

# Self-Enhancement and Psychological Adjustment: A Meta-Analytic Review

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## Abstract

This article advances the debate about costs and benefits of self-enhancement (the tendency to maintain unrealistically positive self-views) with a comprehensive meta-analytic review (299 samples,  $N = 126,916$ ). The review considers relations between self-enhancement and personal adjustment (life satisfaction, positive affect, negative affect, depression), and between self-enhancement and interpersonal adjustment (informant reports of domain-general social valuation, agency, communion). Self-enhancement was positively related to personal adjustment, and this relation was robust across sex, age, cohort, and culture. Important from a causal perspective, self-enhancement had a positive longitudinal effect on personal adjustment. The relation between self-enhancement and interpersonal adjustment was nuanced. Self-enhancement was positively related to domain-general social valuation at 0, but not long, acquaintance. Communal self-enhancement was positively linked to informant judgments of communion, whereas agentic self-enhancement was linked positively to agency but negatively to communion. Overall, the results suggest that self-enhancement is beneficial for personal adjustment but a mixed blessing for interpersonal adjustment.

## Keywords

self-enhancement, positive illusions, personal adjustment, well-being, interpersonal adjustment, agency, communion, meta-analysis

Self-enhancement (SE) refers to the tendency to maintain unrealistically positive self-views (Alicke & Sedikides, 2009; Chang, 2007; Taylor & Brown, 1988). Many philosophical and religious traditions have considered this tendency problematic. The aphorism “know thyself” was inscribed in the forecourt of the Temple of Apollo at Delphi, and its meaning was described in the classical Greek Suda lexicon to refer to “those whose boasts exceed what they are” (<http://www.stoa.org/sol-entries/gamma/333>). The aphorism has been attributed to a dozen of Greek sages, including Socrates, who elevated the acquisition of accurate (rather than inflated) self-knowledge to a virtue (C. Moore, 2015). The Roman poet Horace (65 B.C.–8 B.C.) advised his fellow citizens to remember not only what they are capable of but also what exceeds their grasp. And, for two millennia, Christianity has frowned upon self-aggrandizement or hubris, branding it a cardinal sin (Bollinger & Hill, 2012; Gebauer, Sedikides, & Schrade, 2017). All these cultural and religious proscriptions would invite the conclusion that SE is a recipe for maladjustment.

Yet, despite cultural and religious proscriptions, SE is prevalent (for reviews, see Alicke & Sedikides, 2011; Baumeister, 1998; Brown, 2007; Dunning, 2014). Most people exaggerate their strengths and downplay their weaknesses. They perceive themselves more favorably than the

average peer (Alicke & Govorun, 2005), hold more optimistic views about their own future than about their peers’ future (Shepperd, Klein, Waters, & Weinstein, 2013), and overestimate their objectively assessed performance (Dunning, 2005; Kim, Chiu, & Zou, 2010). Despite manifold instantiations of SE, people underestimate the degree to which they are liable to it—an instantiation of SE in itself (Pronin, Lin, & Ross, 2002; Sedikides, Meek, Alicke, & Taylor, 2014). Furthermore, people engage in many SE processes that lead to unrealistically positive self-views (Hepper, Gramzow, & Sedikides, 2010; Hepper, Sedikides, & Cai, 2013). For example, they desire and pursue feedback that accentuates their positive attributes (Gaertner, Sedikides, & Cai, 2012; Sedikides, 1993). They preferentially affiliate with persons or groups who reflect advantageously on them (Cialdini et al., 1976; Tesser, 1988). They attribute success to the self,

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and failure to others or circumstances (Campbell & Sedikides, 1999). They engage in downward social comparison (Wood, 1989) or avoid social comparison altogether following inferior performance (Gibbons, Benbow, & Gerrard, 1994). They also denigrate the validity of failure feedback (Shepperd, 1993), diminish the personal relevance of the underlying feedback attribute (Tesser, 1988), and selectively forget negative feedback on characteristics they regard as important (Sedikides, Green, Saunders, Skowronski, & Zengel, 2016).

The condemnation by religious and philosophical traditions coupled with the ubiquitous prevalence of SE begs the question of whether SE is costly or beneficial to psychological adjustment. We define the term *adjustment* in a differentiated manner. Following established practice (Kurt & Paulhus, 2008; V. S. Y. Kwan, John, Kenny, Bond, & Robins, 2004; Paulhus, 1998; Taylor, Lerner, Sherman, Sage, & McDowell, 2003), we distinguish between personal (i.e., subjective well-being and mental health) and interpersonal (i.e., social valuation) adjustment. We describe two comprehensive meta-analyses that we undertook to address the issue of whether SE is costly or beneficial to personal adjustment (Part I) and interpersonal adjustment (Part II). Before we do so, we outline our conceptualization of SE and consider two conflicting views: one emphasizing potentially costly implications of SE for adjustment, the other potentially beneficial ones.

## Conceptualization of SE

As stated earlier, we define SE in terms of the tendency to maintain unrealistically positive self-views. SE thus describes *illusory* self-perception, in the sense that self-perception is positive but ungrounded in reality. SE is typically operationalized as a continuous construct that indicates individual differences in the positivity of people's illusory self-perceptions. When we refer to "self-enhancers," we mean persons scoring relatively high on this continuum. The most direct and straightforward operationalization of SE is in terms of criterion-discrepancy measures, which compare one's self-views with an objectively assessed external benchmark. In the domain of intelligence, for example, a researcher could compare participants' self-reported intelligence with their objectively assessed IQ scores. In other domains, where objective test scores are unavailable, a researcher could rely on informant ratings as an external benchmark.

Criterion-discrepancy measures are most suitable to assess SE, because they are thought to reflect "only self-report inflation" (Paulhus & John, 1998, p. 1032). However, they typically capture a single and narrowly defined ability. Given that the range of abilities which can be objectively assessed is limited, such measures get in the way of generalizability (Dufner et al., 2012). For this reason, and to attain maximal coverage, we included in this meta-analytic review all other major indicators of unrealistically positive self-perception. In particular, we included self-enhancing social

comparisons, which are a classic manifestation of SE. Indeed, the tendency to engage in self-enhancing social comparisons by rating oneself more positively than one's peers is regarded as "one of the most robust of all self-enhancement phenomena" (Alicke & Govorun, 2005, p. 85). We also included grandiose narcissism, which is characterized by a pronounced proclivity for SE. Indeed, SE is so central to narcissists that narcissism has even been labeled "the self-enhancer personality" (Morf, Horvath, & Torchetti, 2011, p. 399). Finally, we included socially desirable responding, because it reflects inflated self-views. Indeed, "In the context of questionnaire styles, self-enhancement is typically referred to as socially desirable responding" (Paulhus & Holden, 2010, p. 221).

To be sure, aside from the criterion-discrepancy measures, none of the three other indicators is a pure measure of SE. For example, self-serving social comparisons might be due not only to SE but also to objective ability (V. S. Y. Kwan et al., 2004), grandiose narcissism entails a tendency not only toward SE but also toward disregard for others (Sedikides & Campbell, 2017), and socially desirable responding involves not only private SE but also public self-presentation (Paulhus, 2002). Nevertheless, we submit that excluding these additional indicators, which are prominent in the literature, would have impoverished the current review. As a matter of fact, we think it is important to include them to examine their construct validity—that is, to test whether they show equivalent associations when compared with the "gold standard" indicator, namely criterion-discrepancy measures.

## Two Conflicting Views on the Relation Between SE and Psychological Adjustment

What is the relation between SE and psychological adjustment? One prominent view states that SE is costly to adjustment. Clinical psychologists have often posited that SE is maladaptive (Jahoda, 1958; Rogers, 1951; Vaillant, 1977), and some social-personality psychologists have concurred (Allport, 1943; Colvin & Block, 1994; Maslow, 1950). One potential reason for self-enhancers' maladjustment is that they set unrealistically high goals for themselves. As a consequence, they might risk frequent failure, thus experiencing low well-being (Robins & Beer, 2001). Another potential reason is that self-enhancers see little reason for self-improvement, given that they already rate their performance highly. As a consequence, they might risk missing out on opportunities to advance their skills or abilities, thus experiencing stagnation (Peck, 1978). A third potential reason for self-enhancers' maladjustment is that they might be more likely to engage in boasting and presumptuous social behavior. As a consequence, they could alienate others, thus suffering from thwarted belongingness (Colvin, Block, & Funder,

1995). In all, this view asserts that SE is damaging to both personal and interpersonal adjustment.

A competing but equally prominent view states that SE is beneficial to psychological adjustment (Goorin & Bonanno, 2009; Holtzman & Strube, 2011; Marshall & Brown, 2007; Taylor & Brown, 1988, 1994; Taylor & Sherman, 2008). According to this view, SE is linked to a positive mind-set that involves action orientation, a sense of mastery, and stress resistance. It follows that self-enhancers will be more successful at tasks they undertake, have higher mate value, have higher well-being, and be more popular among their peers. In all, this view asserts that SE promotes both personal and interpersonal adjustment.

The two views have generated intense empirical and theoretical interest. Hundreds of studies (see below) and numerous review articles, book chapters, and books have addressed the costs and benefits of SE (Bates & Stevens, 1989; Brown & Dutton, 1995; Chance & Norton, 2015; Chang, 2007; Dunning, Heath, & Suls, 2004; Gregg, Sedikides, & Gebauer, 2011; Konrath & Bonadonna, 2014; McKay & Dennett, 2009; Pfeffer & Fong, 2005; Robins & John, 1997; Schütz & Baumeister, 2017; Schütz & Hoge, 2007; Sedikides & Alicke, 2012; Sedikides, Gregg, & Hart, 2007; Taylor, 1989). In fact, scholarly interest in the relation between SE and psychological adjustment is growing exponentially. As a case in point, a Google Scholar search using the keywords “self-enhancement” and “psychological adjustment” in combination produced 416 hits in the decade from 1997 to 2006, and 1,790 hits (4.3 times as many) in the decade thereafter (2007–2016). Nevertheless, the primary data have not settled the debate. For example, one relatively recent review concluded that SE “is associated with general maladjustment” (Colvin & Griffo, 2008, p. 135), whereas another review from the same year concluded that SE “can be a vital resource for managing stress and for goal pursuit” (Taylor & Sherman, 2008, p. 68). Currently, there is no consensus regarding SE’s adjustment costs or benefits.

Lack of debate resolution obfuscates theoretical implications. For example, is SE accompanied by adjustment, even though it is defined as unrealistic self-perception? Does SE have a downside—and if so, does this pertain to personal or interpersonal adjustment? Lack of debate resolution also obfuscates applications. For example, should therapists, teachers, managers, and sports coaches foster SE or more moderate self-perception among their patients, students, employees, or athletes, respectively? These issues have been contested in social-personality psychology (Baumeister, Campbell, Krueger, & Vohs, 2003), clinical psychology (Lazarus, 1983), educational psychology (Dunlosky & Lipko, 2007), organizational psychology (Grijalva, Harms, Newman, Gaddis, & Fraley, 2015), and sport psychology (Roberts, Woodman, Lofthouse, & Williams, 2015). Yet, they cannot be answered conclusively without a thorough understanding of the relation between SE and psychological adjustment. We aimed to clarify this relation in the present article.

## Part I: SE and Personal Adjustment

Personal adjustment involves the proclivity to feel happy rather than sad or depressed (Colvin et al., 1995; Kurt & Paulhus, 2008; V. S. Y. Kwan et al., 2004; Taylor et al., 2003). Accordingly, we focused on subjective well-being (i.e., high life satisfaction, positive affect, low negative affect; Diener, 1984, 1994) and low depression (i.e., lack of depressive symptoms) as key indicators of personal adjustment.

There are at least two arguments for the view that SE should be beneficial to personal adjustment. The first argument is that SE might be underlain by a fundamental human motive, namely to sustain or elevate positive self-regard (Alicke, Zell, & Guenther, 2013; M. R. Leary, 2007; Sedikides & Strube, 1997). In cases where fundamental motives, such as belongingness or mastery, are satisfied, the result is an increase in positive affect and a decrease in negative affect (Baumeister & Leary, 1995; Ryan & Deci, 2000; Sheldon & Schöler, 2011). Hence, if SE is underlain by a fundamental motive (i.e., self-regard; Baumeister, 1998; M. R. Leary, 2007; Sedikides & Gregg, 2008), then it should be positively and consistently linked to personal adjustment.

The second argument concerns real-life gains. If SE facilitates external rewards, such as goal attainment (Taylor & Brown, 1988), mating success (Holtzman & Strube, 2010), or a favorable social reputation (Taylor et al., 2003), then these rewards will increase self-enhancers’ personal adjustment. Of note, the “real-life gain” reason implies that, to a large degree, SE benefits will be cumulative or long term. For example, imagine a person whose SE enables her to complete an important performance goal or to attract a desirable mate. In this case, the positive influence of SE on personal adjustment would likely not emerge instantaneously (or just instantaneously) but rather after a temporal delay.

In contrast, the view that SE is costly points to long-term problems associated with SE (Colvin et al., 1995; Robins & Beer, 2001). The argument is that SE entails only short-lived benefits, which prevent self-enhancers from committing themselves to laborious long-term goals (e.g., educational or professional careers). It follows that self-enhancers should likely fail to attain their ambitious goals, an outcome that will hinder their personal adjustment in the long run. We put these discrepant proposals regarding the long-term adjustment implications of SE to meta-analytic scrutiny.

### Potential Boundary Conditions

The SE–personal adjustment link may be contingent upon moderators (Gregg, Hepper, & Sedikides, 2011; Kurt & Paulhus, 2008; V. S. Y. Kwan, John, Robins, & Kuang, 2008). Such moderators could give rise to heterogeneity in results, and thus contribute to the lack of scientific consensus mentioned above. We carefully considered relevant moderators in our meta-analysis, as discussed below.

**Methodology.** Researchers have offered varied operationalizations of SE and adjustment (for reviews, see Gramzow, 2011; Krueger & Wright, 2011; D. A. Moore & Healy, 2008). The ambiguity surrounding costs and benefits of SE might be, at least partly, due to methodological inconsistencies (Kurt & Paulhus, 2008; V. S. Y. Kwan et al., 2004; V. S. Y. Kwan et al., 2008). One method that is likely to produce positively biased results is the use of self-report data to assess adjustment outcomes. In the case of personal adjustment, use of self-report is justified, because personal adjustment is to a considerable degree a subjective phenomenon (Baumeister et al., 2003; Diener, 1994). After all, “Most people *know* that they are happy or that they are not” (Lyubomirsky & Lepper, 1999, p. 138). Nevertheless, it is possible that self-enhancers overestimate not only their attributes or abilities but also their personal adjustment levels (Colvin et al., 1995; Shedler, Mayman, & Manis, 1993; Wojcik & Ditto, 2014). As such, their judgments of personal adjustment might be positively biased. In addition, shared method variance may inflate associations between SE and self-reported personal adjustment. Accordingly, we relied not only on self-report but also on informant reports of personal adjustment.

Informant bias, however, can likewise produce negatively biased results. In some studies, informant reports were used not only to assess personal adjustment but also for the computation of criterion-discrepancy SE scores. The rationale underlying this approach is that informant reports can serve as a criterion of objective attributes or abilities. For example, a researcher can use informant reports of leadership skills as an indicator of objective leadership skills. SE scores are frequently computed by subtracting informant reports from self-reports. For example, a researcher can compute a leadership SE score by subtracting informant-judged leadership skills from self-reported leadership skills. The more positive the resulting difference score is, the more a person is thought to self-enhance. However, this method is problematic when personal adjustment is also informant reported (e.g., informant-reported life satisfaction). The problem is that the benchmark (i.e., informant-judged leadership skills) is often positively correlated with a personal adjustment (i.e., informant-judged life satisfaction), because informants form generalized positive or negative impressions of others (Cooper, 1981; Leising, Erbs, & Fritz, 2010; Nisbett & Wilson, 1977). In such instances, the result of this subtraction (difference score) is an artificial negative correlation between SE and personal adjustment (Asendorpf & Ostendorf, 1998; Griffin, Murray, & Gonzalez, 1999; Zuckerman & Knee, 1996). An alternative approach to difference scores—one that does not lead to an artificial negative correlation between SE and personal adjustment—is to compute SE by partialing out the benchmark from self-reports (John & Robins, 1994). Accordingly, we tested if negatively biased results are produced in studies in which SE scores were computed by subtracting informant reports from self-judgments and in which this difference score was correlated with informant-judged adjustment.

The available number of studies in Part I was sufficiently large to make refined methodological distinctions. We differentiated between criterion-discrepancy SE measures that compare self-reports with external benchmarks (objective task performance, informant reports) and SE measures that are based on self-report alone (e.g., social desirability, grandiose narcissism). One limitation of measures based on self-reports alone is that they are potentially confounded with objective ability (V. S. Y. Kwan et al., 2004). For example, if a person states that she has extraordinary leadership skills, she might be accurate in her assertion. If objective ability (i.e., objective leadership skills) is positively linked to personal adjustment, we observe a spurious positive relation between the SE measure and personal adjustment. Accordingly, the SE–personal adjustment relation may be less positive (or more negative) if SE is assessed with an external benchmark score and not with self-reports alone. The large number of studies allowed us to differentiate even further between subclasses of external benchmark-based and self-reported measures (Table 1). As such, we were able to examine the SE–personal adjustment relation very closely across operationalizations of SE. Within the class of criterion-discrepancy measures, we distinguished between those involving objectively assessed ability as a benchmark (e.g., self-ratings of IQ with objective IQ partialled out) and those involving informant reports as a benchmark (e.g., self-ratings of IQ with informant ratings of IQ partialled out). Within the class of self-report measures, we distinguished among those tapping into self-enhancing social comparisons (i.e., measures assessing the tendencies to judge the self more positively than the average other, to have greater optimism about one’s own future than about the future of other people, or to compare oneself with inferior others), narcissism or grandiosity, social desirability, and miscellaneous others (e.g., preference for self-enhancing feedback).

**Adverse life circumstances.** Several authors have suggested that SE acts as a buffer against life adversity (e.g., unemployment, illness, exposure to traumatic events; Bonanno, Field, Kovacevic, & Kaltman, 2002; Bonanno, Rennie, & Dekel, 2005; Taylor & Armor, 1996; Taylor & Brown, 1988). The logic underlying this suggestion is as follows: Adverse life circumstances often render people emotionally vulnerable, thus hampering their coping ability and precipitating personal maladjustment. However, a self-concept that is strengthened by SE may be adept at protecting against threat (Cuperman, Robinson, & Ickes, 2014; Gramzow, Sedikides, Panter, & Insko, 2000; Sedikides, 2012), warding off personal maladjustment (Brown, 2010b; Green, Sedikides, & Gregg, 2008; Taylor, 1983). Accordingly, we tested whether the relation between SE and personal adjustment is particularly positive in samples who experienced adverse (vs. normal) life circumstances.

**Social normativeness.** Studies on grandiose narcissism indicate that men self-enhance more than women (Grijalva, Newman,

**Table 1.** Categorization of SE Indicators.

SE indicator	SE category	
	Categorization used in Table 3	Categorization used in Table 4
Objective benchmarks as criteria (difference scores)	Criterion discrepancy	Objective benchmarks as criteria
Objective benchmarks as criteria (residual scores)	Criterion discrepancy	Objective benchmarks as criteria
Overclaiming	Criterion discrepancy	Objective benchmarks as criteria
Informant reports as criteria (difference scores)	Criterion discrepancy	Informant reports as criteria
Informant reports as criteria (residual scores)	Criterion discrepancy	Informant reports as criteria
Kwan's (2004) index (difference scores)	Criterion discrepancy	Informant reports as criteria
Kwan's (2004) index (residual scores)	Criterion discrepancy	Informant reports as criteria
Meta-perception self-enhancement	Criterion discrepancy	Informant reports as criteria
Better-than-average judgments	Self-report	Self-enhancing social comparisons
Downward social comparison	Self-report	Self-enhancing social comparisons
Comparative/unrealistic optimism	Self-report	Self-enhancing social comparisons
Grandiose narcissism	Self-report	Narcissism/grandiosity
Grandiosity	Self-report	Narcissism/grandiosity
Uniqueness	Self-report	Narcissism/grandiosity
Narcissistic admiration	Self-report	Narcissism/grandiosity
Entitlement	Self-report	Narcissism/grandiosity
Communal narcissism	Self-report	Narcissism/grandiosity
Self-aggrandizement	Self-report	Narcissism/grandiosity
Arrogance	Self-report	Narcissism/grandiosity
Egotism	Self-report	Narcissism/grandiosity
Social desirability	Self-report	Social desirability
Self-deceptive enhancement	Self-report	Social desirability
Impression management	Self-report	Social desirability
Self-serving bias	Self-report	Other self-reported SE
Self-enhancement motive measures	Self-report	Other self-reported SE
Subjective invulnerability	Self-report	Other self-reported SE
Marital aggrandizement	Self-report	Other self-reported SE
Index by Kitayama, Markus, Matsumoto, and Norasakkunkit (1997)	Self-report	Other self-reported SE
Positive feedback seeking	Self-report	Other self-reported SE

Note. SE = self-enhancement.

et al., 2015), and younger people self-enhance more than older ones (Foster, Campbell, & Twenge, 2003). Thus, if men or younger people self-enhance to a greater extent, they will behave in a way that is more convergent with the norms of their respective in-groups than women or older people. Such norm-convergent behavior might precipitate personal adjustment (Gebauer, Sedikides, Schönbrodt, et al., 2017; Gebauer, Wagner, Sedikides, & Neberich, 2013). If so, we observe a pronounced positive SE–personal adjustment link among men and younger people. A similar argument applies to cultural differences. Some authors have maintained that SE is limited to Western (i.e., individualistic) cultures (Heine, 2012; Heine & Hamamura, 2007; Heine, Lehman, Markus, & Kitayama, 1999), whereas others have proposed that SE is pancultural (Brown, 2010a; Chiu, Wan, Cheng, Kim, & Yang, 2011; Sedikides, Gaertner, & Cai, 2015). If SE were limited to Western cultures, or at least were considerably stronger in Western cultures, then the social normativeness standpoint

would imply a more positive SE–personal adjustment link in Western than Eastern culture.

Relatedly, there is ongoing controversy regarding the role of historical period, with some authors arguing that nowadays people self-enhance more than in the past (Twenge & Foster, 2010; Twenge, Konrath, Foster, Campbell, & Bushman, 2008) and others disputing differences in SE across historical periods (Donnellan & Trzesniewski, 2009; Trzesniewski & Donnellan, 2010; Wetzel et al., 2017). If there has indeed been a shift toward higher narcissism levels in more recent generations, the social normativeness standpoint would anticipate a more positive SE–personal adjustment link in later than earlier years.

**Content domain.** SE can take place in different content domains; for example, people can (and typically do) possess overly positive views not only of their intelligence and extraversion but also of their morality and agreeableness

(Campbell, Rudich, & Sedikides, 2002; Sedikides et al., 2014). In a landmark set of studies, Paulhus and John (1994, 1998) examined the factor structure of SE across nine content domains (dominance, extraversion, intellect, openness, neuroticism, ambition, agreeableness, nurturance, dutifulness). SE indices fell into two broad factors: one resembling agency (competence, dominance, drive), the other resembling communion (warmth, morality, prosociality; for reviews of the agency–communion taxonomy, see Abele & Wojciszke, 2014; Paulhus & Trapnell, 2008; Wiggins, 1979). The distinction between agentic and communal SE proved useful in much subsequent research (Campbell et al., 2002; Gebauer, Sedikides, Schönbrodt, et al., 2017; Paulhus, 2002; Sedikides, Gaertner, & Toguchi, 2003; for a review, see Gebauer & Sedikides, in press). Thus, in line with the extant literature, we examined SE not only as a global, domain-general phenomenon but also as a domain-specific phenomenon, pertaining to either agentic or communal SE.

We refrained from formulating hypotheses on whether agentic SE or communal SE is more strongly linked to personal adjustment. Nevertheless, from a social normativeness standpoint, agentic SE will be more strongly related to personal adjustment among people or cultures where agentic SE is more normative (i.e., men, individualistic societies), whereas communal SE will be more strongly related to personal adjustment among people or cultures where communal SE is more normative (i.e., women, collectivistic societies; Gebauer et al., 2015; Gebauer et al., 2013). Stated otherwise, this standpoint predicts moderation by sex and culture of the SE–personal adjustment link, when agentic and communal SE are considered separately.

## Method

**Literature research.** We conducted a single literature search in November 2014 to identify studies, including screening and coding, for both meta-analyses. Accordingly, the following description of methodology pertains to both Part I and Part II. A coding manual with detailed documentation of the screening procedure, inclusion criteria, and coding rules is available upon request.

Due to the enormity of our scope, we searched for studies published in peer-reviewed journals only and tested carefully for publication bias in both meta-analyses (see below). We retrieved articles from PsychINFO and Web of Science. In each database, we entered keywords referring to SE in combination with keywords referring to either personal or interpersonal adjustment. The keywords referring to SE were *Self-Enhancement*, *Overconfidence*, *Self-Serving*, *Self-Favorability*, *Overclaiming*, *Over-Claiming*, *Self-Deceptive*, *Narcissism*, *Better-Than-Average*, *Comparative Bias*, *Bias Blind Spot*, *Self-Peer Agreement*, *Mnemonic Neglect*, *Overoptimism*, *Over-Optimism*, *Unrealistic Optimism*, *Optimistic Bias*, *Positive Illusions*, *Self-Aggrandizement*, *Self-Arrogance*, *Arrogance*, *Self-Inflation*, *Self-Love*, and *Social*

*Desirability*. The keywords referring to personal adjustment were *Psychological Adjustment*, *Well-Being*, *Affect*, *Mood*, *Life Satisfaction*, *Happiness*, *Depression*, and *Depressiveness*. The keywords referring to interpersonal adjustment were *Likability*, *Popularity*, *Charm*, *Charming*, *Charisma*, *Altruism*, *Agreeableness*, *Agreeable*, *Social Influence*, *Assertiveness*, *Assertive*, *Dominance*, and *Dominant*. We also used a backward search, according to which we perused the References section of included articles to identify relevant work. We set no restriction regarding publication year. We merged hits from the two databases and deleted duplicates.

**Screening.** The first author screened all studies with the help of six research assistants (RAs). The inclusion criteria were as follows: First, studies had to contain at least one measure of SE and one indicator of either personal or interpersonal adjustment. The RAs used a list of indicators displayed in Table 1. Second, studies had to report an effect size or contain statistical information that would permit calculation of an effect size. Third, we excluded clinical or nonadult (<18-year-old) samples, given that our focus was on general effects in the normal adult population. (We did, however, consider samples of people suffering from physical illness, as one instance of adverse life circumstances.) Fourth, we restricted our search to articles written in English and German—both for linguistic convenience (these were the languages spoken by the study screeners and coders) and because the vast majority of relevant work has been published in English. Of all relevant references, only one was written in German.<sup>1</sup>

The RAs were instructed to make an inclusion recommendation for each study. The first author trained the RAs by checking the first 20% of studies screened by each RA. When he detected an error, he corrected it and provided the respective RA with feedback. Following training, RAs proceeded with screening. Of the remaining 80% of the screened studies, the first author randomly selected 40 studies from each RA and independently noted inclusion or exclusion. Cohen's kappa based on a total of 240 studies indicated good agreement between the first author and the RAs,  $k = .89$ . When uncertain about their recommendations (also after the training period), the RAs discussed any issue with the first author who made the final decision.

**Coding.** The first author inspected the Method and Results sections of all studies, marking the effects to be coded. Subsequently, the first author and three RAs coded them. They resolved ambiguities through discussion with the three coauthors of this article. The RAs transferred study information and effect sizes into a coding sheet. Given that both SE and psychological adjustment represent continuous variables, we coded correlations or standardized regression coefficients between the two. When other indices were reported (e.g.,  $t$  or  $F$  values), we transformed them into an  $r$  using the formulas provided by Lipsey and Wilson (2001). When unstandardized

regression coefficients were reported, we standardized them using standard deviations of predictor and criterion variables (Bring, 1994). The reader can find a list of all included articles in Online Supplement.

**Coding agreement.** In an effort to assess coding quality, we asked the three RAs to code the same randomly chosen 25 studies. The mean intraclass correlation (ICC; two-way random ICC, absolute agreement) for continuous variables was .98. The mean agreement for relevant categorical variables was kappa = .96. Disagreements among the RAs were resolved (i.e., deliberation until agreement was reached) after the computation of interrater reliability. In addition, two RAs and the first author double checked for correctness of the following variables across all studies: effect size, study design, SE indicator, and adjustment indicator.

#### Data handling

**Studies with multiple effects.** If multiple effects were reported for a single study, we transformed them into Fisher's  $z$  scores, averaged them, and then transformed the composite score back into an  $r$  score (Shadish & Haddock, 1994). This was the case, for example, when several scales were used to assess the same adjustment indicator (e.g., two measures of positive affect). If one construct was assessed at different time points and the other at only one time point, we extracted the effect size based on the concurrent correlation between the two variables (when possible) or between the most proximate measurements. If a study contained both zero-order and covariate-adjusted effect sizes, we selected the zero-order effect size, because it is most comparable with the majority of the effects.

**Longitudinal effects.** Most longitudinal studies report lagged effects of either initial levels of SE, or initial increases in SE, on subsequent adjustment, while controlling for initial levels of adjustment. Controlling for initial adjustment levels rules out the possibility that the effects of SE on adjustment might be due to stable sources of bias (Dufner et al., 2012). A lagged effect of SE therefore indicates that initial SE might indeed have an influence on subsequent changes in adjustment. We considered these effects in our analyses and meta-analyzed the (standardized) coefficients that were reported in the original articles.

**Grandiose narcissism.** We included operationalizations of grandiose narcissism in the form of aggregate index of the Narcissistic Personality Inventory (Raskin & Hall, 1979), the Admiration subscale score of the Narcissistic Admiration and Rivalry Questionnaire (Back et al., 2013), and the aggregate index of the Communal Narcissism Inventory (Gebauer, Sedikides, Verplanken, & Maio, 2012).

**Agentic and communal SE.** Consistent with prior research, we operationalized agentic SE in terms of Raskin and Hall's

(1979) Narcissistic Personality Inventory (following Campbell & Foster, 2007; Gebauer et al., 2012), the Admiration subscale of Back et al.'s (2013) Narcissistic Admiration and Rivalry Questionnaire (following Geukes et al., 2017; Leckelt, Kűfner, Nestler, & Back, 2015), Paulhus's (1988) Self-Deceptive Enhancement subscale of the Balanced Inventory of Socially Desirable responding (following Paulhus, 2002; Sedikides & Gebauer, 2010),<sup>2</sup> and self-serving social comparisons as well as inflated self-evaluations pertaining to competence and assertiveness (following Abele et al., 2016; Campbell et al., 2002).

Consistent with prior research, we operationalized communal SE in terms of Gebauer, Sedikides, et al.'s (2012) Communal Narcissism Inventory (following Gebauer, Sedikides, et al., 2012; Nehrlich, Gebauer, Sedikides, & Schoel, in press), Crowne and Marlowe's (1960) Social Desirability Scale (following Paulhus, 2002; Paulhus & Trapnell, 2008), Hathaway and McKinley's (1989) Lie Scale from the Minnesota Multiphasic Personality Questionnaire (following Paulhus, 2002; Paulhus & Trapnell, 2008), Eysenck and Eysenck's (1964) Lie Scale from the Eysenck Personality Questionnaire (following Paulhus, 2002; Paulhus & Trapnell, 2008), Paulhus's (1988) Impression Management Scale from the Balanced Inventory of Socially Desirable Responding (following Paulhus, 2002; Paulhus & Trapnell, 2008), and self-serving social comparisons as well as inflated self-evaluations pertaining to warmth and morality (following Abele et al., 2016; Campbell et al., 2002).

**Adjustment composite scores.** In some cases, authors of primary articles computed adjustment composite scores. If these composite scores reflected the average of exclusively relevant adjustment indicators (i.e., positive affect, life satisfaction, negative affect, depression), we included them in the analyses. If the composite scores reflected the average of a variable relevant to our meta-analyses (e.g., life satisfaction) and of a variable irrelevant to our meta-analysis (e.g., eudaimonic well-being), we refrained from coding these results for the sake of clarity and comparability. We made two exceptions: We used such composite scores when informant reports were implicated in the assessment of adjustment or in longitudinal designs due to the relatively small number of relevant informant-report studies and longitudinal studies.

**Publication bias.** We controlled for publication bias by implementing four techniques: First, we used Rosenthal's (1979) fail-safe  $N$  test to estimate how many missing studies with a mean effect of 0 would have to be added to yield a nonsignificant overall effect. Second, we used Egger, Davey Smith, Schneider, and Minder's (1997) regression method to quantify asymmetry in the funnel plot. Third, we recalculated effects using Duval and Tweedie's (2000) trim-and-fill procedure, which estimates the effect size when funnel plot asymmetry is taken into account. Finally, we investigated the

**Table 2.** Sociodemographic Information About the Analyzed Samples.

	Part I: Personal adjustment	Part II: Interpersonal adjustment
Age		
Median	22.15	20.40
SD	16.95	7.64
Range	18.00-88.81	18.17-51.50
% females		
Median	61.90	62.33
SD	20.17	26.94
Range	0-100	0-100
Sample type (%)		
Student samples	64.26	70.91
Ethnic composition (%)		
Predominantly White	70.00	78.26
Predominantly Asian	12.72	13.04
Predominantly Black	0.91	0.00
Mixed (none >60%)	16.36	8.70
Countries	AU, BA, BE, CA, CH, CN, HR, DK, DE, ES, GR, HK, IN, IL, IT, JP, NL, NE, PL, SG, SE, TR, TW, UK, US	CA, CH, FI, DE, NL, PL, KR, UK, US

Note. Valid percentages are shown. An ethnic group was considered predominant in a sample if its members constituted more than 60%. If no ethnic group constituted more than 60%, the sample was considered “mixed”; AU = Australia; BA = Bosnia and Herzegovina; BE = Belgium; CA = Canada; CH = Switzerland; CN = China; HR = Croatia; DK = Denmark; DE = Germany; ES = Spain; GR = Greece; HK = Hong Kong; IN = India; IL = Israel; IT = Italy; JP = Japan; NL = The Netherlands; NE = Nigeria; PL = Poland; SG = Singapore; SE = Sweden; TR = Turkey; TW = Taiwan; UK = the United Kingdom; US = the United States; FI = Finland; KR = South Korea.

distribution of *p* values (i.e., the *p* curve) for right skewedness (Simonsohn, Nelson, & Simmons, 2014).

**Statistical analysis.** We relied on the SPSS macros developed by Lipsey and Wilson (2001) in combination with the software *Comprehensive Meta-Analysis* Version 2 (Borenstein, Hedges, Higgins, & Rothstein, 2005) and the online application *p-checker* (Schönbrodt, 2015). We applied a random-effects model to compute effect sizes, because we considered it possible that effect sizes would vary across studies as a function of (partly unknown) moderators. We determined the random variance component using maximum-likelihood estimation.

**Results**

We provide sociodemographic information about the analyzed samples in Table 2 and present all major results in Table 3.

**Self-reported personal adjustment.** We first examined the overall relation between SE and self-reported personal adjustment. The mean-weighted effect size was significantly positive. Hence, the more people self-enhanced, the better personally adjusted they reported being,  $r = .18$ , 95% confidence interval (CI) = [.17, .20],  $\kappa = 237$  studies,  $N = 117,141$ . Furthermore, there was significant heterogeneity between effect sizes,  $Q_w(236) = 1095.64$ ,  $p < .001$ , indicating that effect sizes differed more than would be expected by sampling error alone.

We considered the possibility that effect size estimates were inflated in studies that did not use criterion-discrepancy SE indicators, because these measures might overlap with actual ability. After all, it is conceivable that SE measures relying on self-report alone, such as grandiose narcissism or self-enhancing social comparisons, might to some extent be backed up by actual ability and that actual ability overlap to some extent drives the relation to personal adjustment. Accordingly, we computed the effect sizes separately for studies that relied on criterion-discrepancy scores and for studies that relied on self-report alone. As Table 3 shows, the effect size was significantly positive and almost identical for both criterion-discrepancy SE measures,  $r = .20$ , 95% CI = [.16, .23],  $\kappa = 25$  studies,  $N = 5,589$ , and for measures relying on self-report,  $r = .18$ , 95% CI = [.16, .20],  $\kappa = 222$  studies,  $N = 114,613$ . These findings speak against the possibility that effect size estimates are inflated in studies that did not use criterion-discrepancy SE indicators. Instead, the findings indicate that it is SE—and not actual ability—that drives the effects.

We also addressed the possibility that the relation between SE and personal adjustment is negative or 0 for more specific operationalizations of SE. As can be seen in Table 4, this was not the case. Across all operationalizations (i.e., measures using informant reports as criteria, measures using objective benchmarks as criteria, self-enhancing social comparisons, narcissism/grandiosity, social desirability, and miscellaneous other measures), SE was positively and significantly linked to personal adjustment, all  $r_s \geq .13$ , all  $p_s \leq .22$ . We thus considered it appropriate to aggregate across SE measures and will report the aggregated results below.

**Table 3.** Effect Sizes  $r$  for the Relation Between SE and Personal Adjustment.

	$k$	$N$	$r$	95% CI	Trim and fill (number of studies filled)	95% CI	Egger et al.'s regression (two-tailed)	Fail-safe $N$	Right skewedness of $p$ curve
Overall effect	237	117,141	.18	[.17, .20]	.14 (44)	[.12, .16]	-0.25 <i>ns</i>	43,670	-26.22**
SE measure: Criterion discrepancy	25	5,589	.20	[.16, .23]	.19 (1)	[.16, .23]	0.10 <i>ns</i>	1,032	-6.55**
SE measure: Self-report	222	114,613	.18	[.16, .20]	.14 (41)	[.12, .16]	-0.25 <i>ns</i>	12,423	-26.22**
Informant-reported adjustment	29	4,760	.12	[.08, .17]	.10 (4)	[.05, .15]	1.72 <i>ns</i>	458	-4.40**
Longitudinal effects	10	1,432	.14	[.09, .19]	.11 (3)	[.06, .16]	-1.23 <i>ns</i>	62	-1.52
Outcome: Positive affect	69	15,960	.22	[.19, .25]	.16 (18)	[.13, .20]	0.08 <i>ns</i>	10,835	-12.72**
Outcome: Life satisfaction	44	70,042	.17	[.13, .21]	.13 (9)	[.10, .17]	-0.65 <i>ns</i>	7,216	-14.32**
Outcome: Negative affect	70	14,060	-.17	[-.13, -.21]	-.17 (0)	[-.13, -.21]	0.77 <i>ns</i>	6,425	-13.26**
Outcome: Depression	117	34,997	-.17	[-.15, -.20]	-.15 (10)	[-.13, -.18]	0.30 <i>ns</i>	24,370	-18.99**
Domain: Agentic SE	87	20,733	.17	[.15, .20]	.14 (12)	[.13, .17]	0.40 <i>ns</i>	10,916	-12.48**
Domain: Communal SE	112	30,668	.18	[.15, .21]	.14 (20)	[.11, .17]	0.02 <i>ns</i>	23,490	-19.08**
Sample: Adverse life circumstances	19	3,440	.16	[.10, .21]	.12 (3)	[.05, .18]	1.21 <i>ns</i>	325	-4.97**
Sample: United States only	133	34,492	.18	[.16, .20]	.14 (22)	[.12, .17]	0.63 <i>ns</i>	29,969	-20.30**
Sample: East Asian cultures only	13	3,430	.23	[.14, .32]	.23 (0)	[.14, .32]	-4.12 <i>ns</i>	639	-8.09**

Note. Criteria of criterion-discrepancy measures were either observer reports or objective scores (e.g., IQ scores). Samples from the "adverse life circumstances" subset of studies included participants who either suffered from severe illness or experienced other stressful events (as, for example, dementia caregivers or survivors of terrorist attacks). Longitudinal effects either included lagged effects of initial levels of SE on subsequent changes in adjustment or increases in SE on subsequent changes in adjustment. Agentic SE measures included indicators such as grandiose narcissism or self-deceptive enhancement, and communal SE measure included indicators such as social desirability or impression management. The East Asian subset included samples from PR China (including Hong Kong), Japan, Singapore, and Taiwan. SE = self-enhancement;  $k$  = number of effect sizes;  $N$  = total number of participants; CI = lower and upper bounds of the 95% confidence interval for  $r$ , *ns* = not significant (two-tailed test).

\* $p < .05$ . \*\* $p < .01$ .

**Table 4.** Effect Sizes ( $r$ ) for Popular Operationalizations of SE.

	$k$	$N$	$r$	95% CI
Informant reports as criteria	7	1,208	.22	[.12, .30]
Objective benchmarks as criteria	18	4,381	.20	[.17, .23]
Self-enhancing social comparisons	51	66,412	.22	[.18, .25]
Narcissism/grandiosity	54	15,093	.13	[.11, .16]
Social desirability	122	33,577	.19	[.16, .22]
Other self-reported SE	7	1,395	.17	[.08, .26]

Note. SE = self-enhancement;  $k$  = number of effect sizes;  $N$  = total number of participants; CI = lower and upper bounds of the 95% confidence interval for  $r$ .

In addition, we ran all following analyses based exclusively on criterion-discrepancy SE indicators, and we present the results of those analyses in Table S1, Online Supplement. The results of the criterion-discrepancy studies were remarkably similar to those of all studies (criterion discrepancy plus self-report only). Indeed, the results remained conceptually unchanged (i.e., significant effects remained significant) in 10 of 12 cases. In the remaining two cases, we were unable to conduct the analyses pertaining to criterion-discrepancy studies because of the limited availability of such studies.

**Informant-reported personal adjustment.** Next, we examined the relation between SE and informant reports of personal adjustment. We began by addressing the possibility of negatively biased results when SE is computed by subtracting

informant reports from self-judgments, and this difference score is correlated with adjustment outcomes that were also judged by informants. We computed the average effect size for studies using this problematic methodology, and we obtained a significant negative relation between SE and personal adjustment,  $r = -.17$ , 95% CI = [-.26, -.08],  $k = 3$  studies,  $N = 437$ . We proceeded with computing the average effect size for studies that did not use this problematic methodology. As shown in Table 3, the effect size was positive and significantly different from 0,  $r = .12$ , 95% CI = [.08, .17],  $k = 29$  studies,  $N = 4,760$ . Hence, the more people self-enhanced, the more personally adjusted they were judged by informants.

We then looked more closely at different kinds of informants. Informant ratings were made by romantic partners or

family members (14% of effect sizes), RAs (2% of effect sizes), peers (including students, friends, and roommates; 66% of effect sizes), or trained mental health experts (18% of effect sizes). In 50% of the studies, participants were free to choose their peer raters. Such self-selection procedure could lead to biased results, if, for example, self-enhancers were particularly likely to choose peers who evaluate them positively. Thus, we excluded those self-selection studies and reran the analysis. Again, SE was positively linked to ratings of personal adjustment,  $r = .14$ , 95% CI = [.09, .20],  $k = 18$  studies,  $N = 3,228$ . Given that mental health experts are arguably the best judges of personal adjustment, we separately analyzed ratings provided by such experts. There were eight relevant studies. Two relied on the problematic methodology and, as before, the mean effect size was negative,  $r = -.20$ , 95% CI = [-.32, -.08],  $k = 2$  studies,  $N = 238$ . In the six remaining studies, which are more trustworthy, SE was positively linked to ratings of personal adjustment,  $r = .25$ , 95% CI = [.17, .32],  $k = 6$  studies,  $N = 681$ . Thus, when we excluded the negatively biased studies, results again indicated that self-enhancers were judged high on personal adjustment. In all, the relation between SE and informant-reported personal adjustment was robust. It held when informants were not chosen by participants and even when informants were mental health experts.

**Longitudinal effects.** Next, we focused on lagged effects of SE on personal adjustment. In particular, we tested whether SE is related to later personal adjustment after concurrent correlations between SE and adjustment are controlled for. This was the case. SE was a positive longitudinal predictor of adjustment,  $\beta = .14$ , 95% CI = [.09, .19],  $k = 10$  studies,  $N = 1,432$ . Hence, despite controlling for concurrent correlations, SE was positively associated with later personal adjustment.

**Specific methodological and substantive analyses.** Subsequently, we tested whether effect sizes differ for specific classes of studies. We did so by creating separate datasets for effects based on different operationalizations of personal adjustment, samples under adverse life circumstances, agentic and communal SE, and samples from Western (i.e., the United States) versus Eastern (i.e., East Asian) cultures.

**Separate effect size estimations for personal adjustment indicators.** We analyzed effect sizes separately for different indicators of personal adjustment. SE was linked to more positive affect and higher life satisfaction ( $r_s \geq .17$ ), whereas SE was linked to less negative affect and lower depression ( $r_s = -.17$ ). Put otherwise, SE was positively linked to all indicators of personal adjustment and was inversely linked to all indicators of personal maladjustment, with effect sizes being similar.

**Adverse life circumstances.** We examined effect sizes for samples under adverse life circumstances. The effect size

was positive, significant, and very similar to the overall effect size,  $r = .16$ , 95% CI = [.10, .21],  $k = 19$  studies,  $N = 3,440$ . Thus, both people living under adverse life circumstances and people living under normal life circumstances derived similar benefits from SE.

**Content domain.** We also examined effect sizes separately for agentic versus communal SE. In both cases, effect sizes were significantly positive and very similar in size. This means that, regardless of whether we focused on SE in the agentic or the communal domain, the SE–personal adjustment links were positive, significant, and approximately equal in size, with a coefficient of  $r = .17$ , 95% CI = [.15, .20],  $k = 87$  studies,  $N = 20,733$ , for agentic SE and  $r = .18$ , 95% CI = [.15, .21],  $k = 112$  studies,  $N = 30,668$ , for communal SE. SE confers personal adjustment benefits regardless of whether SE occurs in agentic or communal domains.

**Culture.** We examined effect sizes separately for different cultural groups. Below, we also describe whether continuous cultural indicators, such as individualism, moderated the relation between SE and personal adjustment. Yet, given that most research on potential cultural differences in SE focused on U.S. American versus East Asian cultures (Heine, 2012; Sedikides, Gaertner, & Cai, 2015), we first estimated effect sizes separately for U.S. American samples and East Asian samples. In both cases, the effects were positive, significant, and similar in size,  $r = .18$ , 95% CI = [.17, .22],  $k = 133$  studies,  $N = 34,492$ , for U.S. American samples and  $r = .23$ , 95% CI = [.14, .32],  $k = 13$  studies,  $N = 3,430$  for East Asian samples. Regardless of whether participants belonged to individualistic or collectivistic cultures, the SE–personal adjustment links were positive and similar in strength. SE conferred personal adjustment benefits to both Westerners and Easterners.

**Publication bias.** As shown in Table 3, Rosenthal's (1979) fail-safe  $N$  indicated that in all cases a substantial number of file-drawer studies would have been necessary to alter the conclusions. Moreover, in no case did Egger et al.'s (1997) regression produce a significant result. Furthermore, in all cases effect sizes remained significant under the trim-and-fill method (Duval & Tweedie, 2000). Finally, the  $p$  curve (Simonsohn et al., 2014) was right skewed in virtually all cases, which speaks against publication bias. Hence, we did not detect any indication that the positive link between SE and personal adjustment was due to publication bias.

**Moderation analyses.** We next computed random-effects meta-regression analyses (estimated via maximum likelihood).<sup>3</sup> We conducted a separate analysis for each moderator, namely sex, age, culture, and historical period (i.e., publication year), with this moderator as the single predictor of effect sizes. As Table 5 shows, neither the sex composition nor the mean age of our samples moderated the SE–personal

**Table 5.** Moderation Effects for the Total Sample of Studies and for Agentic and Communal SE Measures Separately.

	<i>k</i>	$\beta_{\text{total}}$	<i>k</i>	$\beta_{\text{agentic SE}}$	<i>k</i>	$\beta_{\text{communal SE}}$
Sex (% females)	205	.01 <i>ns</i>	76	-.09 <i>ns</i>	96	.04 <i>ns</i>
Age	155	.04 <i>ns</i>	55	.03 <i>ns</i>	72	-.11 <i>ns</i>
Publication year	237	-.10 <i>ns</i>	87	-.14 <i>ns</i>	112	.02 <i>ns</i>
Power distance	228	.11 <i>ns</i>	85	.19 <i>ns</i>	106	.05 <i>ns</i>
Individualism	228	-.09 <i>ns</i>	85	-.09 <i>ns</i>	106	-.12 <i>ns</i>
Masculinity	228	-.07 <i>ns</i>	85	-.11 <i>ns</i>	106	-.04 <i>ns</i>
Uncertainty avoidance	228	-.00 <i>ns</i>	85	-.06 <i>ns</i>	106	-.01 <i>ns</i>
Long-term orientation	228	.02 <i>ns</i>	85	-.03 <i>ns</i>	106	.16 <i>ns</i>
Indulgence	219	-.08 <i>ns</i>	79	-.04 <i>ns</i>	101	-.10 <i>ns</i>

Note. SE = self-enhancement; *k* = number of effect sizes; *ns* = not significant.

adjustment link. Publication year and culture did not moderate the SE–personal adjustment link either. In addition, we found no moderation by age, sex, publication year, or culture when treating agentic and communal SE separately. The positive SE–personal adjustment link was robust.

## Discussion

The current meta-analysis involved more than 200 studies and more than 100,000 participants. As such, it provides the most comprehensive account to date of the relation between SE and personal adjustment. The meta-analysis relied on self-reports, informant reports, and longitudinal data while considering potential moderators that are informative for various theoretical and methodological positions. The results consistently demonstrated that SE is linked to better personal adjustment.

People are arguably the best judges of their personal adjustment (Baumeister et al., 2003; Diener, 1994; Lyubomirsky & Lepper, 1999). Hence, it is telling that SE was positively related to concurrent self-reports of personal adjustment. This positive relation was also present in informant reports of personal adjustment. Hence, the positive relation between SE and personal adjustment was not solely due to self-enhancers' inflated view of their own level of adjustment. In addition, SE was a longitudinal predictor of personal adjustment. Hence, apparently, SE did not only entail short-lived adjustment gains, but it also conferred longer term gains.

We also examined boundary conditions under which the SE–personal adjustment link might become negligible or negative. We analyzed separately six operationalizations of SE and four operationalizations of personal adjustment. We distinguished between samples high versus low in life adversity. And we investigated separately SE–personal adjustment links for Westerners and Easterners. In none of these cases did we locate a boundary condition with one exception: In three studies, SE was computed by subtracting informant reports from self-reports and, at the same time, personal adjustment was assessed via informant report. The results of

those three studies ran counter to all other meta-analytic results. Specifically, the SE–personal adjustment link was negative. However, there are good reasons to argue that this pattern was due to a methodological artifact. If targets are unpopular, they will be rated low on the criterion and low on psychological adjustment, and this leads to negatively biased correlations (Asendorpf & Ostendorf, 1998; Dufner, Reitz, & Zander, 2015; Griffin et al., 1999; Zuckerman & Knee, 1996). The negative pattern is more informative of problems inherent in the method than the costs of SE. Finally, neither age, sex, historical period, nor culture moderated the SE–personal adjustment link.

In summary, this meta-analysis comprehensively addressed the relation between SE and personal adjustment, involving numerous operationalizations and assessments of each construct. SE was positively associated with personal adjustment as reported both by individuals themselves and by outside informants. Moderators did not qualify substantially these result patterns. The robustness—across domains, methods, and cultures—of the findings is consistent with the notion that SE is the signature of an underlying fundamental human motive (self-regard; Alicke et al., 2013; Baumeister, 1998; Gregg & Sedikides, 2018; M. R. Leary, 2007).

## Part II: Interpersonal Adjustment

In the second meta-analysis, we focused on the relation between SE and interpersonal adjustment. Interpersonal adjustment is reflected in the extent to which people are valued by others (Colvin et al., 1995; Kurt & Paulhus, 2008; V. S. Y. Kwan et al., 2004; Taylor et al., 2003). Accordingly, we examined how self-enhancers are valued by informants. We distinguished between domain-general interpersonal adjustment and domain-specific interpersonal adjustment.

### Domain-General Interpersonal Adjustment

An important domain-general index of interpersonal adjustment is the global favorability of informant reports, operationalized as how positively or negatively a target is evaluated

in general (irrespective of the specific attribute being rated). When informants rate a particular target on different (un)desirable attributes, they typically assimilate their ratings across attributes (Cooper, 1981; Leising et al., 2010; Nisbett & Wilson, 1977). For example, if an informant rates a target's likability, honesty, agreeableness, assertiveness, and prestige, these ratings typically correlate positively, and thus the average of all ratings can be used as a domain-general index of interpersonal adjustment.

There are arguments for the view that SE should be beneficial to domain-general interpersonal adjustment. Taylor and Brown (1988) posited that self-enhancers' positive mind-set increases their social allure, which should lead to domain-general interpersonal adjustment. Relatedly, Zeigler-Hill, Besser, Myers, Southard, & Malkin (2013) proposed that favorable self-perception may have a positive social signaling function. Here, the assumption is that perceivers who observe targets with favorable self-perceptions believe that these targets' self-perceptions are backed up by actual ability, which signals appeal as a prospective interaction partner or companion. Again, SE should trigger interpersonal adjustment.

However, there is also an argument for the view that SE might be costly for domain-general interpersonal adjustment. According to this view, self-enhancers are likely to convey impressions of naïveté, self-indulgence, or haughtiness. The hubris hypothesis (Hoorens, 2011; Sedikides et al., 2015), in particular, posits that a person's explicit and self-flattering social comparisons put informants off. This might be so because informants infer that the self-enhancing person holds a disparaging view of others, including a disparaging view of the informant herself or himself. Informants might then evaluate the person unfavorably, as they are personally offended by such inferred direct and self-serving social comparisons (Hoorens, Pandelaere, Oldersma, & Sedikides, 2012; Hoorens, Van Damme, Helweg-Larsen, & Sedikides, 2017; Van Damme, Hoorens, & Sedikides, 2016).

As in the prior meta-analysis, we examined whether differences in methodology qualify the directionality of the SE–interpersonal adjustment link. Given that we only used informant ratings of interpersonal adjustment, we did not need to consider the possibility that self-enhancers possess inflated views of their own level of adjustment in this part of the meta-analytic review. Yet, a methodological issue that we raised previously is relevant here. Effect sizes will again likely be negatively biased, if SE scores are computed by subtracting informant reports from self-judgments and if this difference score is correlated to adjustment outcomes that were also judged by informants. Hence, we tested whether effect sizes based on this method are more negative (or less positive) than effect sizes based on unproblematic methods.

Also as in the prior meta-analysis, we examined whether SE entails costs over time. Some researchers have argued that self-enhancers are increasingly disapproved, as one gets to know them better (Colvin et al., 1995; Paulhus, 1998).

That is, self-enhancers might be initially liked by unfamiliar informants, possibly because self-enhancers radiate self-confidence and positive affect. As familiarity increases, however, self-enhancers might come to be seen by informants as unlikely to live up to these positive first impressions, perhaps because they might behave in an egoistic manner or are unwilling to invest in relationships. As a result, they might be disliked. This theoretical view, then, predicts that SE will be linked to higher domain-general interpersonal adjustment at zero acquaintance but to lower domain-general interpersonal adjustment at longer (i.e., nonzero) acquaintance.

### *Domain-Specific Interpersonal Adjustment*

Domain-specific interpersonal perception can be arranged alongside the two interpersonal dimensions of agency and communion (T. Leary, 1957; Rosenberg, Nelson, & Vivekananthan, 1968; Wiggins, 1979). Thus, it was an obvious choice to examine domain-specific interpersonal adjustment in terms of agentic and communal social valuation (for reviews, see Abele & Wojciszke, 2014; Fiske, Cuddy, & Glick, 2007). We also wanted to match the domains of SE and the domains of interpersonal adjustment contentwise, which was another important reason to distinguish between agentic and communal social valuation. In Part I, we have described why the agency–communion distinction is particularly relevant when it comes to domain-specific SE (Paulhus & John, 1994, 1998; see also Campbell et al., 2002; Gebauer et al., 2012; Sedikides, Rudich, Gregg, Kumashiro, & Rusbult, 2004). As such, we proceeded to distinguish between agentic and communal SE in Part II and, accordingly, also to distinguish between agentic and communal interpersonal adjustment. Next, we describe our predictions on the relation between agentic and communal SE on one hand, and agentic and communal social valuation on the other.

Several theoretical and empirical sources predict positive effects, if the SE domain matches the interpersonal adjustment domain (i.e., agency–agency, communion–communion). People typically try to present themselves favorably to others (M. R. Leary, 1995) and negotiate a positive identity with them (Schlenker, Britt, & Pennington, 1996). Accordingly, SE in a given domain should lead to positive informant valuations in that domain. For example, if a person (unwarrantedly) believes that she is particularly high on agency, she will be motivated to present herself to informants as agentic and to influence their perceptions of herself as agentic, even above and beyond her objectively assessed agency (Denissen, Schönbrodt, van Zalk, Meeus, & van Aken, 2011). Analogous processes would operate for communion. Furthermore, the same effects would be predicted by von Hippel and Trivers's (2011) evolutionary theory of self-deception. The theory posits that, by self-enhancing, people manage to display more confidence in social interactions than is warranted by their actual skills. Based on these cues, interaction partners infer that self-enhancers indeed

possess these skills. In all, this theory predicts that agentic SE will evoke positive informant reports in terms of agency, and communal SE will evoke positive informant reports in terms of communion.

However, there is also an argument to be made for the view that SE has a negative effect on domain-specific interpersonal adjustment. That is, agentic SE may also be inversely related to informant reports of communion. Evaluations of agency follow the rules of a zero-sum game (Dufner, Leising, & Gebauer, 2016; Tiedens & Jimenez, 2003). This point is best illustrated, if one considers that agency largely represents the dominance dimension of social judgment (T. Leary, 1957; Wiggins, 1991). Given that not all persons in a dyad or group can dominate, one person's dominance comes at the cost of other people's submission. Therefore, if self-enhancers come across as highly agentic, this can curtail other persons' agency. Such a tendency may be considered by informants as egoistic, threatening, and detrimental to other people's ambitions. Consequently, informants should judge agentic self-enhancers as low in communion.

## Method

As described in Part I's "Method" section, we conducted a literature search to retrieve studies relevant to personal adjustment and interpersonal adjustment. We operationalized domain-general interpersonal adjustment as the average of all specific social valuations (i.e., social acceptance, likability, popularity, assertiveness, dominance, leadership, prestige, social status, benevolence, altruism, agreeableness, empathy, helpfulness, honesty, social support, sympathy, trust, warmth). We operationalized the domain-specific valuations (i.e., agentic and communal valuations) as follows: For agentic evaluations, we analyzed informant reports of assertiveness, dominance, leadership, prestige, and social status. For communal valuations, we analyzed informant reports of benevolence, altruism, agreeableness, empathy, helpfulness, honesty, social support, sympathy, trust, and warmth.

## Results

Table 2 provides sample information, including demographics. Informant ratings of interpersonal adjustment came from romantic partners or family members (8% of effect sizes), RAs (1%), supervisors or other expert judges (8% of effect sizes), and peers, including participants, students, friends, coworkers, and roommates (83% of effect sizes). In 13% of the studies, participants were free to select their informant raters. We tested for differences between studies in which participants selected their informant reporters and studies in which participants did not select their informant reporters. Specifically, we ran all major analysis (i.e., all analyses reported in Tables 6 and 7) 2 more times, once on studies in which participants selected their informant reporters and once on studies in which they did not. Results were

conceptually identical in regard to both sets of studies. That is, findings that were (non)significant in one set of studies were also (non)significant in the other set. Therefore, in the main text, we report only the results of the analyses containing all studies. (Tables S4 and S5 in the Online Supplement show the results excluding studies with self-selected informants.)

As in Part I, we report results that are aggregated across all SE indicators. In addition, as in Part I, we attempted to rerun all analyses with effect sizes exclusively derived from criterion-discrepancy SE measures (Tables S2 and S3, Online Supplement). However, in several cases, meta-analytic integration was not possible due to a lack of studies (e.g., there were no criterion-discrepancy studies using communal SE indicators). In the remaining cases, the number of studies was low, which led to imprecise effect size estimates. Nevertheless, whenever we report significant results in the following, we also report the effect size based on criterion-discrepancy measures.

As in Part I, we used random-effects models in all our analyses and determined the random variance component via maximum-likelihood estimation.

*SE and domain-general interpersonal adjustment.* We first tested predictions of the two competing theoretical views on the relation between SE and domain-general interpersonal adjustment (Table 6); that is, we examined the relation between SE and global favorability of informant reports (i.e., collapsing across all specific valuations). The mean-weighted effect size was not significantly different from 0,  $r = -.01$ , 95% CI =  $[-.06, .04]$ ,  $k = 55$  studies,  $N = 11,794$ , and there was significant heterogeneity between effect sizes,  $Q_w(54) = 369.94$ ,  $p < .001$ . The results were not supportive of either view: SE was neither positively nor negatively related to domain-general interpersonal adjustment.

Next, we turned to testing the hypothesis stating that, when SE is computed by subtracting informant reports from self-reports and the outcome is also rated by informants, this will negatively bias the results. We analyzed effect sizes that were based on this method, and indeed obtained a significant negative relation between SE and domain-general interpersonal adjustment,  $r = -.22$ , 95% CI =  $[-.40, -.03]$ ,  $k = 8$  studies,  $N = 2,054$ . Thus, the hypothesis received empirical backing. We removed these effect sizes from all subsequent analyses to arrive at unbiased results. Also, in the absence of these effect sizes, SE was unrelated to the domain-general interpersonal adjustment,  $r = .02$ , 95% CI =  $[-.03, .07]$ ,  $k = 50$  studies,  $N = 10,615$ .

We proceeded with testing the relation between SE and domain-general interpersonal adjustment separately for zero and longer acquaintance (Table 6). SE was positively related to domain-general interpersonal adjustment at zero acquaintance (i.e., when ratings were made by informants who had never met the targets before),  $r = .11$ , 95% CI =  $[.03, .18]$ ,  $k = 22$  studies,  $N = 3,633$ , but was unrelated to domain-general

**Table 6.** Effect Sizes ( $r$ ) for the Relation Between SE and Domain-General Interpersonal Adjustment.

Informant judgments	Overall SE			
	$k$	$N$	$r$	95% CI
Domain-general interpersonal adjustment	55	11,794	-.01	[-.06, .04]
Domain-general interpersonal adjustment: Problematic methodology	8	2,054	-.22	[-.40, -.03]
Domain-general interpersonal adjustment: No problematic methodology	50	10,615	.02	[-.03, .07]
Domain-general interpersonal adjustment: Zero acquaintance	22	3,633	.11	[.03, .18]
Domain-general interpersonal adjustment: Longer acquaintance	30	7,201	-.04	[-.09, .01]

Note. SE = self-enhancement;  $k$  = number of effect sizes;  $N$  = total number of participants; CI = lower and upper bounds of the 95% confidence interval for  $r$ .

**Table 7.** Effect Sizes ( $r$ ) for the Relation Between Criterion-Discrepancy Measures of Agentic and Communal SE and Informant Judgments.

	Informant-reported agency				Informant-reported communion			
	$k$	$n$	$r$	95% CI	$k$	$n$	$r$	95% CI
Agentic SE	17	3,124	.21	[.14, .29]	22	6,226	-.10	[-.14, -.05]
Communal SE	3	1,000	-.03	[-.09, .03]	9	2,064	.12	[.07, .18]

Note. SE = self-enhancement;  $k$  = number of effect sizes;  $N$  = total number of participants; CI = lower and upper bounds of the 95% confidence interval for  $r$ .

interpersonal adjustment at longer acquaintance (i.e., when ratings were made by informants who had met the targets before),  $r = -.04$ , 95% CI = [-.09, .01],  $k = 30$  studies,  $N = 7,201$ . SE was associated with initial approval, but this approval vanished over time. Here, though, we considered an alternative explanation. Specifically, in some longer acquaintance contexts, informants were targets' romantic partners or family members (types of relationships that are typically incorporated into one's self-concept; Aron et al., 2004), but naturally this was never the case in zero acquaintance contexts. Hence, the type of relationship between targets and informants was a potential confound. We therefore reestimated the effect for longer acquaintance contexts excluding all cases when informants were romantic partners or family members. The results were virtually identical to the previous ones,  $r = -.03$ , 95% CI = [-.08, .02],  $k = 23$  studies,  $N = 5,959$ . Relationship type between target and informant thus did not influence the results.

When we examined whether the positive relation between SE and domain-general interpersonal adjustment at zero acquaintance replicates for criterion-discrepancy SE indicators, we detected an effect size that was not significantly different from 0,  $r = .13$ , 95% CI = [-.08, .32],  $k = 5$  studies,  $N = 656$ . Importantly, however, the magnitude of the effect size estimate did not differ much from the original analysis (analysis including all SE measures:  $r = .11$ ; analysis including criterion discrepancies only:  $r =$

.13). Rather, the apparent difference is due to lower power when including only criterion-discrepancy studies. (The total  $N$  was more than 6 times smaller than in the original analysis.)

*SE and domain-specific interpersonal adjustment.* Next, we tested whether agentic SE was related to agentic social valuation and whether communal SE was related to communal social valuation (Table 7). Indeed, agentic SE was positively related to informant-reported agency,  $r = .21$ , 95% CI = [.14, .29],  $k = 17$  studies,  $N = 3,124$ , and communal SE was positively related to informant-reported communion,  $r = .12$ , 95% CI = [.07, .18],  $k = 9$  studies,  $N = 2,064$ . These results indicate that agentic self-enhancers manage to obtain an agentic reputation, whereas communal self-enhancers manage to obtain a communal reputation.

When we reestimated the effect size for agentic SE based on criterion-discrepancy SE indicators, we again obtained a positive effect that was significantly different from 0,  $r = .25$ , 95% CI = [.14, .34],  $k = 3$  studies,  $N = 399$ . (Due to a lack of relevant criterion-discrepancy studies, it was impossible to examine the effect of communal SE indicators.) This result suggests that the effect is not restricted to self-report-only measures of SE but applies to criterion-discrepancy measures, too. Given that criterion-discrepancy measures of SE control for actual ability, the result speaks against the alternative explanation that the relation

**Table 8.** Test for Publication Bias and Questionable Research Practices in the Analyses on Interpersonal Adjustment.

	Trim and fill (number of studies filled)	95% CI	Egger et al.'s regression (two-tailed)	Fail-safe <i>N</i>	Right skewedness of <i>p</i> curve
Domain-general interpersonal adjustment: Problematic methodology	-.15 (2)	[-.32, .04]	-2.92 <i>ns</i>	163	-7.39**
Domain-general interpersonal adjustment: Zero acquaintance	.05 (5)	[-.04, .13]	0.47 <i>ns</i>	182	-3.15**
Agentic SE: Informant-reports agency	.18 (2)	[.10, .26]	-0.32 <i>ns</i>	569	-6.55**
Communal SE: Informant-reports communion	.12 (0)	[.07, .18]	-1.90 <i>ns</i>	53	-2.60**
Agentic SE: Informant-reports communion	-.10 (0)	[-.14, -.05]	-0.03 <i>ns</i>	238	-4.79**

Note. CI = lower and upper bounds of the 95% confidence interval for *r*, *ns* = not significant (two-tailed test); SE = self-enhancement.

\**p* < .05. \*\**p* < .01.

between agentic SE and informant-reported agency was driven by actual target ability.

Nevertheless, we examined this issue more deeply. One could argue that, if actual ability was not measured validly in the latter studies, then the relations between criterion-discrepancy measures and informant-reported agency would be driven by actual ability. However, if the relations between criterion-discrepancy measures and informant-reported agency were driven by actual ability, then they should be more pronounced, the better informants were acquainted with the targets. After all, an informant who has known a target for a longer time typically is a more accurate judge of the target's actual ability than an informant who is unacquainted with the target (Connelly & Ones, 2010; Funder & Colvin, 1988). Accordingly, we reestimated the domain-specific effects of SE separately for zero acquaintance contexts (i.e., judgments from informants who were unacquainted with the target) and longer acquaintance contexts (i.e., judgments from informants who had met the target before). Again, such an analysis was only possible for agentic SE, because there were not enough studies pertaining to the relation between communal SE and social valuation in zero acquaintance contexts (*k* = 1 study). Agentic SE was not significantly related to informant-reported agency in longer acquaintance contexts,  $r = .11$ , 95% CI = [-.04, .27], *k* = 7 studies, *N* = 1,446, whereas there was a significant positive relation in zero acquaintance contexts,  $r = .25$ , 95% CI = [.15, .34], *k* = 11 studies, *N* = 1,789. Hence, the effect was clearly not larger in longer acquaintance contexts (if anything, the reverse was true). All effects were based on judgments made by peers not by romantic partners or family members. Therefore, differences in relationship type (i.e., distant vs. close) between targets and informants across studies are unlikely confounds. In all, then, we found no support for the alternative explanation that effects were driven by overlaps between SE and actual ability. SE likely evoked positive domain-specific informant reports that are independent of target's actual ability.

Finally, we tested whether agentic SE is negatively related to informant reports of communion (Table 7). Indeed, agentic SE was inversely related to informant reports of communion,  $r = -.10$ , 95% CI = [-.14, -.05], *k* = 24 studies, *N* = 6,226. Yet, when we analyzed criterion-discrepancy measures separately, the effect size was smaller and nonsignificant,  $r = -.02$ , 95% CI = [-.06, .02], *k* = 3 studies, *N* = 2,325. Due to the low number of studies in this analysis, it is not possible to determine whether the different results are due to systematic differences between self-report and criterion-discrepancy SE measures, or due to peculiarities of the three studies using a criterion-discrepancy SE measure.

**Publication bias.** We tested for publication bias for all major results that were significantly different from 0 (Table 8). Rosenthal's (1979) fail-safe *N* suggested that in all cases, a substantial number of file-drawer studies would have been necessary to alter the overall conclusions. Moreover, in no case did Egger et al.'s (1997) regression produce a significant result. Furthermore, in most cases (again, see Table 8) effect sizes remained unchanged when we used the trim-and-fill method (Duval & Tweedie, 2000). Finally, a *p*-curve analysis (Simonsohn et al., 2014) indicated that in all cases the *p* curve was right skewed. It is unlikely that our results were due to publication bias.

## Discussion

The question about costs and benefits of SE cannot be answered definitively without a thorough analysis of the relation between SE and interpersonal adjustment. After all, personal and interpersonal adjustments are equally important pillars of adjustment (Kurt & Paulhus, 2008; V. S. Y. Kwan et al., 2004; Paulhus, 1998; Taylor et al., 2003). Accordingly, we focused in this meta-analysis on how SE is linked to interpersonal adjustment. Unfortunately, the number of studies relying on criterion-discrepancy measures of SE was in most cases too low to draw reliable conclusions from them.

In the following, we thus focus on the results of the main analyses (involving all SE indicators). We found that SE is linked to nuanced, rather than unambiguously positive or negative, reactions from informants.

SE was unrelated to domain-general interpersonal adjustment. This null result is inconsistent with both the social signaling hypothesis (Zeigler-Hill & Besser, 2013) and the hubris hypothesis (Hoorens et al., 2012). People who maintain unrealistically positive self-views do not generally stir unequivocal approval or disapproval.

Yet, as in Part I, methodology mattered. The relation between SE and domain-general interpersonal adjustment was substantially negative when SE was measured by subtracting informant reports from self-judgments, and then correlating the resulting difference score to adjustment outcomes that were also judged by informants. Studies using this method produced results that were markedly different from those of the remaining studies.

Another relevant factor was time frame. SE was positively related to domain-general interpersonal adjustment in zero but not in longer acquaintance contexts. Self-enhancers thus seem appealing at first sight, but their appeal wanes with the passage of time. Notably, however, at longer acquaintance, the relation between SE and interpersonal adjustment was not negative but 0. In other words, informants did not generally dislike self-enhancers even when they are well familiar with them.

Moreover, there was evidence for benefits of SE in domain-specific interpersonal adjustment. Agentic SE was associated with positive informant reports on agency, and communal SE was associated with positive informant reports on communion. These findings are compatible with several theoretical views, in particular theories of self-presentation (M. R. Leary, 1995), self-identification (Schlenker et al., 1996), and self-deception (von Hippel & Trivers, 2011). Consistent with these theories, SE appears to entail social benefits. Informants seem to “buy into” agentic and communal self-enhancers’ (inflated) self-views and perceive them as real. When an agentic reputation is at stake (e.g., at job interviews), persons with inflated views of their agentic attributes are likely to have an advantage. Similarly, when a communal reputation is at stake (e.g., in newly formed dyadic relationships or interdependent groups), targets with inflated views of their communal attributes are likely to have an advantage. It is worth reiterating that these advantages were not domain-general: Advantages in one domain did not carry over to the other. Interestingly, the positive association between agentic SE and informant reports on agency was descriptively (albeit not significantly) larger at zero acquaintance than at longer acquaintance. Potentially, self-enhancers manage to deceive informants about their abilities while unfamiliar to them, but self-enhancers become less efficient in their deception as familiarity with informants increases.

Finally, the results indicated that agentic SE was inversely related to informant reports of communion. People who

maintained unrealistically positive views of their agentic attributes were considered particularly low in communion. The literature has linked narcissism, one of the most prominent measures of agentic SE, to low levels of communion—both in self-reports of communion (Paulhus, 2001) and in informant reports of communion (Dufner et al., 2012). Given that informants perceived agentic self-enhancers as lacking in communion, agentic SE may be an impairment to cooperative social interactions. A communal reputation typically elicits communal responses: People who appear warm, friendly, and cooperative often encounter warmth, friendliness, and cooperativeness from others (Carson, 1969; Horowitz et al., 2006), resulting in mutually beneficial interactions (Dufner et al., 2016). If agentic self-enhancers are seen as noncommunal, however, they are likely to undermine this process of mutual benefits. Finally, the meta-analysis points to the need for research on the social consequences of communal SE. Especially studies using criterion-discrepancy measures of communal SE are lacking, and so are studies testing the social repercussions of communal SE in zero acquaintance contexts.

In summary, Part II indicates that SE is consequential for interpersonal adjustment. The level of a person’s SE most likely determines, to an extent, how this person is judged by others. Although domain-general SE is unrelated to domain-general interpersonal adjustment at longer acquaintance, domain-general SE is related to more positive domain-general interpersonal adjustment at zero acquaintance. Moreover, agentic self-enhancers are considered high in agency, and communal self-enhancers are considered high in communion by others. Yet, a potential downside of agentic SE is that it may precipitate an uncommunal reputation.

## General Discussion

Does SE entail costs or benefits for psychological adjustment? This question is among the most commonly debated ones in social-personality psychology. An answer to the question would also be relevant for research and theory in clinical, educational, organizational, and sport psychology. Beyond academia, an answer would have profound implications for practitioners, too. So, is SE primarily costly or beneficial? Our article advanced that debate toward resolution. It did so by providing the first meta-analytic overview of the association between SE and both personal and interpersonal adjustments. Our review covers more than four decades of research and includes almost 300 studies totaling more than 120,000 participants. We were thus able to investigate thoroughly whether results were robust or driven by methodological particularities of certain studies.

One key result from our two meta-analyses was that some major contradictions in the literature are, indeed, due to a number of prominent studies that relied on problematic methodology. These studies computed SE scores by subtracting informant reports from self-judgments and correlated

this difference score to adjustment outcomes that were also judged by informants. We found that effect sizes based on this problematic methodology were substantially negatively biased, and we obtained consistent evidence for just that across both meta-analyses. Thus, past empirical studies relying on this problematic methodology and literature reviews summarizing such studies drew unduly negative conclusions about the consequences of SE. Difference scores as SE measures should generally be avoided in all cases when the criterion and the adjustment indicator are correlated. To circumvent the problem altogether, researchers will do well to partial out benchmark scores instead of subtracting them.

Once we removed the studies that suffered from the problematic methodology, the findings painted a fairly consistent picture. Part I suggested that SE is beneficial for personal adjustment. Self-enhancers evinced relatively high subjective well-being (i.e., life satisfaction, positive affect, absence of negative affect) and lack of depressive symptoms. Thus, people who have a tendency to view themselves in an unrealistically positive light are better off in terms of their affective experience and their mental health than people who lack this tendency. These benefits were detectable regardless of the source of adjustment scores (self-reported vs. informant reported), the way SE was operationalized (criterion discrepancy vs. self-report only), participants' life circumstances (adverse vs. normal), participants' sex (male vs. female), participants' age (young adults vs. older adults), year of publication (younger cohort vs. older cohort), and participants' cultural background (Westerners vs. Easterners). Stated otherwise, the findings were robust across a wide range of relevant moderators. The findings align with the view that people gain personal adjustment benefits by engaging in SE (Goorin & Bonanno, 2009; Marshall & Brown, 2007; Taylor & Brown, 1994; Taylor & Sherman, 2008). In contrast, we found no evidence for the view that SE is linked to personal maladjustment (Colvin et al., 1995; Robins & Beer, 2001). More generally, the findings also align with the idea that SE is at the service of a fundamental human motive to secure or maximize positive self-regard (Alicke et al., 2013; Baumeister, 1998; Sedikides & Gregg, 2008).

Is SE costly or beneficial for interpersonal adjustment? The Part II results show that the answer to this question is more intricate than for personal adjustment. More precisely, the answer hinges on two factors: acquaintanceship (zero acquaintance vs. longer acquaintance) and SE domain (agentic vs. communal).

As to the first factor (acquaintanceship), self-enhancers were evaluated positively at zero acquaintance (i.e., when informants did not know the targets beforehand). However, self-enhancers were not evaluated positively at longer acquaintance (i.e., when informants had known the targets before). SE thus seems linked to the ability to make positive first impressions, which is an asset in all contexts when people interact with hitherto unacquainted others (Ambady & Skowronski, 2008). This factor may help reconcile seemingly

inconsistent findings in the literature. More precisely, our findings suggest that studies which found a positive relation between SE and interpersonal adjustment often used ratings from unacquainted informants (Anderson, Brion, Moore, & Kennedy, 2012; Back, Schmukle, & Egloff, 2010), whereas studies that found no (or even a negative) relation between SE and interpersonal adjustment often used ratings from informants who were acquainted with the targets (Bond, Kwan, & Li, 2000; Judge, LePine, & Rich, 2006). Future research may examine conditions under which SE is linked to better interpersonal adjustment even in longer acquaintance settings. For example, in particularly difficult/stressful times, self-enhancers may enjoy interpersonal adjustment benefits (in zero and longer acquaintance settings), because others might appreciate self-enhancers' optimistic demeanor (Bonanno et al., 2005).

As to the second factor (SE domain), SE was positively associated with informant reports in that specific domain (agency or communion). Put differently, agentic SE was positively related to informant reports on agency, and communal SE was positively related to informant reports on communion. On their own, these results suggest that agentic and communal SE have both positive consequences, because the former was related to an agentic reputation and thus to getting ahead in the social world, whereas the latter was related to a communal reputation and thus to getting along with others (Hogan, 1982). Importantly, however, we found that agentic SE was linked not only to a more agentic reputation but also to a *less* communal reputation and hence to not getting along with others particularly well. The negative relation between agentic SE and informant-reported communion might explain why SE is perceived as problematic across all world religions (Gebauer, Nehrlich et al., 2017; Gebauer, Sedikides, et al., 2017). A major reason for religiosity's success is that religiosity binds people in communal in-groups (Graham & Haidt, 2010). However, the negative relation between agentic SE and communion suggests that SE can undermine positive reciprocal communal interaction that is so vital for religiosity's success. From this vantage point, it is understandable why world religions command their believers to refrain from (agentic) SE (Sedikides & Gebauer, 2013). More broadly, the current findings demonstrate that researchers need to pay particular attention to SE domain (agentic vs. communal) when studying the interpersonal benefits of SE.

In light of the nuanced effects we just discussed, it is not surprising that the relation between overall SE (aggregated across content domains) and domain-general interpersonal adjustment (aggregated across time scales and content domains) was 0. The nuanced effects likely canceled each other out. Thus, the issue of whether SE is generally costly or beneficial for interpersonal adjustment is complex and cannot be addressed with a simple "yes" or "no" answer. This means that existing hypotheses making general claims about SE and interpersonal adjustment (such as the social signaling hypothesis or the hubris hypothesis) need to be further specified by

taking into account acquaintanceship (zero acquaintance vs. longer acquaintance) and SE domain (agentic vs. communal). For example, our finding that agentic (communal) SE is linked to an agentic (communal) reputation is in line with a version of the social signaling hypothesis that is attentive to content domains. Likewise, the finding that agentic SE is linked to a low-communion reputation fits a variant of the hubris hypothesis.

## Limitations and Future Directions

Our meta-analytic approach provided precise effect sizes estimates concerning the relations between SE and psychological adjustment, and enabled us to examine for the first time whether study characteristics account for differences in effect sizes. However, there are several limitations that need to be considered when interpreting the current results. The limitations include weakness of the original studies and ambiguities associated with the meta-analytic method in general. In the following, we elaborate on these limitations and offer suggestions for follow-up research.

The relation between SE and personal adjustment was not moderated by any of the factors we considered. The absence of moderation effects implies a strikingly robust relation between SE and personal adjustment. Is this relation a human universal? It may be premature to draw a strong conclusion. This caution is warranted, because most studies included data from participants who were rather young, well-educated, and White, with not all world regions being represented (Table 2). We hope future research will examine the relation between SE and psychological adjustment in a wider array of samples. In that respect, Table 2 may serve as a useful guide to identify populations who have received little empirical attention so far.

Criterion-discrepancy measures are particularly well-suited to assess SE. Yet, the majority of studies did not rely on criterion-discrepancy measures but only on self-report measures. In Part I, the number of studies using criterion-discrepancy SE indicators was low but sufficiently large to replicate the key effects of our more inclusive analyses (i.e., analyses combining studies with criterion-discrepancy and self-report-only measures). In Part II, the number of studies using criterion-discrepancy measures was so low that we were unable to conduct several more specific analyses (e.g., communal SE as a predictor of any interpersonal adjustment indicator). Future research would do well to rely more firmly on criterion-discrepancy measures in operationalizing SE. It could, for example, rely on peer-reported communion (Thielmann, Zimmermann, Leising, & Hilbig, 2017) or direct observation of communal behavior in the laboratory (Baumert, Schlösser, & Schmitt, 2013) to obtain criterion-discrepancy measures of communal SE.

Our meta-analytic review suggests that associations between SE and personal adjustment are, by and large, positive. However, we are not in a position to describe the precise trajectory of these associations in greater detail. Is the

relation between SE and personal adjustment linear or curvilinear? Greater SE may be incrementally adaptive, or may be adaptive up to a certain point after which the trajectory stabilizes or even reverses (Baumeister, 1989). Very few studies have considered nonlinear relations (Dufner et al., 2013), and therefore it was not possible to integrate these scarce results in a systematic manner. Future research could address such questions by relying on newly developed techniques (Humberg, Dufner, Schönbrodt, Geukes, Hutteman, Küfner, et al., 2017; Humberg, Dufner, Schönbrodt, Geukes, Hutteman, van Zalk, et al., 2017) that zero in on the precise trajectory of the relation between SE and adjustment. Also, individual-level meta-analysis that pools raw data across studies might reach the necessary resolution to identify reliably nonlinear trends.

Our meta-analyses also remain silent about the psychological processes linking SE to psychological adjustment. The longitudinal relations between SE and personal adjustment in Part I are consistent with the view that SE entails real-life gains (i.e., agentic reputation) that, in turn, promote personal adjustment in the long run. Yet, we were unable to test directly this claim. Future research should assess indicators of real-life gains and examine whether they mediate longitudinal effects of SE on personal adjustment. Of relevance, the results of Part II already go some way to testing such process hypotheses. Specifically, Part II revealed that SE can increase one's social valuation, which, in turn, is likely to promote personal adjustment (Gebauer et al., 2015; M. R. Leary & Baumeister, 2000; Mahadevan, Gregg, Sedikides, & de Waal-Andrews, 2016).

Concerning the effects of SE on interpersonal adjustment, a lens model perspective (Brunswik, 1956) suggests that these effects are mediated by observable behavioral cues, particularly at zero acquaintance. In line with this possibility, research has shown that displays of agency mediate the link between narcissism and popularity (Back et al., 2010), and between agentic SE and informant-reported social status (Anderson et al., 2012). Future research should study systematically which behaviors are produced by agentic and communal SE in different social contexts, and how these behaviors affect interpersonal adjustment.

Furthermore, given that the effect of SE on interpersonal adjustment can be positive, neutral, or negative, it might be a crucially relevant skill for people to regulate SE according to situational requirements. People are indeed capable of regulating SE (Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995; Day & Schleicher, 2006; Sedikides, 2009), and the extent to which self-enhancers possess this ability may determine self-enhancers' overall level of interpersonal adjustment. We encourage future researchers to address this possibility.

The current results are compatible with the possibility that SE may be a cause of adjustment. Yet, it is possible that SE is not only an antecedent but also a consequence of psychological adjustment. If SE precipitates personal adjustment benefits, then operant reinforcement processes might render future SE more likely. After all, organisms typically engage in a

behavior more frequently, if this behavior accrues benefits (Thorndike, 1911). In line with this possibility, several longitudinal studies have linked initial levels of well-being to subsequent increases in SE (C. M. Kwan, Love, Ryff, & Essex, 2003; Zuckerman & O'Loughlin, 2009), and there is some evidence for a mutually reinforcing relationship between SE and personal adjustment (Dufner et al., 2015). Future research should examine this possibility more comprehensively.

The current meta-analytic review arguably included the most central indicators of personal and interpersonal adjustment. Yet, the sheer amount of available studies made it impossible to cover personal and interpersonal adjustment exhaustively. For example, SE has been linked to anxiety (Sedikides et al., 2004) and eudaimonic well-being (Aghababaei & Błachnio, 2015), which are relevant indicators of personal adjustment. Furthermore, SE has been linked to short-term mate appeal (Schröder-Abé, Rentzsch, Asendorpf, & Penke, 2016) and romantic relationship functioning (Murray & Holmes, 1997), which are relevant indicators of interpersonal adjustment. Future research may complement the present meta-analytic results with an examination of links between SE and additional indicators of personal and interpersonal adjustment.

## Conclusion

Theorists have claimed that SE is a phenomenon with far-reaching implications for psychological functioning (Alicke et al., 2013; Baumeister, 1998; Brown, 2007; Sedikides & Gregg, 2008). In combination, the results of the two current meta-analyses provide the strongest evidence thus far for this claim. For personal adjustment, SE is beneficial. Self-enhancers experience greater levels of subjective well-being and lower levels of depression. For interpersonal adjustment, SE can be beneficial, neutral, or problematic depending on the context. Self-enhancers leave generalized positive first impressions in others, and they are judged highly on the traits on which they self-enhance. Yet, they are evaluated neutrally at longer acquaintance, and, if they self-enhance on agentic attributes, they are deemed uncommunal. Thus, SE appears to be a resource for personal adjustment but a mixed blessing for interpersonal adjustment.

## Author note

The data and analysis scripts to reproduce the major results are provided here: [osf.io/8aubq](https://osf.io/8aubq).

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## Notes

1. To estimate the number of studies that would have been relevant, but that appeared in languages other than English or German, we reran our PsychINFO search, but this time searched only for articles written in any language but English or German. We received 69 hits. In our original search, we received 2,372 hits. Thus, by restricting our search to articles in English or German language we missed out on the inclusion of approximately 3% additional studies. In all, restriction to articles in English and the language(s) that the first author speaks is not only consistent with typical meta-analytic search conventions (e.g., Palumbo et al., 2017), but it also resulted in a negligible percentage of the total number of studies included in the meta-analysis.
2. The Edwards (1957) Social Desirability Scale was also classified as agentic rather than communal in content (Paulhus, 2002). However, this scale includes items from the Minnesota Multiphasic Personality Inventory that have originally been developed to capture psychopathological aspects of personality. As a consequence, the scale overlaps strongly with psychological adjustment (Crowne & Marlowe, 1960). We therefore refrained from coding effects that were based on the Edwards Social Desirability Scale.
3. We conducted a separate set of regression analyses with the method of moments estimation of effect sizes. The results were virtually identical to the reported ones.

## Supplemental material

Supplementary material is available online with this article.

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