contextualizing the size and significance of our effects in terms of their relative size to one another rather than making strong and definitive statements about their size according to others' recommendations.

[3] We note that the NARQ-S has been administered to 20 German-speaking and 7 English-speaking samples. The scale was originally developed in German and translated into English with the traditional translation-back-translation-confirmation process. This process was also used to generate English, Dutch, Danish, Italian, and Chinese versions of the NARQ by both the original authors and independent author teams (see Back et al., 2013; Vecchione et al., 2018; Zhang et al., 2017). Further, comparable measurement properties are found for different translations of the NARQ, including the German and English versions (i.e., measurement invariance; Wetzel et al., 2021). Finally, analyses with the data used in the present study also found comparable measurement properties across translations (see Table S1; Leckelt et al., 2019).

To examine age differences in narcissism, hierarchical regression analyses were conducted in which each narcissism scale (and its facets where appropriate) were predicted from the linear and quadratic (age^2) effects of age. Age was centered prior to the computation of the quadratic terms. The effects of age and their interactions with gender were entered into separate steps (Step 1: age, gender, age × gender; Step 2: age^2, age^2 × gender). The most complex model that explained a significant amount of variance was retained and interpreted.

Study 2 was not preregistered. Due to the sensitivity of some of the data collections/participant samples and data use access agreements restricting their public dissemination (e.g., clinical samples, proprietary samples, NIH's NESARC-III study), we were unable to share all data of Study 2. However, all sharable data can be found on the Open Science Framework (OSF): https://osf.io/gp6a4/?view_only=9e33468ea1fb447388eada970681add2. However, this means that the results based on this shared subset might will not fully match the overall results in the manuscript (e.g., Sample 40's data could not be shared publicly).

Results

A summary of the age, gender, age x gender, age^2, and age^2 x gender effects is summarized in Table 6 and the figures. Detailed estimates and full models are provided in the supplementary tables. Age (and age x gender) plots by measure are provided in the supplementary materials.

NPI

For overall NPI-Total, the linear effect of age was the best fitting model (see the first panel of Supplemental Table 1. NPI-Total narcissism was highest among younger adults and lowest among older adults. Men reported higher levels of NPI-Total narcissism compared to women (see Supplemental Figure 1a).

For the Leadership/Authority subscale of the NPI, the linear effect of age was the best fitting model (see the second panel of Supplemental Table 1). Leadership/Authority was highest among younger adults and lowest among older adults. Men reported higher levels of Leadership/Authority compared to women (see Supplemental Figure 1b).

For the Entitlement/Exploitativeness subscale of the NPI, the quadratic effect of age was the best fitting model (see the third panel of Supplemental Table 1. Entitlement/Exploitativeness was higher among younger adults compared to middle-aged and older adults (among whom there were very few age differences; see Supplemental Figure 1c). Men reported higher Entitlement/Exploitativeness compared to women.

For the Grandiose Exhibitionism subscale of the NPI, the quadratic effect of age was the best fitting model (see the bottom panel of Supplemental Table 1). Grandiose Exhibitionism was higher among younger adults compared to middle-aged and older adults (among whom there were very few age differences; see Supplemental Figure 1d). Men reported higher Grandiose Exhibitionism compared to women.

Hypersensitive Narcissism

For Hypersensitive narcissism, the quadratic effect of age was the best fitting model (see Supplemental Table 2). Age differences were most dramatic earlier in life and relatively flat among middle-aged and older adults (see Supplemental Figure 2a). Men reported higher hypersensitive narcissism compared to women. The effects of age and age^2 were both moderated by gender. Decomposing this effect revealed that the quadratic effect of age was more dramatic among men (β = -.04, p < .001) than women (β = .01, p = .73). However, this effect was relatively small, and the regression lines were nearly parallel (see Supplemental Figure 2b).

DD Narcissism

For Dirty Dozen narcissism, the quadratic effect of age was the best fitting model See Supplemental Table 3). Age differences were most dramatic earlier in life and relatively flat among middle-aged and older adults. Men reported higher DD narcissism compared to women (see Supplemental Figure 3a). The effects of age and age^2 were both moderated by gender. Decomposing this effect revealed that the quadratic effect of age was more dramatic among men (β = -.04, p < .001) than women (β = .01, p = .50). However, this effect was relatively small, and the regression lines were nearly parallel (see Supplemental Figure 3b).

PES

For the PES, the quadratic effect of age was the best fitting model (see Supplemental Table 4). Age differences were most dramatic among middle-aged and older adults and relatively flat among young adults. Men reported higher psychological entitlement compared to women (see Supplemental Figure 4). The linear effect of age was moderated by gender. Decomposing this effect revealed that the effect of age was stronger among men (β = -.18, p < .001) than women (β = -.14, p < .001).

DSM-IV NPD

For the DSM-IV NPD measure, the quadratic effect of age was the best fitting model (see Supplemental Table 5). Age differences were most dramatic among younger adults and relatively flat among middle-aged and older adults (see Supplemental Figure 5a). Men reported higher DSM-IV NPD compared to women. The effects of age and age^2 were both moderated by gender. Decomposing this effect revealed that the quadratic effect of age was more dramatic among men (β = .10, p < .001) than women (β = .06, p < .001). Age differences were largely similar between men and women. However, older men reported higher scores of DSM-IV NPD compared to middle-aged men whereas middle-aged and older women reported comparable levels of DSM-IV

NPD.

NARQ-S

For overall NARQ-Total, age differences were best characterized by the linear effect of age (i.e., the quadratic effect of age was not significant; see the first panel of Supplemental Table 6). NARQ-Total was highest among younger adults and lowest among older adults (see Supplemental Figure 6a). Men reported higher levels of NARQ-Total compared to women. The quadratic model was the best fit, indicating that gender moderated the effect of age^2. The quadratic effect of age was significant for women (β = .05, p = .001) and not significant for men (β = -.003, p = .87). Women had more dramatic age differences among younger adults and few age differences after middle-aged and older adults (see Supplemental Figure 6b).

For NARQ-Admiration, the linear effect of age was the best fitting model (see the middle panel of Supplemental Table 6). NARQ-admiration was highest among younger adults and lowest among older adults (see Supplemental Figure 6c). Men reported higher levels of narcissistic admiration compared to women. The effects of age and age^2 were both moderated by gender. The linear effect of age was slightly stronger for women (β = -.12, p < .001) compared to men (β = -.08, p < .001). However, decomposing the age^2 × gender interaction revealed that the effect was not significant for men (β = -.03, p = .17) or women (β = .02, p = .16). In other words, despite the age^2 estimate being different between men and women, it was not significantly different from zero.

For NARQ-Rivalry, the quadratic effect of age was the best fitting model (see the bottom panel of Supplemental Table 6). Narcissistic rivalry was highest among younger adults compared to middle-aged and older adults (among whom age differences were relatively flat; see Supplemental Figure 6d). Men reported higher levels of narcissistic rivalry compared to women.

SINS

For SINS narcissism, the quadratic effect of age was the best fitting model (see Supplemental Table 7). Age differences were most dramatic earlier in life and relatively flat among middle-aged and older adults (see Supplemental Figure 7a). Men reported higher SINS narcissism compared to women. The quadratic effect of age was moderated by gender. Decomposing this effect revealed that the quadratic effect of age was more dramatic among women ($\beta = .08$, $p < .001$) than men ($\beta = .06$, $p < .001$). However, this effect was relatively small, and the regression lines were nearly parallel (see Supplemental Figure 7b).

B-PNI

For B-PNI Grandiosity, the linear effect of age was the best fitting model (see the first panel of Supplemental Table 8). B-PNI Grandiosity was highest among younger adults and lowest among older adults (see Supplemental Figure 8a). Men reported higher levels of Grandiosity compared to women.

For B-PNI Vulnerability, the linear effect of age was the best fitting model (see the bottom panel of Supplemental Table 8). B-PNI Vulnerability was highest among younger adults and lowest among older adults (see Supplemental Table 8b). Although there was not a significant main effect of gender, there was a significant age × gender interaction. Decomposing this interaction revealed that the linear effect of age was stronger among men ($\beta = -.18$, $p < .001$)

compared to women (β = -.11, p < .001).[4,5]

Summary of Results

A summary of the aforementioned effects across the different instruments are shown in Table 5. In addition, forest plots summarizing all the effects can be found in Figures 1 (for age and age^2), 2 (for gender), and 3 (for age × gender and age^2 × gender). To examine the robustness of age-related differences across inventories and data sets, we ran a series of meta-analyses. There was significant heterogeneity in each case, and the results of these analyses are summarized here.

For age, the random effects meta-analytic effect size across all inventories, facets, and data sets was r = -.104, 95% CI [-.136, -.072] (Q(20) = 2460.91, p < .001; I^2 = 99.19%, 95% CI [99.06%, 99.30%]). These results suggest a relatively robust, albeit modest, negative association between age and narcissism across inventories (see Figure 1a) although there was considerable heterogeneity (variation) in the size of the age effects across measures.

[4] B-PNI Grandiosity and Vulnerability are higher-order factors that collectively contain 7 sub-facets (see Measures in Study 1). For parsimony, we presented the higher-order factors here. However, Supplementary Table 9 reports age differences in these sub-facets. In summary, the linear effect best characterized age differences in exploitativeness (β = -.12, p < .001), self-sacrificing self-enhancement (β = -.12, p < .001), grandiose fantasy (β = -.19, p < .001), contingent self-esteem (β = -.14, p < .001), hiding the self (β = -.14, p < .001), devaluing (β = -.11, p < .001), and entitlement rage (β = -.08, p < .001). There were no significant quadratic age effects (ps > .15) Men reported higher B-PNI narcissism than women on every sub-facet (βs > |.03|, ps < .03) with the exceptions of contingent self-esteem (p = .67) and hiding the self (p = .94). We also included these estimates in the meta-analyses found at the end of the results.

[5] Applying the same long-string analysis of careless/insufficient effort responding, we found that men often reported longer strings for the NARQ-S (r = -.059, p < .001), the HSNS (r = -.044, p < .001), the DDN (r = -.044, p < .001), and the B-PNI (r = -.072, p < .001). Older adults reported longer strings for the NPI (r = .067, p < .001) and the HSNS (r = .034, p < .001), consistent with Study 1. Younger adults reported longer strings for the NARQ-S (r = -.363, p < .001) and the B-PNI (r = -.359, p < .001). Age and gender were largely unrelated to IER for the other scales (ps > .487). In controlling for these long-string tendencies, three noteworthy differences in the results emerged: first, for B-PNI Grandiosity, the age^2 term went from non-significant (β = -.004, p = .849) to significant (β = .055, p = .006), suggesting that the age differences in B-PNI Grandiosity were most dramatic among young adults and flatter in older adulthood (this pattern can be seen in Figure 8a). Second, for B-PNI Vulnerability, a previously non-significant gender difference (β = -.032, p = .083) became significant (β = -.047, p = .011) such that men reported higher vulnerability compared to women. Third, for HSNS, the age^2 term went from non-significant (β = -.012, p = .136) to significant (β = -.016, p = .047), suggesting that the age differences in HSNS Narcissism were most dramatic among young adults and flatter in older adulthood (this pattern can be seen in Figure 2a).

For age^2, the random effects meta-analytic effect size across all inventories, facets, and data sets was r = .005, 95% CI [-.013, .023] (Q(20) = 792.40, p < .001; I^2 = 97.48%, 95% CI [96.87%, 97.96%]). These results suggest a very small curvilinear effect between age and narcissism which, in many cases, was near-zero or not significant (see Figure 1b).

For gender, the random effects meta-analytic effect size across all inventories, facets, and data sets was r = -.079, 95% CI [-.098, -.060] (Q(20) = 824.34, p < .001; I^2 = 97.57%, 95% CI [97.00%, 98.04%]). Men were higher in narcissism across nearly every inventory and facet, with some exceptions (e.g., some B-PNI subscales; see Figure 2).

For the age × gender interactions, the effect sizes were very small for both the age × gender (random effects: r = -.013, 95% CI [-.021, -.006]; Q(20) = 119.58, p < .001; I^2 = 83.27%, 95% CI [75.54%, 88.56%], see Figure 3a) and age^2 × gender interaction terms (random effects: r = .005, 95% CI [-.002, .011]; Q(20) = 89.71, p < .001; I^2 = 77.71%, 95% CI [66.36%, 85.23%], see Figure 3b). Altogether, although gender occasionally moderated age differences in narcissism, it did so in inconsistent ways and, even when consistent, the effects were relatively small and often non-significant (see Figure 3).

In sum, the age differences in narcissism across inventories supports the idea of a maturational effect that is often seen in studies of other psychological characteristics (e.g., the Big Five personality traits). Following the recommendation from a helpful reviewer, we were able to anchor some of our findings more formally to how well they might be represented by Big Five personality traits. Specifically, Du et al., (2019) tried to explain the degree to which variation in narcissism—aggression associations might be partially explained by how much each measure "taps into" other personality traits like extraversion, agreeableness, and neuroticism. The same can be done with associations between age and gender and narcissism (e.g., is

variability in age and gender differences in some narcissism scales attributable to the fact that the measures might be heavily weighted with elements of extraversion, agreeableness, and neuroticism?). Although there was not perfect overlap in our measures and those used in Du et al. (2021), some comparisons could be made. Specifically, narcissism measures that more overlapping content with extraversion, agreeableness, and neuroticism showed more dramatic (negative) associations with age (the associations between the age coefficients and the weights provided by Du et al., 2021 ranged from |.20| to |.40|). For example, the well-documented lifespan differences in neuroticism (e.g., that older adults are lower in neuroticism) can be seen in measures that are more closely weighted with neuroticism (Du et al., 2021). Likewise, gender differences in narcissism inventories tapping into elements of extraversion, agreeableness, and neuroticism also reproduce gender differences seen previously (i.e., measures that more closely tapped into these three traits reported larger gender differences (e.g., ranging from |.21| to |.43|). We further contextualize our age and gender differences in narcissism in the Discussion below.

Discussion

There is a long prevailing perception that younger people are more narcissistic than older people and that men are more narcissistic than women. However, reviewing the history of narcissism research illustrates that the definitions, conceptualizations, and measurements of narcissism vary considerably. Whether narcissism significantly differed across age and gender when measured across different instruments has not yet been tested in a comprehensive manner. The present study aimed to close this gap. Following the recommendation by Foster and colleagues (2018) we examined cross-sectional age and gender differences and their interactions using a battery of eight narcissism instruments and a sample of over 250,000 participants.

In Study 1, and in line with the different conceptualizations of narcissism, we found that

the subscales included in the eight measures (i.e., NPI, HSNS, DDN, PES, DSM-IV NPD, NARQ-S, SINS, B-PNI) show only modest overlap. In addition, the large variability in the correlation sizes across measures suggest that the instruments do not uniformly measure the same construct. Complementing with the findings of the factor analysis, Study 1 indicates that narcissism ≠ narcissism and the different ways of measuring characteristics ostensibly labeled "narcissism" can probably be organized in a better descriptive way. Rather, some measures can be unequivocally classified as the construct of narcissistic neuroticism, agentic extraversion, or self-centered antagonism. This is in line with the current conceptualization of narcissism from a trifurcated perspective (e.g., Krizan & Herlache, 2018; Miller et al., 2017, 2021). However, few measures simultaneously tap into two of these constructs (e.g., DSM-IV NPD, HSNS) suggesting that there is some ambiguity about what exactly these scales are measuring and how they fit into current understandings of narcissism.

In Study 2, we tested linear and quadratic age effects, gender effects, and age x gender interactions across the same eight narcissism measures. Our results generally suggest that the older participants were, the less narcissistic they tended to be. Further, men were more likely to report higher narcissism compared to women. Even though the age and gender differences emerged consistently across the different instruments, their ability to explain variance in narcissism was weak. While age explained 1% in the variance of narcissism, gender explained .6%. The quadratic age effects and age x gender interactions were very small and not very consistent across measures/samples. These results imply that, within the scope of these eight measures, age differences in narcissism across adulthood are comparable in their direction, irrespective of the instrument used, the instrument's subscales, and consequently, whether agentic, antagonistic, or neurotic aspects of narcissism were measured. This evidence raises

confidence in how narcissism is associated with age across its different definitions and conceptualizations, and it expands the knowledge of how narcissism is distributed across the adult lifespan. Although it could be the case that the overall negative effect of age is driven by a construct other than narcissism, such as general personality pathology.

The negative associations between age and narcissism found in the present study is in line theories that suggest narcissism declines across adulthood and with previous cross-sectional and longitudinal evidence examining one of the focal eight measures separately (e.g., Barlett & Barlett, 2015; Carter & Douglass, 2018; Foster et al., 2003; Grosz et al., 2019; Hill & Roberts, 2012; Roberts et al., 2010; Wetzel et al., 2020; Wilson & Sibley, 2011).

Nevertheless, we found considerable differences in the size of the age differences across measures. Based on the correlations between instruments and the factor analysis of Study 1, we cannot pinpoint the size differences in the age effects to specific narcissism constructs. In other words, it seems that the effect size differences did not emerge because scales that measure a similar narcissism construct (e.g., agentic extraversion) also show consistently stronger age effects than other scales that measure another narcissism construct (e.g., narcissistic neuroticism). It is possible that the variation in age effects could be due to other study differences, such as sampling. Thus, we conclude that age effects emerged in the same direction across measures but nevertheless varied substantially. This variation needs to be addressed in future research that can link these measures to other demographic and personality variables.

Ultimately, the exact reasons why older adults report lower narcissism could be determined by several mechanisms (e.g., maturational processes, social investment, cohort/changes in conventionality/traditionalism, and social desirability), which is underlined by the differential patterns across the inventories, their varying degree of overlap, and the

heterogeneity in their factor loadings. In addition, given that the obtained age differences in narcissism mirror those found for the Big Five personality traits—such as higher agreeableness and lower extraversion and neuroticism in older adulthood (e.g., Roberts et al., 2006)—it could also be possible that these age-related differences share similar developmental determinants. This is underlined by recent findings of strong correlational overlaps between extraversion, neuroticism, and agreeableness and specific narcissism measures also used in the present study (Du et al., 2021). Thus, it would be interesting for future studies to examine if the same factors that drive agreeableness to be higher with age, are also the same factors that drive the antagonistic part of narcissism to be lower with age.

We also found differences across measures in terms of the quadratic association and if it explained significantly more variance compared to the linear age association. The effect sizes of the quadratic age effects were very small, explaining less than .003% of variance. However, these results generally suggest that young adults are slightly more narcissistic compared to middle-aged adults which share comparable narcissism levels with older adults. Based on the factor analysis, we find that some of these scales tap into narcissism aspects (i.e., agentic extraversion and self-centered antagonism) that might be especially sensitive to the theorized mechanisms occurring in young adulthood (i.e., social role demands) and less sensitive to developmental changes in midlife and later adulthood (i.e., socioemotional selectivity).

Gender differences were in line with previous meta-analytic results in that men generally reported higher narcissism levels than women (Grijalva et al., 2015). Combined with the results of the factor analysis of Study 1, we found that gender differences were strongest in narcissism scales related to agentic extraversion and self-centered antagonism factors, but not the narcissistic neuroticism factor. Therefore, the gender differences do not seem to be driven by

gender differences in emotional instability but rather by differences in agentic and antagonistic features of narcissism. In terms of the Big Five traits, it could be that these gender differences emerged based on differences in extraversion (i.e., facet of social dominance) and agreeableness. It needs to be mentioned, however, that the effect was small and explained less than 1% in the variation of narcissism.

The present study also revealed that gender occasionally moderated age effects in narcissism, with very small and inconsistent effects across instruments. We see two potential reasons for the inconsistent results across studies. First, differences in the age x gender interactions could originate from sampling variability. These samples could differ in their educational and economic backgrounds as well as political and religious views, which could at least partially account for the heterogeneity in the effects. Second, the heterogeneity could also be due to characteristics of the specific instruments, such as the wording of the items. This possibility is, however, less likely, given that there is consistency in the age differences and in the gender differences across instruments. The small magnitude of these interactions paired with currently unknown sources of heterogeneity might jointly explain why gender did not consistently moderate age differences in narcissism.

Based on these inconsistent and small age x gender interaction findings and previous consistent gender differences across ages (Grijalva et al., 2015), we conclude that gender differences appear to be relatively comparable across the adult lifespan, and gender effects are most pronounced in terms of the agentic and antagonistic features of narcissism. Gender differences could be relatively uniform across life through the continual status and socialization experiences experienced by men and women (Philipson, 1985; Stewart & Healy, 1989; Tschanz et al., 1998; Twenge, 2009). These status and socialization experiences—irrespective of whether

people are in the reproductive or working stages of their life—potentially shape their narcissism levels across life.

Implications

Negative outcomes of high levels of narcissism include lower commitment in romantic relationships (Campbell & Foster, 2002) and higher likelihood of divorce (Wetzel et al., 2020), more psychological distress (Grubbs & Exline, 2016), counterproductive work behavior (Grijalva & Newman, 2015), compulsive buying (Rose, 2007), and addiction (Bilevicius et al., 2019). Thus, younger and male adults high in narcissism might have a higher risk to experience these outcomes. Narcissism, however, does not only entail negative outcomes. People with higher narcissism are more popular in the initial stages of acquaintance (Back et al., 2010), they experience less daily sadness, anxiety, loneliness, and depression (Sedikides et al., 2004), are more persuasive (Goncalo et al., 2010), and increase their performance after negative feedback (Nevicka et al., 2016). Hence, individuals in young adulthood and who are male are more likely to report higher levels of narcissism, and higher levels of narcissism might partly explain variation in an array of outcomes, both positive and negative. Nevertheless, it needs to be noted that these associations are generally small, implying that the negative and positive potential outcomes of narcissism might not be experienced frequently by people higher in narcissism; nor might younger and male participants be very likely to be narcissistic. However, having extreme values on narcissism or experiencing a narcissistic personality disorder are rather rare and thus the small associations for age and gender are not surprising.

The next step in theorizing about narcissism would be to develop theoretical models that explain why age differences generalize across different facets of narcissism. Are the mechanisms that drive the age differences the same for agentic, antagonistic, and neurotic narcissism? In

other words, does grandiose narcissism decline across life for one set of reasons but neurotic narcissism declines across life for another set of reasons? Are different mechanisms responsible for the differences across young, middle, and late adults? The same applies for the findings regarding gender differences. What are the reasons behind gender differences, and are they similar or different across narcissism scales?

Theoretical models that develop hypotheses about the shared and diverging underlying mechanisms of age and gender differences in narcissism facets can greatly inform future studies that aim to empirically test these mechanisms. For instance, regarding age differences in narcissism, testing developmental changes due to transitioning into adult social roles, such as being an employee, romantic partner, or parent, potentially lowers narcissism levels. Long-term longitudinal designs that track narcissism across many years could examine whether social roles are one of the reasons young adults mature and become less narcissistic over time. Regarding gender differences, cross-cultural and generational studies could provide some indication of how differing gender views might lead to varying gender differences across countries and across time.

Given the heterogeneity in the empirical overlap between measures, it is crucial in the upcoming years to define the construct of narcissism more precisely, to shed measurements that depict personality constructs other than narcissism, and thus to overcome the jingle fallacy that continues to constitute an important issue in the narcissism field (e.g., Hendin & Cheek, 1997; Miller et al., 2017). Particularly Study 1 provides important empirical impetus to circumscribe the construct of narcissism more closely. Additionally, Study 2 and its consistent age and gender differences imply that despite the large range in the overlap across measures, these different instruments assess some shared overarching attribute (e.g., general personality pathology, externalizing psychopathology, disagreeableness) that potentially drives these uniform effects.

Future research is needed to investigate how narcissism measures have similar age and gender differences while simultaneously being sometimes conceptually very distinct from each other.

Limitations and Outlook for Future Research

Despite the strengths of the present study, there are limitations that are worth noting. First, due to the little variability in assessment dates, we cannot distinguish whether the reported age differences stem from developmental changes across the lifespan or from differences across birth cohorts and generations partly bound to societal events (Roberts et al., 2010; Stronge et al., 2018; Twenge et al., 2008, 2021; Wetzel et al., 2020). Likewise, gender moderations of age could be due not only to changes across the lifespan experienced by men and women but also to sociocultural shifts across cohorts that might impact how gender differences manifest themselves across generations. Future research could use longitudinal data across multiple instruments to tease apart age from cohort effects. Such a research undertaking would be useful in furthering the understanding of how age differences are generalizable across different narcissism measures and facets and in illuminating whether generational differences in narcissism exist.

Second, the present study did not examine potential mechanistic factors that might contribute to the obtained age and gender differences. Future research could focus on the theorized mechanisms of narcissism changes across the lifespan or across cohorts. What factors contribute to the decrease of narcissism and do these factors vary across the lifespan, across generations, and across gender? Such factors could include whether young adults take on normative social roles (e.g., Roberts et al., 2008), whether individuals in midlife and older adulthood foster social relationships more (e.g., Carstensen, 1995), what the degree of experienced failures is (Foster et al., 2003), and how personality disorders in individuals decline across the life span (e.g., Samuels et al., 2002). In addition to these theorized factors, other

transitions might contribute to age and gender differences in narcissism. For example, experiencing major life events, such as victimization, bereavement, or relationship dissolution has been shown to predict changes in narcissism over time (Grosz et al., 2019; Orth & Luciano, 2015; Wetzel et al., 2020). Some of these life events could be more likely in a specific life stage or more likely for men or women, which could explain potential differences.

Third, the samples of the present study were diverse, including convenience samples, internet and MTurk samples, clinical, community, and representative samples. However, for many of these samples, self-selection might have biased the results. Furthermore, the gender distributions and the age ranges were also diverse, which might have contributed to the diverging results regarding the gender moderation of age effects. In addition, our study did not include samples covering childhood and adolescence (for a similar approach, see Soto et al., 2011). Furthermore, sample sizes ranged considerably across instruments (from n = 5,802 for the B-PNI to n = 139,748 for the SINS). Given that the SINS is more strongly linked to social desirability (e.g., Konrath et al., 2014), a more balanced sample size distribution would have been preferrable. To minimize noise in the data across different samples, future studies with a battery of different instruments could make use of matching procedures (or random assignment) to ensure that differences in the effects are not due to idiosyncratic sample characteristics. A further possibility is to recruit a large sample to participate in a variety of different narcissism measures and to use Principal Component Analysis to group measures together to examine age and gender differences on the trifurcated level of narcissism (e.g., Krizan & Herlache, 2018; Miller et al., 2017, 2021).

Relatedly, and regarding Constraints on Generalizability, the samples used were Western and highly educated, originating from industrialized, rich, and democratic countries. Thus, the

present findings may not necessarily generalize to other cultures or countries. The potential reasons behind the age and gender differences in narcissism (e.g., social investment or gender socialization) could substantially differ in other cultural contexts, leading to different results.

And fourth, our study was limited to eight narcissism instruments—although certainly more exist (e.g., the Five-Factor Narcissism Inventory; Glover et al., 2012)—and used available samples that co-authors have contributed. This also entailed that some measures were assessed in the same convenience sample, which limited our ability to test heterogeneity in the meta-analytic effects. This is because we did not have enough short- and long-term measures and different sets of samples to conduct an in-depth investigation of the reasons behind potential variations in the effects. Further, all measures that we examined depict narcissism and its facets as relatively stable personality traits. However, research on narcissism *states* is growing (e.g., Edershile & Wright, 2020; Giacomin & Jordan, 2016). States, compared to traits, could provide a pathway for potential interventions to decrease narcissism (e.g., Giacomin & Jordan, 2014; Wrzus & Roberts, 2017). It remains an open research question how age and gender differences arise across different state measures and how these differences impact the development of narcissism as a stable individual difference.

Lastly, an important consideration in interpreting the present findings is that the instruments used to measure narcissism did not show a substantial overlap (mean correlation across different instruments' (sub)scales: $r = .32$, median $r = .34$). As alluded to in the introduction, the history and conceptualization of narcissism research has a diverse background which poses the question of whether narcissism research suffers from the 'jingle' fallacy (Thorndike, 1913) in that it claims to measure narcissism while measuring neighboring constructs. It was not the goal of the present study to resolve this issue. The present study cannot

address which components of the age and gender differences measured with the narcissism instruments are unique to the construct of narcissism or ubiquitous for several personality constructs (e.g., neuroticism, extraversion, agreeableness) and internalizing or externalizing disorders (with which neuroticism and antagonism are related; Lynam & Miller, 2019). Because we did not assess other personality traits alongside narcissism, our study cannot inform whether these age- or gender-related findings are specific to narcissism or generalizable to other personality constructs. Future studies in the field of narcissism must devote efforts to solve the issues of conceptualization and measurement.

Conclusion

The present study reflects a concerted effort to examine age and gender differences across eight commonly used narcissism measures in over 250,000 participants. Across instruments, we found that narcissism was generally lower in older and in female participants. Future research can investigate the reasons for age and gender differences in narcissism and identify sources of heterogeneity across particular estimates (e.g., curvilinear effects, gender moderation) or samples.

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Table 1

Overview of the Most Commonly Used Narcissism Measures

Scale	Abbreviation	Author(s)	Year	Example studies on age differences
Narcissistic Personality Inventory	NPI	Raskin & Hall	1979	Cross-sectional: Cai et al. (2012), Carter & Douglass (2018), Foster et al. (2003), Hill & Roberts (2012), Roberts et al. (2010), Wilson & Sibley, (2011, Study 2) Longitudinal: Grosz et al. (2019), Wetzel et al. (2020)
Hypersensitive Narcissism Scale	HSNS	Hendin & Cheek	1997	Cross-sectional: Barlett & Barlett (2015)
Dirty Dozen (Dirty Dozen Narcissism)	DDN	Jonason & Webster	2010	Cross-sectional: Klimstra et al., (2020, Study 1) Longitudinal: Klimstra et al., (2020, Study 2)
Psychological Entitlement Scale	PES	Campbell et al.	2004	Cross-sectional: Wilson & Sibley (2011, Study 1)
Alcohol Use Disorder and Associated Disabilities Interview Schedule – Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition	DSM-IV NPD	Ruan et al.	2008	Cross-sectional: Pulay et al. (2011), Stinson et al. (2008)
Narcissistic Admiration and Rivalry Questionnaire	NARQ	Back et al.	2013	
Single Item Narcissism Scale	SINS	Konrath et al.	2014	
Brief version of the Pathological Narcissism Inventory	B-PNI	Schoenleber et al.	2015	

Table 2

Correlations and Descriptive Statistics for the Narcissism Scales of Study 1

Construct	1	2	3	4	5	6	7	8	9	10	11	12
1.) NPI-Total	**.86**	4838	4837	4835	2722	2724	3650	3646	4811	4811	4810	4050
2.) NPI LA	.845	**.76**	4837	4835	2722	2724	3650	3646	4811	4811	4810	4050
3.) NPI GE	.757	.470	**.74**	4834	2722	2724	3650	3646	4810	4810	4809	4050
4.) NPI EE	.525	.330	.265	**.51**	2721	2724	3649	3645	4809	4809	4808	4050
5.) HSNS	.107	.000[b]	.097	.298	**.73**	3129	3130	3128	2722	2722	2722	3120
6.) DD Narcissism	.471	.319	.455	.331	.382	**.73**	3131	3128	2723	2723	2723	3121
7.) PES	.389	.271	.304	.381	.329	.443	**.64**	4053	3647	3647	3646	4045
8.) DSM-IV NPD	.504	.352	.386	.479	.421	.478	.467	**.78**	3648	3648	3647	4044
9.) NARQ	.559	.395	.446	.456	.420	.559	.513	.537	**.75**	4836	4835	4052
10.) NARQ Admiration	.458	.455	.470	.297	.257	.507	.460	.444	.839	**.72**	4835	4052
11.) NARQ Rivalry	.357	.197	.269	.465	.442	.414	.386	.443	.823	.382	**.72**	4051
12.) SINS	.352	.226	.341	.310	.292	.365	.301	.411	.392	.276	.368	**N/A**
13.) PNI CSE	.008[b]	-.102	.065	.195	.524	.433	.213	.267	.313	.151	.374	.189
14.) PNI EXP	.502	.397	.271	.351	.202	.371	.270	.334	.402	.338	.326	.284
15.) PNI SSSE	.171	.125	.145	.075	.254	.388	.179	.245	.319	.358	.163	.103
16.) PNI HS	-.038[a]	-.061	-.105	.117	.372	.150	.115	.178	.151	.078	.173	.109
17.) PNI GF	.257	.187	.200	.203	.383	.464	.287	.372	.403	.377	.285	.229
18.) PNI DEV	.154	.051	.105	.316	.507	.376	.342	.401	.410	.272	.410	.248
19.) PNI ER	.381	.232	.307	.439	.531	.558	.487	.526	.593	.467	.515	.349
20.) PNI Grandiosity	.420	.321	.278	.286	.376	.545	.332	.428	.504	.478	.351	.281
21.) PNI Vulnerability	.151	.030[b]	.112	.329	.615	.480	.358	.426	.457	.299	.461	.279
M	1.378	1.440	1.365	1.229	2.839	2.787	3.119	0.375	2.764	3.273	2.254	2.570
SD	0.178	0.262	0.254	0.268	0.619	0.817	1.255	0.208	0.899	1.107	1.054	1.547

Note. NPI: Narcissistic Personality Inventory; LA: Leadership/Authority; GE: Grandiose Exhibitionism; EE: Entitlement/Exploitiveness; DD: Dirty Dozen; PES: Psychological Entitlement Scale; DSM-IV NPD: Diagnostic and Statistical Manual of Mental Disorders Narcissistic Personality Disorder; NARQ: Narcissistic Admiration and Rivalry Questionnaire; SINS: Single-item Narcissism Scale; PNI: Pathological Narcissism Inventory; CSE: Contingent Self-esteem; EXP: Exploitativeness; SSSE: Self-sacrificing Self-enhancement; HS: Hiding the Self; GF: Grandiose Fantasy; DEV: Devaluing; ER: Entitlement Rage; Sample sizes for each bivariate correlation are presented in the upper

diagonal. Cronbach's alphas are presented in the diagonal. All correlations without a subscript are significant at $p < .01$. [a] = $p < .05$; [b] = $p > .05$.

13	14	15	16	17	18	19	20	21
3651	3647	3649	3650	3651	3650	3651	3652	3652
3651	3647	3649	3650	3651	3650	3651	3652	3652
3651	3647	3649	3650	3651	3650	3651	3652	3652
3650	3646	3648	3649	3650	3649	3650	3651	3651
2723	2722	2721	2723	2723	2723	2723	2723	2723
2724	2723	2722	2723	2723	2725	2724	2725	2725
3650	3648	3648	3649	3650	3650	3650	3651	3651
3648	3645	3646	3647	3647	3647	3648	3648	3648
3648	3645	3646	3648	3649	3648	3648	3649	3649
3648	3645	3646	3648	3649	3648	3648	3649	3649
3647	3645	3645	3647	3648	3648	3647	3648	3648
4043	4040	4041	4044	4044	4043	4043	4044	4045
.84	4063	4065	4065	4064	4065	4067	4067	4067
.145	**.78**	4062	4062	4061	4063	4063	4063	4063
.415	.232	**.70**	4063	4062	4063	4065	4065	4065
.434	.201	.310	**.75**	4064	4064	4065	4065	4066
.420	.292	.462	.355	**.79**	4064	4064	4065	4065
.576	.264	.372	.466	.400	**.75**	4065	4066	4066
.553	.377	.419	.345	.479	.629	**.73**	4067	4067
.437	.691	.736	.390	.802	.464	.573	**.81**	4068
.822	.306	.479	.714	.522	.838	.789	.587	**.89**
3.079	3.217	3.863	3.630	3.705	2.775	2.946	3.596	3.108
1.195	1.080	0.970	1.117	1.141	1.051	1.036	0.793	0.871

Table 3

Factor Loadings from Study 1.

Narcissism operationalization	Narcissistic neuroticism	Agentic extraversion	Self-centered antagonism
PNI-Total	0.904	0.176	0.373
PNI-Vulnerability	0.843	-0.038	0.484
PNI-Grandiosity	0.783	0.558	0.049
PNI-CSE	0.760	-0.134	0.405
PNI-SSSE	0.752	0.287	-0.068
PNI-GF	0.705	0.412	0.053
PNI-HS	0.681	-0.102	0.042
PNI-DEV	0.663	-0.054	0.475
PNI-ER	0.583	0.223	0.607
HSNS	0.465	-0.077	0.618
Dirty Dozen	0.388	0.476	0.414
PNI-EXP	0.300	0.616	0.128
NARQ	0.245	0.558	0.623
NARQ-R	0.214	0.179	0.776
DSM-IV NPD	0.205	0.416	0.582
NARQ-A	0.190	0.744	0.239
PES	0.129	0.432	0.541
SINS	0.066	0.281	0.506
NPI-EE	0.014	0.303	0.619
NPI-Total	-0.043	0.873	0.290
NPI-GE	-0.046	0.673	0.255
NPI-LA	-0.071	0.795	0.088

Note. The scales were ordered based on the factor loading on the Narcissistic Neuroticism factor—the factor with the largest eigenvalue and explained variance.

Table 4

Description of Data Sources for Study 2

Sample	Description	Measures available	Sample size	M_{age} (*SD*)	% Female	Source
Samples 1-27	A combination of 27 convenience and representative samples from a validation project for the NARQ-S.	NARQ-S; NPI	15,832	33.13 (16.27)	63.7%	Leckelt et al., 2019
Sample 28	A large internet sample validating a single-item measure of narcissism	SINS	139,748	42.53 (13.99)	54.0%	not published
Sample 29	Internet sample for validating the B-PNI	NPI, NARQ, B-PNI	3,794	35.09 (13.39)	72.0%	Wetzel et al., 2021
Sample 30	Internet sample	NPI	2,200	25.99 (9.14)	74.5%	Foster, Campbell, & Twenge, 2003
Sample 31	MTurk	NPI	3,078	32.46 (11.86)	56.1%	Leckelt, Back, Foster, Hutteman, et al., 2016
Sample 32	MTurk	NPI, PES, HSNS	2,647	32.57 (11.57)	65.4%	Leckelt, Back, Foster, Hutteman, et al., 2016
Sample 33	Online internet sample	NPI	1,572	41.42 (11.13)	42.3%	Bianchi et al., 2014
Sample 34	MTurk	NPI	1,113	32.94 (9.93)	45.6%	not published
Sample 35	Internet sample available from openpsychometrics.org	NPI	10,579	34.97 (13.46)	42.4%	not published
Sample 36	2013 wave of the New Zealand Attitudes and Values Survey	PES	18,261	45.75 (14.67)	63.1%	New Zealand Attitudes and Values Study (Stronge, Milojev, & Sibley, 2018)

Sample 37	Internet sample available from openpsychometrics.org	HSNS, DDN	32,277	29.19 (11.34)	38.2%	not published
Sample 38	Undergraduate subject pool	B-PNI	899	19.75 (1.66)	69.6%	not published
Sample 39	Undergraduate subject pool	B-PNI	545	19.44 (1.31)	72.2%	Hopwood et al., 2011
Sample 40	The National Epidemiologic Survey of Alcohol and Related Conditions (wave 2)	DSM-IV NPD	34,653	49.06 (17.30)	57.97%	Bianchi et al., 2014
Sample 41	Community/clinical sample from the Western New York area	B-PNI	249	27.85 (6.27)	55.0%	Edershile et al., 2018
Sample 42	Community/clinical sample from the Pittsburgh area	B-PNI	311	42.61 (12.79)	63.0%	not published

Table 5

Description of Data Sources for Study 2

Sample	Sample size	M_{age} (*SD*)	Age range	% Female
NPI	32,248	31.87 (12.47)	15-86	56.8
HSNS	34,922	29.19 (11.34)	18-99	38.2
DDN	32,277	28.91 (11.28)	18-99	35.9
PES	20,532	45.75 (14.67)	18-94	63.1
DSM-IV NPD	34,653	49.06 (17.30)	20-89	57.97
NARQ-S	19,591	33.46 (15.73)	14-96	65.8
SINS	139,748	42.53 (13.99)	18-99	54.0
B-PNI	5,802	31.34 (13.38)	18-77	72.0

Note. These are measure/data set-specific sample sizes which includes redundant participants that are included in data sets (see Table 2) that include multiple measures of narcissism. Note, some participants had missing data on one or two variables.

Table 6

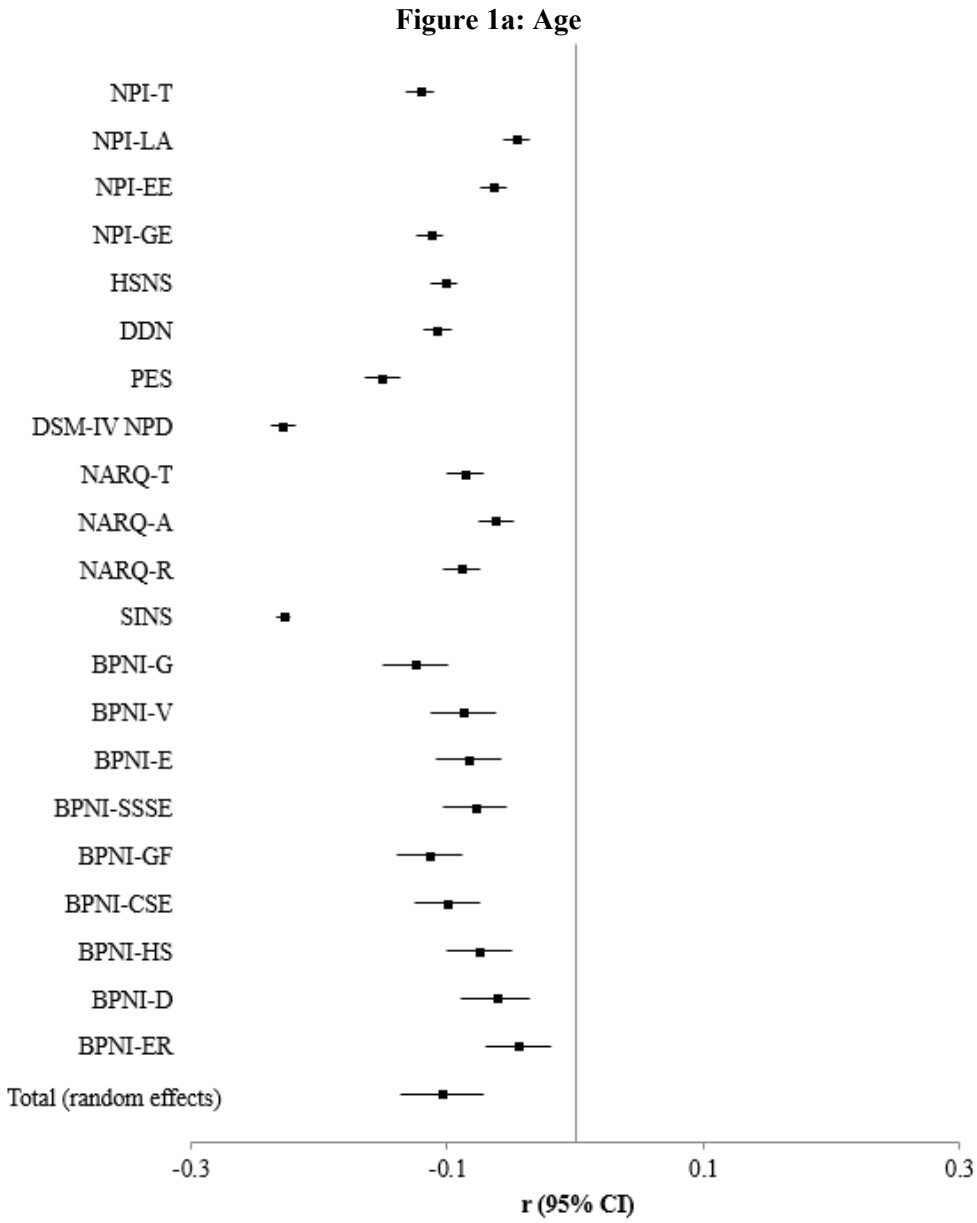
Summary of Age, Gender, and Age x Gender Effects Across the Eight Narcissism Measures

Measure	Age	Gender	Age x gender	Age^2	Age^2 x gender
NPI total	**-.17**	**-.12**	.002		
NPI Leadership/Authority	**-.07**	**-.11**	.01		
NPI Entitlement/Exploitativeness	**-.09**	**-.08**	-.004	**-.02**	.001
NPI Grandiose Exhibitionism	**-.16**	**-.03**	-.01	**.03**	.01
Hypersensitive Narcissism	**-.15**	**-.10**	**-.06**	**-.02**	**.03**
Dirty Dozen Narcissism	**-.16**	**-.20**	**-.05**	-.02	**.02**
PES	**-.16**	**-.12**	**-.02**	**-.03**	.001
DSM-IV NPD	**-.16**	**-.11**	.002		
NARQ-S total	**-.12**	**-.16**	.01		
NARQ-S Admiration	**-.10**	**-.12**	-.01		
NARQ-S Rivalry	**-.14**	**-.17**	-.001	**.04**	.02
SINS	**-.23**	**-.15**	-.004	**.07**	**.01**
B-PNI Grandiosity	**-.19**	**-.14**	-.01		
B-PNI Vulnerability	**-.15**	-.01	**-.04**		

Note. The standardized regression coefficients are reported (β). Coefficients in bold are significant ($p < .05$). If only linear age effects are reported, these models were chosen, and the quadratic did not significantly explain variance beyond the linear age effect. If both coefficients are reported, the linear + quadratic model was chosen.

Figure 1

Forest Plots of the Effects of Age (Figure 1a) and Age^2 (Figure 1b) Across Inventories



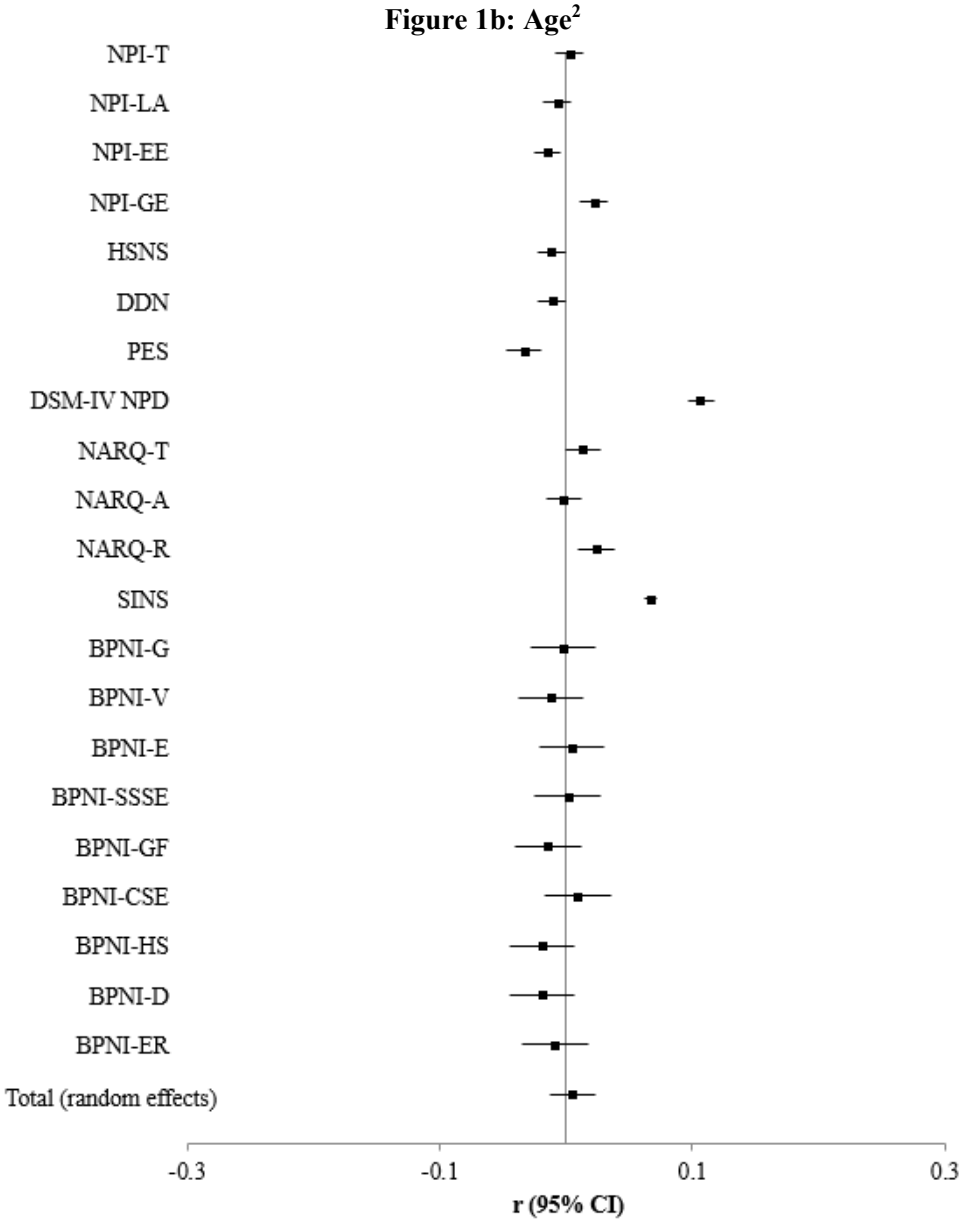


Figure 2
Forest Plot of the Effects of Gender

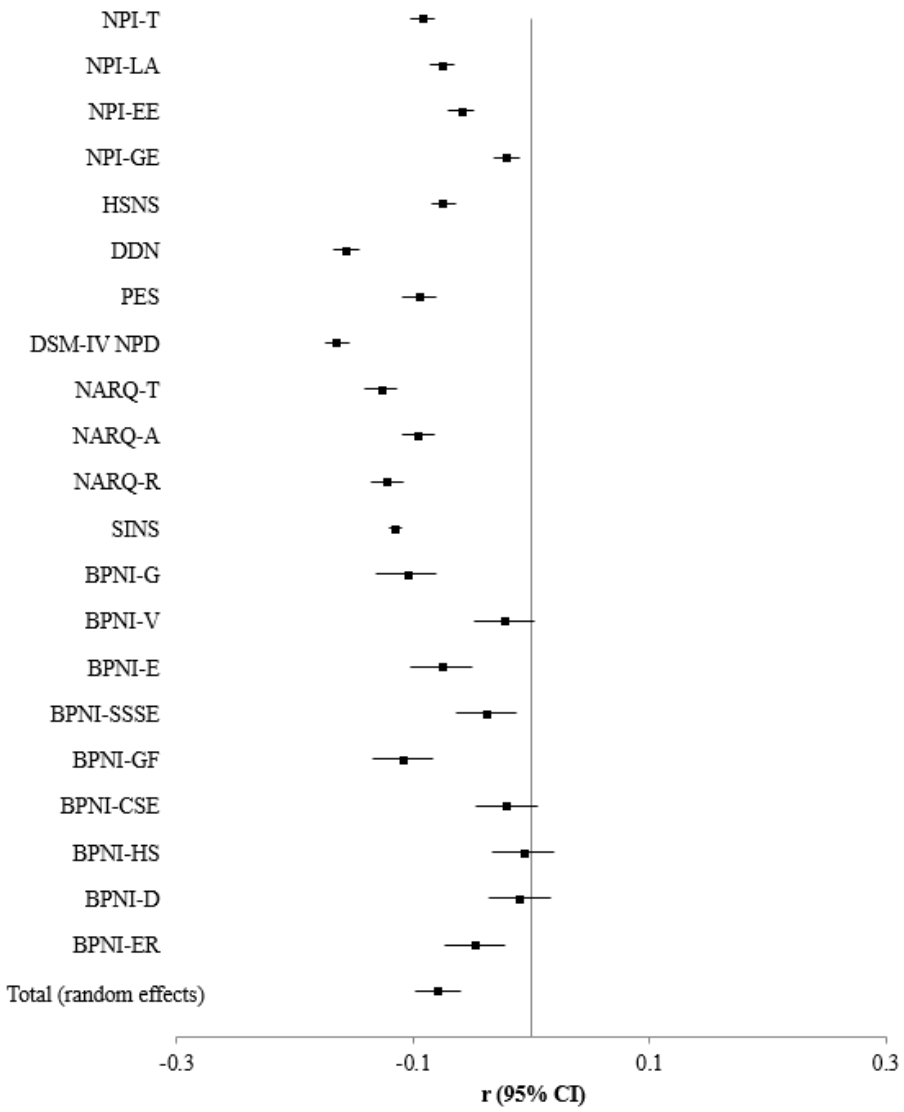


Figure 3

Forest Plots of the Effects of Age x Gender (3a), and Age^2 x Gender (3b)

Figure 3a: Age x Gender

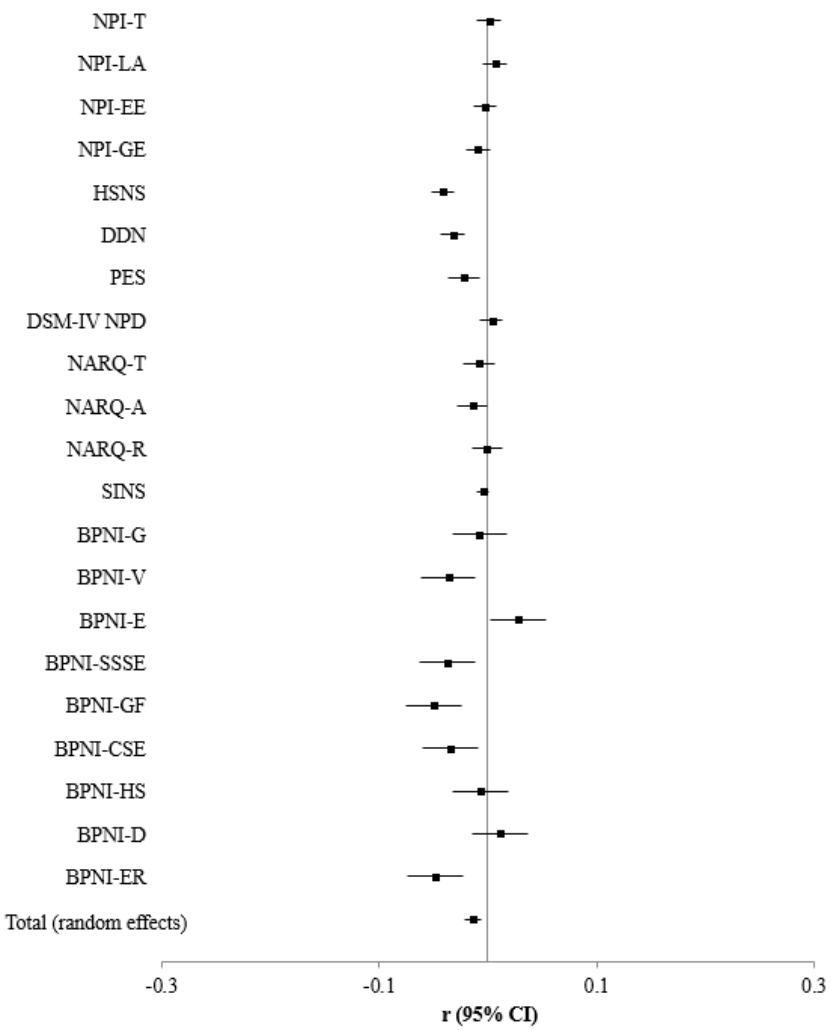
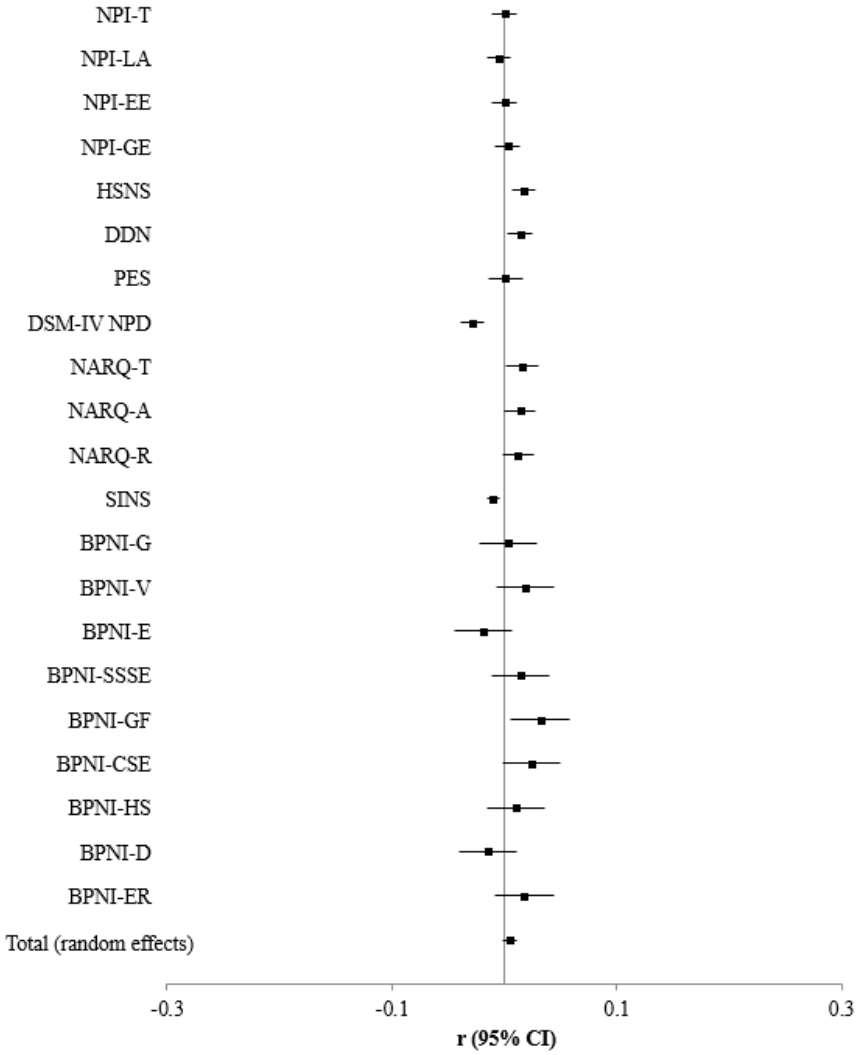


Figure 3b: Age^2 x Gender



Supplemental Tables

Supplemental Table 1

Age Differences in NPI Scores

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
NPI-Total	*b*	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.17	.06		910.11	< .001	50.06	50.28	50.15	.07		675.07	< .001	50.00	50.29
Age	-.13	.004	-.17	-30.04	< .001	-.14	-.12	-.14	.01	-.17	-21.86	< .001	-.15	-.12
Gender	-1.24	.06	-.12	-22.42	< .001	-1.34	-1.13	-1.24	.07	-.12	-16.63	< .001	-1.38	-1.09
Age × Gender	.001	.004	.002	.28	.78	-.01	.01	.001	.01	.002	.23	.82	-.01	.01
Age^2								< .001	< .001	.004	.48	.63	< .001	.001
Age^2 × Gender								< .001	< .001	< .001	-.03	.98	-.001	.001
R^2				.04							.04			
F			*F*(3,32111) = 469.12		< .001					*F*(5,32109) = 281.51		< .001		
ΔR^2											< .001			
ΔF											.12	.89		

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
Leadership/Authority	*b*	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.15	.06		894.54	< .001	50.04	50.26	50.21	.08		665.89	< .001	50.06	50.36
Age	-.06	.004	-.07	-12.61	< .001	-.07	-.05	-.05	.01	-.07	-8.22	< .001	-.06	-.04
Gender	-1.07	.06	-.11	-19.17	< .001	-1.18	-.97	-1.02	.08	-.10	-13.58	< .001	-1.17	-.88
Age × Gender	.004	.004	.01	.84	.40	-.01	.01	.01	.01	.01	1.25	.21	-.004	.02
Age^2								< .001	< .001	-.01	-1.19	.24	-.001	< .001
Age^2 × Gender								< .001	< .001	-.01	-.96	.34	-.001	< .001
R^2				.02							.02			
F			*F*(3,31857) =		< .001					*F*(5,31855) =		< .001		

				174.24							105.07			
ΔR^2												< .001		
ΔF												1.31	.27	

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
Entitlement/ Exploitativeness	*b*	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.11	.06		894.46	< .001	50.00	50.22	50.24	.08		666.81	< .001	50.09	50.39
Age	-.08	.004	-.10	-18.56	< .001	-.09	-.08	-.07	.01	-.09	-11.47	< .001	-.08	-.06
Gender	-.79	.06	-.08	-14.16	< .001	-.90	-.68	-.79	.08	-.08	-10.54	< .001	-.94	-.65
Age × Gender	-.002	.004	-.003	-.49	.63	-.01	.01	-.003	.01	-.004	-.45	.65	-.02	.01
Age^2								-.001	< .001	-.02	-2.60	.01	-.001	< .001
Age^2 × Gender								< .001	< .001	.001	.08	.94	-.001	.001
R^2				.02							.02			
F			$F(3,31841)$ = 183.64		< .001					$F(5,31839)$ = 111.56		< .001		
ΔR^2											< .001			
ΔF											3.40	.03		

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
Grandiose Exhibitionism	*b*	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.04	.06		894.43	< .001	49.93	50.15	49.84	.08		662.53	< .001	49.70	50.00
Age	-.11	.004	-.14	-24.76	< .001	-.12	-.10	-.13	.01	-.16	-20.46	< .001	-.14	-.12
Gender	-.25	.06	-.03	-4.46	< .001	-.36	-.14	-.28	.08	-.03	-3.72	< .001	-.43	-.13
Age × Gender	-.01	.004	-.01	-1.90	.06	-.02	< .001	-.01	.01	-.01	-1.65	.10	-.02	.002
Age^2								.001	< .001	.03	3.94	< .001	.001	.002
Age^2 × Gender								< .001	< .001	.01	.51	.61	< .001	.001

R^2	.02			.02	
F	$F(3, 31845) = 220.87$	< .001		$F(5, 31843) = 135.86$	< .001
ΔR^2				.001	
ΔF				8.20	< .001

Note. Gender: -1 = Men, 1 = Women.

Supplemental Table 2

Age Differences in HSNS scores

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
	b	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	49.82	.05		914.65	< .001	49.71	49.93	49.91	.07		712.97	< .001	49.78	50.05
Age	-.14	.01	-.16	-30.26	< .001	-.15	-.13	-.13	.01	-.15	-19.09	< .001	-.15	-.12
Gender	-.84	.05	-.08	-15.40	< .001	-.95	-.73	-.98	.07	-.10	-13.96	< .001	-1.11	-.84
Age × Gender	-.04	.01	-.04	-8.02	< .001	-.05	-.03	-.05	.01	-.06	-7.65	< .001	-.07	-.04
Age^2								-.001	< .001	-.02	-2.13	.03	-.001	< .001
Age^2 × Gender								.001	< .001	.03	3.17	.002	< .001	.002
R^2				.04							.04			
F			*F*(3,34562) = 413.43		< .001					*F*(5,34560) = 241.65		< .001		
ΔR^2											< .001			
ΔF											8.70	< .001		

Note. Gender: -1 = Men, 1 = Women.

Supplemental Table 3

Age Differences in Dirty Dozen Narcissism

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
	b	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	49.47	.06		876.98	< .001	49.36	49.58	49.56	.07		682.80	< .001	49.42	49.70
Age	-.10	.01	-.17	-31.00	< .001	-.16	-.14	-.14	.01	-.16	-19.45	< .001	-.16	-.13
Gender	-1.95	.06	-.19	-34.57	< .001	-2.06	-1.84	-2.06	.07	-.20	-28.41	< .001	-2.20	-1.92
Age × Gender	-.03	.01	-.03	-5.95	< .001	-.04	-.02	-.04	.01	-.05	-5.77	< .001	-.06	-.03
Age^2								-.001	< .001	-.02	-1.98	.05	-.001	< .001
Age^2 × Gender								.001	< .001	.02	2.51	.01	< .001	.002
R^2				.07							.07			
F				*F*(3, 31920) = 762.75	< .001						*F*(5, 31918) = 460.43	< .001		
ΔR^2											< .001			
ΔF											6.56	< .001		

Note. Gender: -1 = Men, 1 = Women.

Supplemental Table 4

Age Differences in PES Scores

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
	b	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.28	.08		656.85	< .001	50.13	50.43	50.54	.10		523.96	< .001	50.35	50.73
Age	-.11	.01	-.16	-20.61	< .001	-.12	-.10	-.11	.01	-.16	-20.36	< .001	-.12	-.10
Gender	-1.21	.08	-.12	-15.75	< .001	-1.36	-1.06	-1.22	.10	-.12	-12.67	< .001	-1.41	-1.03
Age × Gender	-.01	.01	-.02	-2.26	.02	-.02	-.002	-.02	.01	-.02	-2.91	.004	-.03	-.01
Age^2								-.001	< .001	-.03	-4.44	< .001	-.002	-.001
Age^2 × Gender								< .001	< .001	.001	.15	.88	-.001	.001
R^2				.04							.04			
F				*F*(3,17879) = 218.93	< .001						*F*(5,17877) = 135.49	< .001		
ΔR^2											.001			
ΔF											10.00	< .001		

Note. Gender: -1 = Men, 1 = Women.

Supplemental Table 5

Age Differences in DSM-IV NPD Scores

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
	b	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.61	.06		889.14	< .001	50.50	50.73	49.96	.06		788.07	< .001	49.83	50.09
Age	-.09	.002	-.16	-41.77	< .001	-.10	-.09	-.11	.002	-.17	-43.70	< .001	-.11	-.10
Gender	-1.15	.03	-.11	-41.59	< .001	-1.21	-1.10	-1.04	.04	-.10	-31.08	< .001	-1.11	-.97
Age × Gender	.003	.003	.002	.89	.38	-.004	.010	.003	.004	.002	.69	.49	-.01	.01
Age^2								.002	< .001	.08	19.88	< .001	.002	.002
Age^2 × Gender								-.001	< .001	-.02	-5.29	< .001	-.001	-.001
R^2				.04							.05			
F				*F*(3, 34650) = 1906.90	< .001						*F*(5, 34648) = 1229.68	< .001		
ΔR^2											.01			
ΔF											170.00	< .001		

Supplemental Table 6

Age Differences in NARQ-S Scores

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
NARQ-Total	*b*	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.52	.07		679.22	< .001	50.38	50.67	50.40	.10		489.41	< .001	50.19	50.60
Age	-.08	.01	-.12	-16.76	< .001	-.09	-.07	-.09	.01	-.14	-12.05	< .001	-.10	-.07
Gender	-1.68	.07	-.16	-22.61	< .001	-1.83	-1.54	-1.83	.10	-.17	-17.75	< .001	-2.03	-1.63
Age × Gender	.004	.01	.01	.77	.44	-.01	.01	-.01	.01	-.01	-1.07	.29	-.02	.01
Age^2								.001	< .001	.02	1.87	.06	< .001	.001
Age^2 × Gender								.001	< .001	.03	2.15	.03	< .001	.001
R^2				.04							.04			
F			$F(3, 19275) = 255.09$		< .001					$F(5, 19273) = 155.38$		< .001		
ΔR^2											.001			
ΔF											5.63	.004		

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
NARQ-Admiration	*b*	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.39	.08		676.10	< .001	50.25	50.54	50.42	.10		489.00	< .001	50.22	50.62
Age	-.07	.01	-.10	-14.02	< .001	-.07	-.06	-.06	.01	-.10	-8.65	< .001	-.08	-.05
Gender	-1.24	.08	-.12	-16.63	< .001	-1.39	-1.09	-1.38	.10	-.13	-13.37	< .001	-1.58	-1.18
Age × Gender	-.003	.01	-.01	-.75	.46	-.01	.01	-.01	.01	-.02	-1.98	.05	-.03	< .001
Age^2								< .001	< .001	-.003	-.30	.77	-.001	< .001
Age^2 × Gender								.001	< .001	.03	1.97	.05	< .001	.001
R^2				.02							.02			
F			$F(3,19532) = 155.97$		< .001					$F(5,19530) = 94.38$		< .001		

ΔR^2												< .001		
ΔF												1.98	.14	
	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
NARQ-Rivalry	*b*	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.51	.07		679.98	< .001	50.37	50.66	50.28	.10		489.45	< .001	50.08	50.48
Age	-.07	.01	-.11	-15.52	< .001	-.08	-.06	-.09	.01	-.14	-12.43	< .001	-.10	-.08
Gender	-1.64	.07	-.16	-22.08	< .001	-1.79	-1.49	-1.75	.10	-.17	-17.03	< .001	-1.95	-1.55
Age × Gender	.01	.01	.01	1.68	.09	-.001	.02	-.001	.01	-.001	-.08	.94	-.02	.01
Age^2								.001	< .001	.04	3.40	.001	< .001	.002
Age^2 × Gender								< .001	< .001	.02	1.70	.09	< .001	.001
R^2				.04							.04			
F			$F(3,19423) = 233.17$		< .001					$F(5,19421) = 143.87$		< .001		
ΔR^2											.001			
ΔF											9.61	< .001		

Note. Gender: -1 = Men, 1 = Women.

Supplemental Table 7

Age Differences in SINS Scores

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
	b	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.12	.03		1926.64	< .001	50.07	50.17	49.54	.04		1416.42	< .001	49.47	49.61
Age	-.16	.002	-.22	-83.48	< .001	-.16	-.15	-.17	.002	-.23	-87.10	< .001	-.17	-.16
Gender	-1.45	.03	-.15	-55.68	< .001	-1.50	-1.40	-1.51	.04	-.15	-43.14	< .001	-1.58	-1.44
Age × Gender	-.001	.002	-.002	-.60	.55	-.01	.003	-.003	.002	-.004	-1.68	.09	-.01	.001
Age^2								.003	< .001	.07	24.84	< .001	.003	.003
Age^2 × Gender								< .001	< .001	.01	3.83	< .001	< .001	.001
R^2				.07							.07			
F			*F*(3, 138124) = 3420.36		< .001					*F*(5, 138122) = 2188.66		< .001		
ΔR^2											.004			
ΔF											317.59	< .001		

Note. Gender: -1 = Men, 1 = Women.

Supplemental Table 8

Age Differences in B-PNI Scores

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
B-PNI Grandiosity	*b*	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.69	.14		356.26	< .001	50.41	50.97	50.72	.20		249.17	< .001	50.32	51.12
Age	-.14	.01	-.19	-13.45	< .001	-.16	-.12	-.14	.02	-.19	-9.39	< .001	-.17	-.11
Gender	-1.58	.14	-.14	-11.08	< .001	-1.86	-1.30	-1.61	.20	-.14	-7.90	< .001	-2.01	-1.21
Age × Gender	-.01	.01	-.01	-.59	.56	-.03	.01	-.01	.02	-.01	-.57	.57	-.04	.02
Age^2								< .001	.001	-.004	-.19	.85	-.002	.001
Age^2 × Gender								< .001	.001	.01	.21	.83	-.001	.002
R^2				.06							.06			
F			*F*(3,5772) = 115.45		< .001					*F*(5,5770) = 69.26		< .001		
ΔR^2											< .001			
ΔF											.03	.97		

	Step 1					95% Confidence interval		Step 2					95% Confidence interval	
B-PNI Vulnerability	*b*	*SE*	β	*t*	*p*	*LB*	*UB*	*b*	*SE*	β	*t*	*p*	*LB*	*UB*
Intercept	50.06	.15		346.02	< .001	49.78	50.35	50.20	.21		242.56	< .001	49.80	50.61
Age	-.11	.01	-.15	-10.14	< .001	-.13	-.09	-.10	.02	-.13	-6.54	< .001	-.13	-.07
Gender	-.15	.15	-.01	-1.07	.29	-.44	.13	-.36	.21	-.03	-1.74	.08	-.77	.05
Age × Gender	-.03	.01	-.04	-2.47	.01	-.05	-.01	-.04	.02	-.06	-2.73	.01	-.07	-.01
Age^2								-.001	.001	-.02	-.91	.36	-.002	.001
Age^2 × Gender								.001	.001	.03	1.38	.17	< .001	.003

R^2	.03		.03	
F	$F(3,5771)$ = 52.73	< .001	$F(5,5769)$ = 32.05	< .001
ΔR^2			< .001	
ΔF			1.02	.36

Note. Gender: -1 = Men, 1 = Women.

Supplementary Table 10

Age Differences in BPNI Facet Scores

	Step 1					95% Confidence Interval		Step 2					95% Confidence Interval	
BPNI-Exploitativeness	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*
Intercept	50.61	.14		350.30	< .001	50.33	50.89	50.56	.21		244.65	< .001	50.15	50.96
Age	-.09	.01	-.12	-8.44	< .001	-.11	-.07	-.09	.02	-.13	-6.23	< .001	-.12	-.06
Gender	-1.38	.14	-.12	-9.56	< .001	-1.67	-1.10	-1.18	.21	-.11	-5.69	< .001	-1.58	-.77
Age × Gender	.02	.01	.02	1.50	.14	-.01	.04	.03	.02	.04	2.04	.04	.001	.06
Age^2								< .001	.001	.01	.34	.73	-.001	.002
Age^2 × Gender								-.001	.001	-.03	-1.39	.16	-.003	< .001
R^2				.03							.03			
F			F(3, 5772) = 55.16		< .001					F(5, 5770) = 33.50		< .001		
ΔR^2											< .001			
ΔF											1.01	.36		

	Step 1					95% Confidence Interval		Step 2					95% Confidence Interval	
BPNI-Self-sacrificing Self-enhancement	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*
Intercept	50.18	.15		345.90	< .001	49.90	50.47	50.17	.21		241.64	< .001	49.76	50.58
Age	-.09	.01	-.12	-8.22	< .001	-.11	-.07	-.09	.02	-.12	-5.88	< .001	-.12	-.06
Gender	-.42	.15	-.04	-2.90	.004	-.71	-.14	-.58	.21	-.05	-2.79	.01	-.99	-.17
Age × Gender	-.03	.01	-.04	-2.81	.01	-.05	-.01	-.04	.02	-.06	-2.75	.01	-.07	-.01
Age^2									.001	.002	.10	.92	-.002	.002
Age^2 × Gender								.001	.001	.03	1.08	.28	-.001	.002
R^2				.02							.02			

F			F(3, 5766) = 40.87		< .001					F(5, 5764) = 24.83		< .001	
ΔR^2											< .001		
ΔF											.77	.46	

	Step 1					95% Confidence Interval		Step 2					95% Confidence Interval	
BPNI-Grandiose Fantasy	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*
Intercept	50.57	.14		354.74	< .001	50.29	50.85	50.73	.20		248.74	< .001	50.33	51.13
Age	-.14	.01	-.19	-13.15	< .001	-.16	-.12	-.13	.02	-.17	-8.56	< .001	-.16	-.10
Gender	-1.32	.14	-.12	-9.24	< .001	-1.60	-1.04	-1.67	.20	-.15	-8.17	< .001	-2.07	-1.27
Age × Gender	-.03	.01	-.04	-2.82	.01	-.05	-.01	-.06	.02	-.07	-3.69	< .001	-.08	-.03
Age^2								-.001	.001	-.02	-1.06	.29	-.002	.001
Age^2 × Gender								.002	.001	.06	2.40	.02	< .001	.004
R^2				.06							.06			
F			F(3, 5764) = 113.03		< .001					F(5, 5762) = 69.01		< .001		
ΔR^2											.001			
ΔF											2.88	.06		

	Step 1					95% Confidence Interval		Step 2					95% Confidence Interval	
BPNI-Contingent Self-esteem	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*
Intercept	50.03	.15		345.13	< .001	49.75	50.31	49.93	.21		240.88	< .001	49.53	50.34
Age	-.11	.01	-.14	-9.86	< .001	-.13	-.09	-.11	.02	-.15	-7.47	< .001	-.14	-.08
Gender	-.06	.15	-.01	-.43	.67	-.35	.22	-.32	.21	-.03	-1.55	.12	-.73	.09
Age × Gender	-.02	.01	-.03	-1.87	.06	-.04	.001	-.04	.02	-.05	-2.56	.01	-.07	-.01
Age^2								.001	.001	.01	.69	.49	-.001	.002
Age^2 × Gender								.001	.001	.04	1.76	.08	< .001	.003

R^2			.02								.03			
F			F(3, 5771) = 46.97		< .001						F(5, 5769) = 29.33		< .001	
ΔR^2											.001			
ΔF											2.83		.06	

	Step 1					95% Confidence Interval		Step 2					95% Confidence Interval	
BPNI-Hiding the Self	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*
Intercept	49.99	.15		344.06	< .001	49.70	50.27	50.20	.21		241.54	< .001	49.79	50.61
Age	-.10	.01	-.14	-9.37	< .001	-.12	-.08	-.09	.02	-.11	-5.64	< .001	-.12	-.06
Gender	.01	.15	.001	.07	.94	-.27	.30	-.11	.21	-.01	-.51	.61	-.51	.30
Age × Gender	< .001	.01	< .001	.03	.98	-.02	.02	-.01	.02	-.01	-.53	.59	-.04	.02
Age^2								-.001	.001	-.03	-1.41	.16	-.003	< .001
Age^2 × Gender								.001	.001	.02	.77	.44	-.001	.002
R^2			.02								.02			
F			F(3, 5771) = 35.40		< .001						F(5, 5769) = 21.64		< .001	
ΔR^2											< .001			
ΔF											1.01		.36	

	Step 1					95% Confidence Interval		Step 2					95% Confidence Interval	
BPNI-Devaluing	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*
Intercept	50.14	.15		344.08	< .001	49.86	50.43	50.35	.21		241.58	< .001	49.94	50.76
Age	-.09	.01	-.11	-7.88	< .001	-.11	-.06	-.07	.02	-.09	-4.57	< .001	-.10	-.04
Gender	-.32	.15	-.03	-2.17	.03	-.60	-.03	-.15	.21	-.01	-.74	.46	-.56	.26
Age × Gender	.001	.01	.001	.06	.95	-.02	.02	.01	.02	.02	.82	.41	-.02	.04
Age^2								-.001	.001	-.03	-1.45	.15	-.003	< .001

$Age^2 \times Gender$								-.001	.001	-.03	-1.12	.26	-.003	.001
R^2			.01								.01			
F			F(3, 5769) = 26.32		< .001						F(5, 5767) = 16.97	< .001		
ΔR^2											.001			
ΔF											2.92	.05		

	Step 1					95% Confidence Interval		Step 2					95% Confidence Interval	
BPNI-Entitlement Rage	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*	*b*	*SE*	*β*	*t*	*p*	*LB*	*UB*
Intercept	50.24	.15		345.01	< .001	49.95	50.52	50.34	.21		241.61	< .001	49.93	50.75
Age	-.06	.01	-.08	-5.38	< .001	-.08	-.04	-.05	.02	-.07	-3.34	.001	-.08	-.02
Gender	-.55	.15	-.05	-3.78	< .001	-.84	-.27	-.75	.21	-.07	-3.60	< .001	-1.16	-.34
Age × Gender	-.04	.01	-.05	-3.77	< .001	-.06	-.02	-.06	.02	-.07	-3.61	< .001	-.09	-.03
Age^2								-.001	.001	-.01	-.66	.51	-.002	.001
$Age^2 \times Gender$								.001	.001	.03	1.33	.19	-.001	.003
R^2			.02								.02			
F			F(3, 5769) = 28.89		< .001						F(5, 5767) = 17.69	< .001		
ΔR^2											< .001			
ΔF											.89	.41		

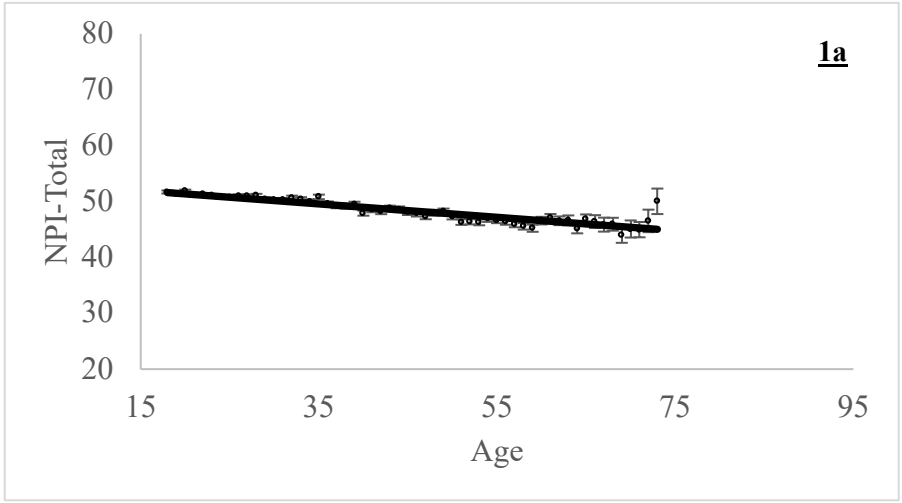
Note. Gender: -1 = Men, 1 = Women.

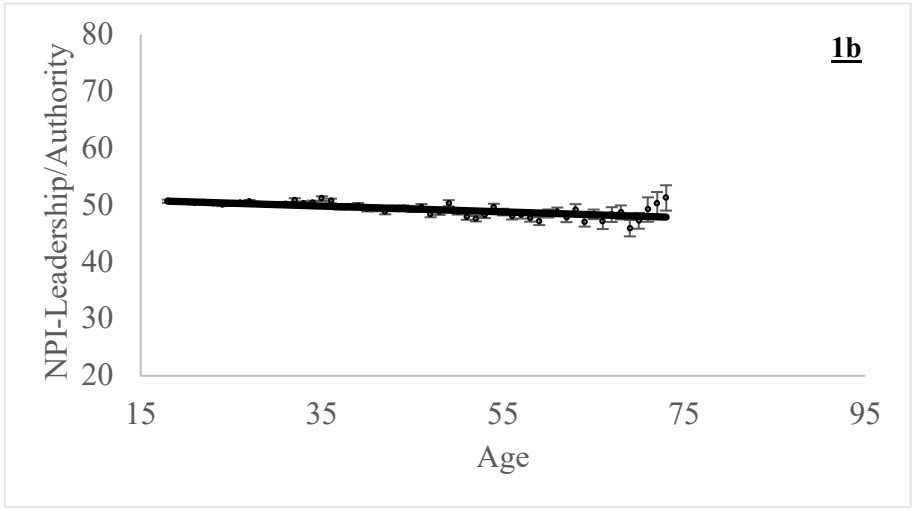
Supplemental Figures

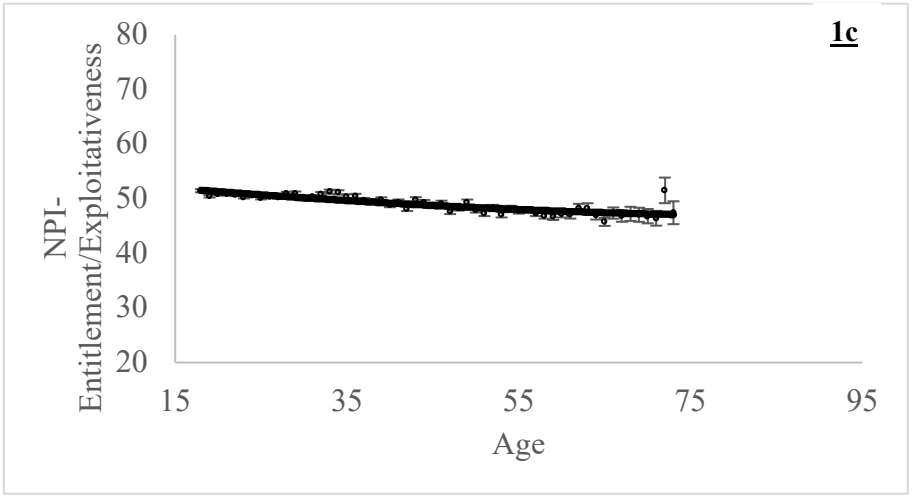
For all figures, mean observations are only plotted if they exceed *N*=20. Figure axes are scaled to allow comparability of results across scales.

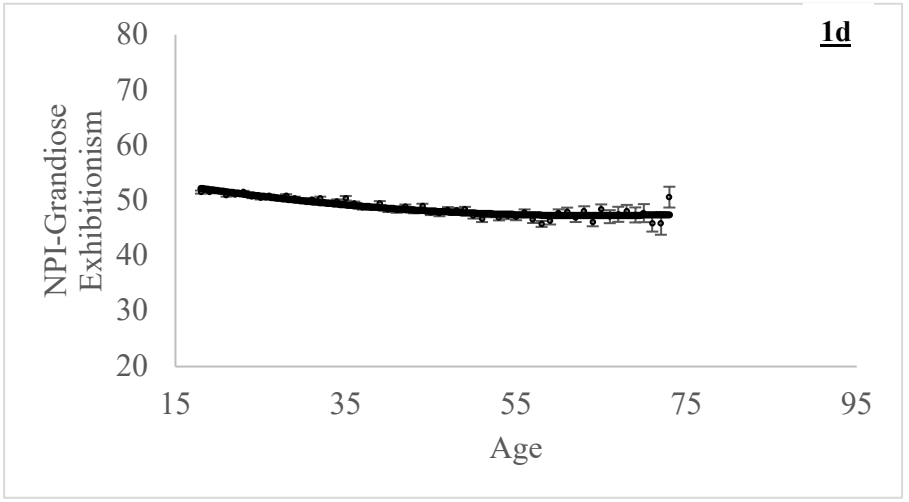
Supplemental Figure 1

Age Differences in the NPI: NPI-Total (Figure 1a), Leadership/Authority (Figure 1b), Entitlement/Exploitativeness (Figure 1c), and Grandiose Exhibitionism (Figure 1d)



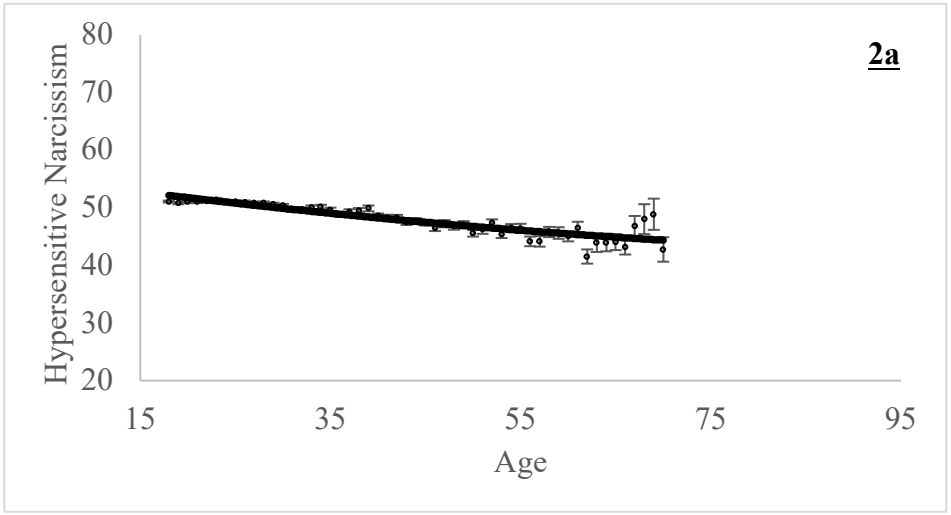


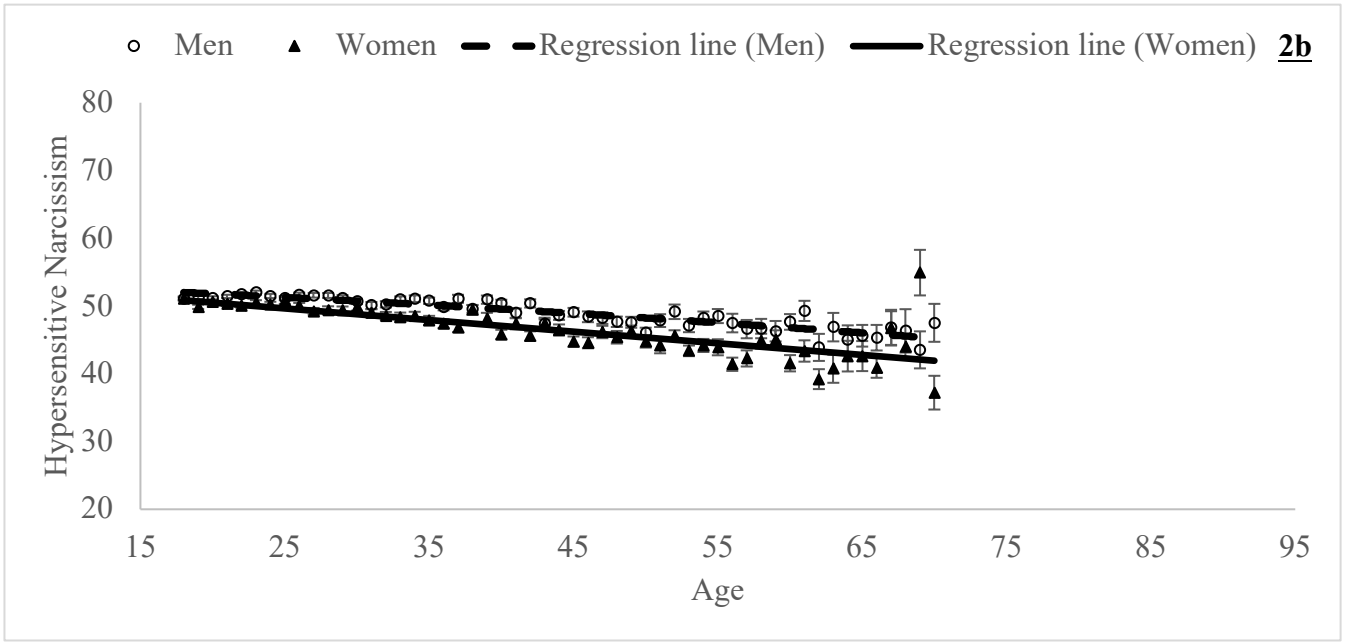




Supplemental Figure 2

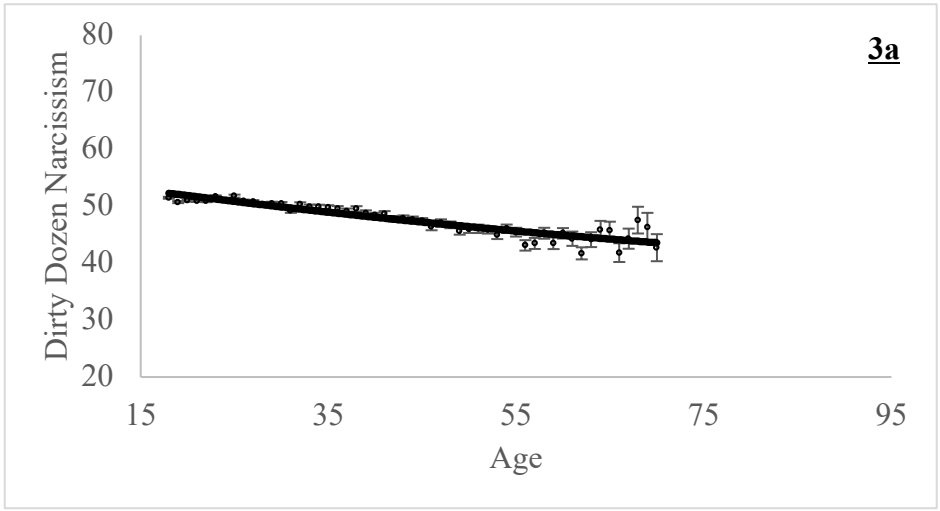
Age Differences in the HSNS (Hypersensitive Narcissism; Figure 2a) and Age^2 x Gender Interaction (Figure 2b)



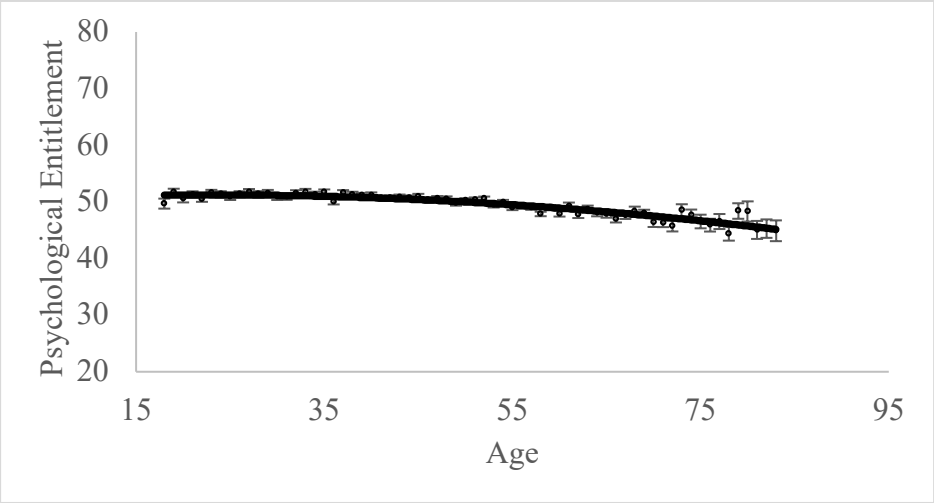


Supplemental Figure 3

Age Differences in the Dirty Dozen Narcissism (Figure 3a) and Age^2 x Gender Interaction (Figure 3b)

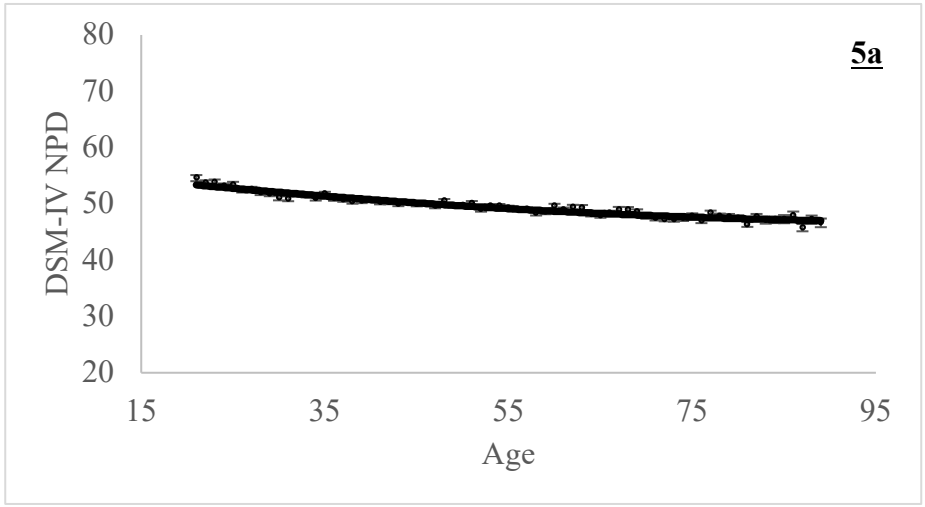


Supplemental Figure 4
Age Differences in the PES



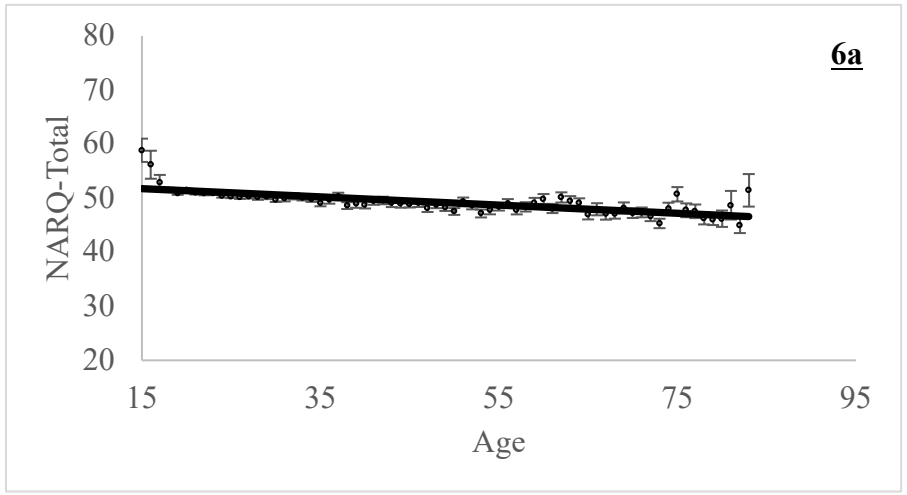
Supplemental Figure 5

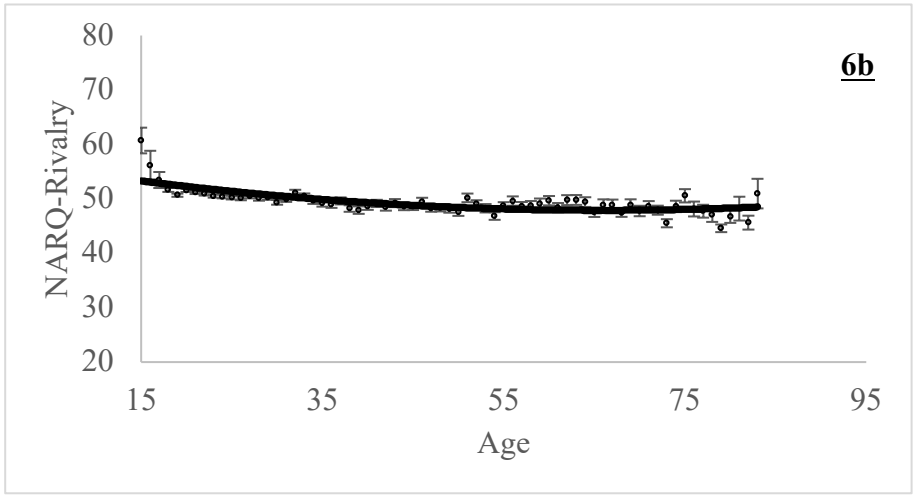
Age Differences in the DSM-IV NPD: 5a (DSM-IV NPD) and 5b (age² x gender interaction)

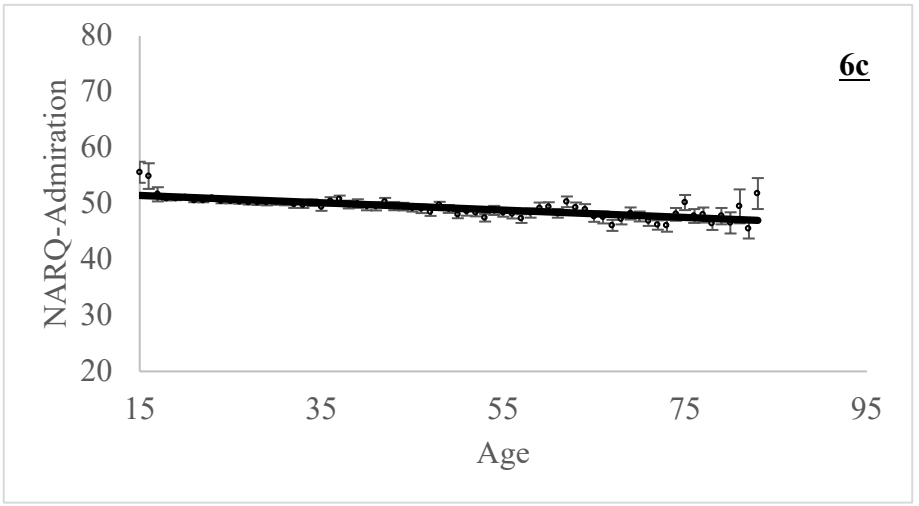


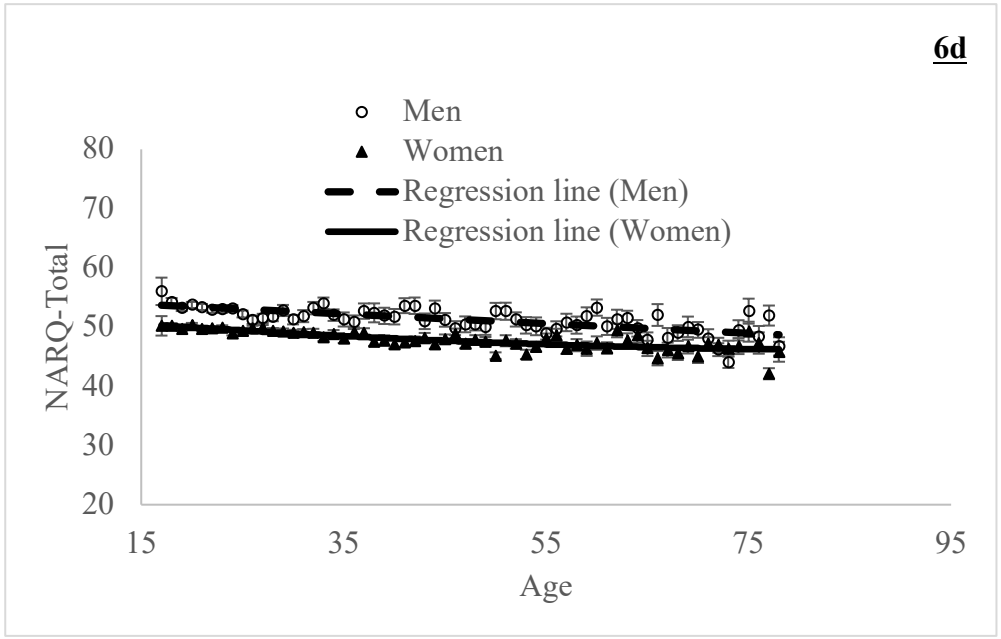
Supplemental Figure 6

Age Differences in the NARQ: NARQ-Total (Figure 6a), NARQ-Admiration (Figure 6b), NARQ-Rivalry (Figure 6c), and Age² x Gender Interaction for NARQ-Total (Figure 6d)



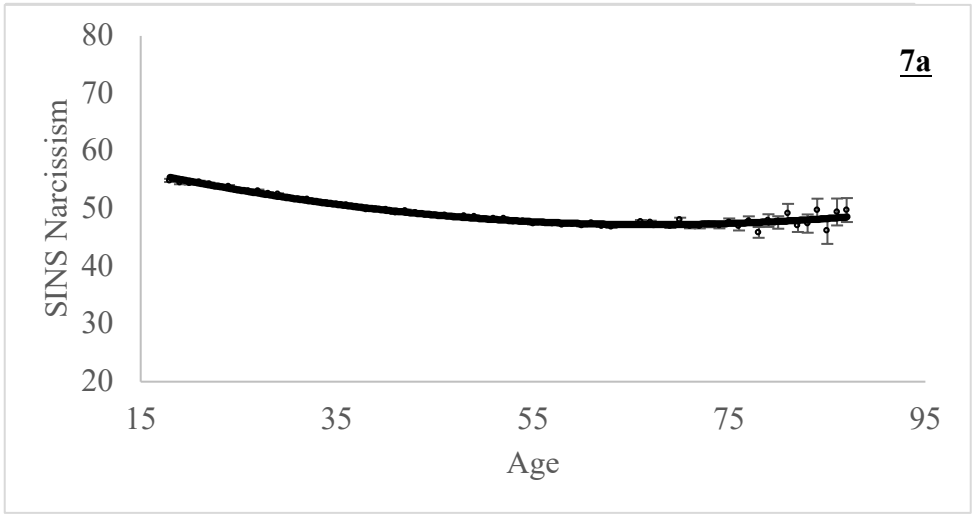






Supplemental Figure 7

Age Differences in SINS Narcissism (Figure 7a) and Age^2 x Gender Interaction (Figure 7b)



Supplemental Figure 8

Age Differences in the B-PNI Grandiosity (Figure 8a) and Vulnerability (Figure 8b)