Is Accurate, Positive, or Inflated Self-Perception Most Advantageous for Psychological
Adjustment? A Competitive Test of Key Hypotheses

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Abstract

Empirical research on the (mal-)adaptiveness of favorable self-perceptions, self-enhancement, and self-knowledge has typically applied a classical null-hypothesis testing approach and provided mixed and even contradictory findings. Using data from five studies (laboratory and field, total $N = 2,823$), we employed an information-theoretic approach combined with Response Surface Analysis to provide the first competitive test of six popular hypotheses: that more favorable self-perceptions are adaptive versus maladaptive (Hypotheses 1 and 2: Positivity of self-view hypotheses), that higher levels of self-enhancement (i.e., a higher discrepancy of self-viewed and objectively assessed ability) are adaptive versus maladaptive (Hypotheses 3 and 4: Self-enhancement hypotheses), that accurate self-perceptions are adaptive (Hypothesis 5: Self-knowledge hypothesis), and that a slight degree of self-enhancement is adaptive (Hypothesis 6: Optimal margin hypothesis). We considered self-perceptions and objective ability measures in two content domains (reasoning ability, vocabulary knowledge) and investigated six indicators of intra- and interpersonal psychological adjustment. Results showed that most adjustment indicators were best predicted by the positivity of self-perceptions. There were some specific self-enhancement effects, and evidence generally spoke against the self-knowledge and optimal margin hypotheses. Our results highlight the need for comprehensive and simultaneous tests of competing hypotheses. Implications for the understanding of underlying processes are discussed.

Keywords: self-knowledge, self-enhancement, response surface analysis, information-theoretic approach, intelligence self-views

Is Accurate, Positive, or Inflated Self-Perception Most Advantageous for Psychological Adjustment? A Competitive Test of Key Hypotheses

People differ substantially in how positively or negatively they perceive their own attributes, such as their intellectual ability, interpersonal skills, or physical attractiveness. They also differ in the accuracy with which such self-perceptions mirror reality: Whereas some people maintain unwarranted low self-views, others have realistic self-views, and still others see their attributes as more favorable than they actually are. One of the most heated discussions in the self-concept literature is the debate on the *consequences* of self-perceptions: For example, are people mentally healthy, prestigious, and popular if they see themselves positively? Or should their self-view rather be in close touch with reality to achieve such outcomes?

Clinical and social personality psychologists have often argued that realistic self-perception is a prerequisite for adaptive functioning (Allport, 1943; Jahoda, 1958; Rogers, 1951; Maslow, 1950; Vaillant, 1977). This view was challenged in a seminal article by Taylor and Brown (1988) who hypothesized that holding unrealistically positive self-views should foster a healthy and well-adjusted mind. This hypothesis provoked a heated debate with some researchers defending the view that positive or even positively biased self-perception is adaptive (e.g., Marshall & Brown, 2007; Taylor & Brown, 1994), whereas others argued that it is maladaptive (e.g., Colvin & Block, 1994; Colvin, Block, & Funder, 1995). Still others opined a mixture of these positions, arguing that self-views should not be accurate but moderately inflated to be most adaptive (Baumeister, 1989).

Each position has received preliminary empirical support, and thus the pattern of results is somewhat contradictory. As we argue in the following, this situation arose in part from the fact that the statistical approaches used in the literature were often not ideally suited for testing the respective hypothesis. Apart from this shortcoming, no investigation has thus far

tested all prominent hypotheses simultaneously, which is, however, the only way to directly compare their empirical support.

In the current research, we aimed at solving these issues. In the following, we will first introduce our notation for the psychological constructs in our focus and systematically spell out six empirical hypotheses that have emerged from the debate. We then combine methods of *Response Surface Analysis* (RSA; Edwards, 2002) with an *information-theoretic* (IT) approach for model comparison (e.g., Akaike, 1973; Burnham & Anderson, 2002) to simultaneously compare empirical evidence for these hypotheses, using data from five large studies, and focusing on the domain of intellectual ability.

Reality, Self-Perceptions, and their Discrepancy

Within the debate on the (mal)adaptive effects of self-perceptions, no consensus has yet been established on the conceptualizations of the constructs that have been suggested to either foster or harm psychological adjustment (see also Colvin & Griffo, 2008). We will therefore now carve out the conceptualizations that we applied in the present research and call for a clear differentiation of these constructs when discussing their potential effects.

Definitions of the Relevant Constructs

We will use the expression *reality* to refer to people's actual value on a characteristic of interest (e.g., *real intellectual ability*). In empirical studies, reality can of course be measured only approximately by using corresponding instruments (e.g., intelligence tests). We use the term *positivity of self-view* (PSV) to refer to the positivity of a person's self-perception with regard to an attribute that is consensually evaluated as favorable; for example, PSV with regard to intelligence reflects how smart a person thinks he or she is.

When it comes to comparing self-perceptions to reality, we define *self-enhancement* (SE) as the directed *discrepancy* between a person's self-view and reality with regard to a specific characteristic of interest (e.g., intelligence). This definition is one of the most commonly applied conceptualizations of SE and is, for example, reflected in the general use

of discrepancy measures (e.g., algebraic differences or residual scores) to assess individuals' SE (e.g., see Anderson, Brion, Moore, & Kennedy, 2012; Chung, Schriber, & Robins, 2016; Colvin et al., 1995; Dufner, Reitz, & Zander, 2015; Gabriel, Critelli, & Ee, 1994; Gramzow, Elliot, Asher, & McGregor, 2003; John & Robins, 1994; Kurman & Sriram, 1997; Noble, Heath, & Toste, 2011; Robins & Beer, 2001; Willard & Gramzow, 2009).

Note that the term “self-enhancement” (or related terms such as “positive illusion”) has sometimes been used to refer to only *positive* discrepancies between self-views and reality, whereas negative discrepancies have been treated under the label “self-effacement.” This is *not* the case in the present research; we refer to SE as a dimensional construct that ranges from strongly *negative* SE values¹ (self-view much lower than real ability) to a value of zero SE (self-view matches real ability) to strongly positive SE values (self-view much higher than real ability). Moreover, the term “self-enhancement” has sometimes been used to refer to the positivity of people's self-perceptions *per se*. Here, we chose the label PSV to refer to the positivity of people's self-perceptions, whereas we use the term SE to explicitly refer to the degree of *discrepancy* between such self-perceptions and reality. From a differential perspective (rather than a within-subject perspective), PSV and SE are *not* equivalent constructs: Simon (who has a high self-view that accurately mirrors his high real ability) can have a higher PSV value than Ann (who has a medium self-view and still lower real ability), while at the same time, Ann can have a higher SE value than Simon.

We say that persons hold an *accurate* self-view when their self-perception matches their real ability, that is, when their SE value is zero. Finally, persons hold *slightly inflated* self-views when they have a specific, positive value of SE.

Potential Processes Associated with Reality, PSV, and their Discrepancy

The introduced constructs must be strictly differentiated when discussing their relevance in explaining individual differences in psychological adjustment (see also Colvin & Block, 1994; Humberg et al., 2018). In practice, this differentiation can be realized using the

visualization in Figure 1. The figure integrates assumptions that have been discussed in the literature, providing a basic framework to outline how intellectual PSV, reality, and their discrepancy manifest in self- or peer-perceived behavioral expressions and might thereby affect psychological adjustment. Self-view ability (i.e., PSV), for example, is manifested in self- or peer-perceived self-presentations (variables V1 and V2 in Figure 1), real ability is manifested in self- or peer-perceived performance outcomes (variables V3 and V4), and the discrepancy (negative, zero, or positive) between self-view and real ability (i.e., SE) is manifested in the discrepancy between the respective manifestations of self-view and reality. This discrepancy can be perceived by the self (“within-self discrepancy”; e.g., the discrepancy between one’s expected vs. self-observed actual performance in a task) or by another person (“within-peer discrepancy”; e.g., the discrepancy between peers’ perceptions of what someone expects from his or her own performance vs. peers’ observations of the person’s actual performance outcome).

The figure additionally depicts a purely intrapersonal process (P0) and social feedback processes that might be relevant in this context. Figure 1 explicitly differentiates processes that can underlie effects of PSV (e.g., P0, P1, or P2) versus effects of the discrepancy of PSV and reality (e.g., of SE) that require the involvement of within-self discrepancy or within-peer discrepancy processes (e.g., P3, P4). Although Figure 1 provides only a rough scheme of these processes, we suggest that most arguments from the debate can be retraced through paths in this model.

The Six Hypotheses: Theoretical Accounts and Empirical Evidence

We now demonstrate that, when strictly differentiating the different possible effects, six empirical hypotheses can be derived from arguments made in the debate on self-perception adaptiveness. Here, we focus mainly on intelligence self-perceptions, but the same sorting of hypotheses can be applied to other content domains.

Beneficial Positivity of Self-View Hypothesis

It has been hypothesized that persons who maintain more favorable self-perceptions (e.g., Simon, with a high self-view) should show more self-confidence, better coping mechanisms, and more persistence in goal pursuit than persons with less favorable self-views (e.g., Ann, with a medium self-view), and should therefore show better intrapersonal adjustment (Aspinwall & Taylor, 1997; Bonanno, Renicke, & Dekel, 2005; Brown & Dutton, 1995; Felson, 1984; Locke, Latham, & Erez, 1988; Taylor & Armor, 1996; Taylor & Brown, 1988). In Figure 1, these mechanisms would imply that P1 describes a positive effect, meaning that when Simon's self-view is higher than Ann's, Simon perceives more favorable manifestations of his self-view than Ann perceives for her self-view, and this leads to Simon showing better intrapersonal adjustment than Ann. It has also been argued that persons who hold more favorable self-views should maintain higher overall positivity toward the self, for example, because people tend to generalize self-related cognitions (process P0 in Figure 1; e.g., Markus, 1977).

Considering social adjustment, it is possible that persons with more favorable self-perceptions display competence cues more prominently (variable V2 in Figure 1) and are thus perceived as more competent or higher in status by their peers (P2 in Figure 1 positive; Anderson et al., 2012; Von Hippel & Trivers, 2011).

A frequently applied specification of this assumption in the intellectual ability domain is that the effect should occur even when real ability is controlled for (e.g., Dufner, Gebauer, Sedikides, & Denissen, 2018; Chamorro-Premuzic, Harlaar, Greven, & Plomin, 2010). This specification was considered necessary because of the consistent findings that intellectual self-perceptions are related to real ability levels (Borkenau & Liebler, 1992, 1993; Mabe & West, 1982) and that intellectual ability is associated with various indicators of psychological adjustment (e.g., Batty, Deary, & Gottfredson, 2007). The *Beneficial PSV Hypothesis* accordingly suggests a positive effect of intellectual PSV on adjustment that goes beyond the

beneficial ability effect: Even for two persons with the same level of real ability, the person with the higher self-view should be better adjusted.

A valid statistical approach to test the Beneficial PSV Hypothesis involves computing a semi-partial correlation that captures the association between self-viewed ability and adjustment while controlling for potential effects of real ability and testing it for positivity (or, equivalently, computing residuals of individuals' self-views with real ability partialled out and testing their correlation with an adjustment variable).² Studies that applied this procedure have shown that, after controlling for real ability, self-viewed ability was positively related to self-esteem and well-being (e.g., Dufner, Reitz, et al., 2015; Gabriel et al., 1994), achievement motivation and effort (e.g., Ackerman, Kanfer, & Goff, 1995; Chung et al., 2016; Felson, 1984; Gramzow, Willard, & Mendes, 2008; Kurman, 2006), peer-perceived competence and influence (e.g., Anderson et al., 2012), and popularity and respect amongst peers (e.g., Dufner et al., 2013).

Detrimental Positivity of Self-View Hypothesis

Another view is that persons who maintain higher self-views (e.g., Simon) engage in more boasting behavior (V2 in Figure 1) than persons with less favorable self-views (e.g., Ann), and therefore are less popular in their peer group (P2 negative; Alicke & Sedikides, 2009; Colvin et al., 1995). We define the corresponding empirical hypothesis, the *Detrimental PSV Hypothesis*, as the assumption that higher self-views should be related to worse adjustment when real ability is controlled for. Concerning the intellectual domain, we know of only one study that found support for this hypothesis. Robins and Beer (2001) found that persons with higher academic self-views decreased more in self-esteem and well-being over time.

Beneficial Self-Enhancement Hypothesis

We define the *Beneficial Self-Enhancement (SE) Hypothesis* as the proposition that persons with higher levels of SE are better adjusted than persons with lower SE levels. That

is, according to the Beneficial SE Hypothesis, Ann (medium self-view of 5, low real ability of 2) should be better adjusted than Simon (high, accurate self-view of 9), who should again be better adjusted than Greg (self-view = 3, real ability = 5) because the discrepancy between Ann's self-viewed and real ability ($5-2=3$) is higher than the discrepancy for Simon ($9-9=0$), and Simon's discrepancy is higher than Greg's ($3-5=-2$).

It is important to note the difference between the Beneficial Self-Enhancement Hypothesis and the Beneficial PSV Hypothesis: The Beneficial PSV Hypothesis posits that adjustment depends on the *level* of people's self-viewed ability alone; for example, it predicts that Simon (high self-view) should be better adjusted than Ann (medium self-view). The Beneficial SE Hypothesis, by contrast, predicts that Ann should be better adjusted than Simon because this hypothesis is based on the assumption that the *discrepancy* between self-viewed and real ability is meaningful for adjustment.

Whereas extensive theory on the Beneficial PSV Hypothesis exists (arguing for the processes P0, P1, or P2 in Figure 1), arguments that can be aligned with the Beneficial SE Hypothesis are scarce. To provide theoretical accounts for this hypothesis, it is necessary to reason why higher discrepancies between self-viewed and real ability should lead to intra- or interpersonal benefits (e.g., through the processes P3 and P4 in Figure 1). The only³ reasoning that we know of that contains such an element of comparison involves the argument that high intellectual SE may increase conflicts between a person and his or her peers, because peers perceive the person's self-presentation to be more positive than is justified by his or her performance (via process P4 in Figure 1). This conflict (which could by itself be seen as a detrimental consequence of SE) could reduce false consensus thinking within the group, increase the defending of ideas, and thus lead to higher group performance (see Polzer, Kramer, & Neale, 1997).

Regarding SE in the intellectual ability domain, researchers have reported that higher SE was related to higher self-esteem (Chung et al., 2016), more emotional equanimity

(Gramzow et al., 2008), less depressive symptomatology (Noble et al., 2011), and higher peer-perceived social status and group influence (Anderson et al., 2012).

Detrimental Self-Enhancement Hypothesis

It has also been suggested that persons with higher levels of SE are more prone to setting unrealistically high goals than persons with lower SE (Colvin et al., 1995). A person's degree of SE should thus be related to his or her experience with discrepancies between situational demands and real performance, and higher discrepancies could undermine personal well-being (P3 in Figure 1 negative; Robins & Beer, 2001). Furthermore, persons with high levels of SE might evoke social problems and conflicts when peers notice a discrepancy between the persons' self-assuredness and their actual performance (P4 in Figure 1 negative; e.g., Anderson, Ames, & Gosling, 2008; John & Robins, 1994; Paulhus, 1998). Accordingly, the *Detrimental SE Hypothesis* states that persons with higher SE should be worse adjusted than persons with lower SE levels. Considering intellectual SE, Polzer et al. (1997) reported that higher SE was related to more perceived conflict in a group situation.

Self-Knowledge Hypothesis

Is it adaptive to know oneself well? It has been argued that persons with *accurate* self-views (Self-Knowledge; SK; e.g., Simon, whose self-view equals his real ability) should be better able to select tasks, find life niches, or make decisions that match their capabilities than persons with less accurate self-views (e.g., Ann, whose self-view is much higher than her real ability; Kate, whose self-view is slightly higher than her real ability; or Greg, whose self-view is lower than his real ability). Consequently, persons with realistic self-views should be more satisfied with the self and life in general (process P3 in Figure 1, an inverted U-shaped association with the highest level of adjustment for $V1 = V3$; e.g., Ryff & Singer, 2006; Wilson & Dunn, 2004) and should maintain better working social relationships (process P4 inverted U-shape, highest adjustment for $V2 = V4$; Higgins, 1996; Leary & Toner, 2012).

Accordingly, the *Self-Knowledge (SK) Hypothesis* states that persons with more accurate self-perceptions (i.e., discrepancy between self-viewed and real ability closer to zero) should be better adjusted than persons with less accurate self-views, no matter whether the respective discrepancies are positive or negative. That is, the SK Hypothesis posits a curvilinear (inverted U-shaped) association between SE and adjustment, with maximal adjustment for an SE value of zero (i.e., accurate self-view). In a first empirical investigations of the consequences of intellectual SK, Kim et al. reported that persons with more realistic assessments of their own performance on an intellectual ability test had higher self-esteem, well-being, and performance (Kim, Chiu, & Zou, 2010; Kim & Chiu, 2011).

Optimal Margin Hypothesis

Finally, and as a compromise between the Beneficial SE and SK Hypotheses, it has been argued that persons who hold slightly inflated self-views (e.g., Kate, whose self-view exceeds her real ability only slightly) might be better adjusted than persons with lower levels of SE (e.g., Greg, whose self-view is lower than his real ability; or Simon, whose self-view is accurate) but that it should be exhausting for persons with higher levels of SE (e.g., Ann) to sustain self-perceptions that deviate greatly from reality, which could promote stress (P3 in Figure 1 describing an inverted U-shaped association with highest adjustment occurring when V1 is slightly higher than V3; Baumeister, 1989; see also McAllister, Baker, Mannes, Stewart, & Sutherland, 2002).

Thus, the *Optimal Margin (OM) Hypothesis* posits the existence of an optimal (positive) value of SE. Persons whose self-view exceeds their real ability by this exact margin are expected to be the best adjusted ones. The OM Hypothesis thus posits a curvilinear (inverted U-shaped) association between SE and adjustment. It differs from the SK Hypothesis in that it predicts maximal adjustment not for an SE value of zero (i.e., for Simon) but for a specific positive value of SE (e.g., for Kate). Empirically, Kim and Chiu (2011) reported that slightly

too favorable self-views concerning verbal abilities were associated with the highest self-esteem and the lowest depression levels.

Compatibility of the Six Hypotheses

When considering these hypotheses with regard to specific self-viewed ability, real ability, and adjustment variables, only some of these hypotheses are compatible to some degree, whereas most of them are contradictory (see Figure 2). Concerning the compatible hypotheses, the Beneficial SE Hypothesis includes a beneficial PSV effect: When considering Kate and Greg who have the same real ability value (e.g., ability = 5), the Beneficial SE Hypothesis posits that the person with the higher self-view (e.g., Kate's self-view = 6) should be better adjusted than the person with the lower self-view (e.g., Greg's self-view = 3) because she has the higher discrepancy between self-view and reality (e.g., $SE_{Kate} = 6 - 5 = 1$, $SE_{Greg} = 3 - 5 = -2$). This would also be in line with the Beneficial PSV Hypothesis. Accordingly, if the Beneficial SE Hypothesis holds, the Beneficial PSV Hypothesis would automatically hold as well. Note that the opposite statement is not true: There can be a beneficial PSV effect (Simon with high, accurate self-view better adjusted than Ann with medium self-view and lower real ability) but no beneficial SE effect (otherwise, Ann should be better adjusted than Simon, as she has a higher degree of SE). For analogous reasons, the Detrimental SE Hypothesis implies the Detrimental PSV Hypothesis (see Figure 2) but not vice versa. Apart from these two exceptions, all other empirical hypotheses contradict one another (see Figure 2).

Empirically Comparing the Multiple Competing Hypotheses

Given that most of the six hypotheses are contradictory, why did they all find preliminary empirical support in the literature, even when the same adjustment domains were considered? One possible cause might be that prior research has almost exclusively chosen a single hypothesis and tested it in isolation with null-hypothesis testing. However, because the

hypotheses make contradictory predictions about closely related psychological phenomena (see Figure 1), they should all be tested in a competitive way and compared in one study.

We posit that special attention should be paid to identifying appropriate statistical representations of the hypotheses. This is especially challenging with regard to the four hypotheses involving the discrepancy between self-viewed and real ability. In the above-mentioned studies, which supported the Beneficial SE, Detrimental SE, SK, or OM Hypothesis, these hypotheses have been tested by computing individual SE scores (e.g., algebraic difference scores or residual scores of the self-view with real ability partialled out) and using them to predict an adjustment indicator in a (linear or quadratic) regression. Extensive literature has indicated that the two-step nature of such approaches makes them biased⁴ toward falsely accepting the hypothesis in question, both when investigating the Beneficial and Detrimental SE Hypotheses (e.g., Asendorpf & Ostendorf, 1998; Griffin, Murray, & Gonzalez, 1999; Humberg et al., 2018; Krueger & Wright, 2011; Zuckerman & Knee, 1996) and when investigating the SK and OM Hypotheses (e.g., Edwards, 1994, 2001).

Here, we used statistical models based on Response Surface Analysis (RSA; e.g., Edwards, 2002). RSA models overcome the limitation of prior two-step approaches, because they avoid the need to compute SE scores⁵ in a separate step (see Edwards, 2002; Humberg et al., 2018; Schönbrodt, 2016a) and provide unbiased tests of the SE, SK, and OM Hypotheses.

Analytical Strategy

To test all competing hypotheses against each other, we followed an *information-theoretic* (IT) approach (Burnham & Anderson, 2002; Garamszegi, 2011; Wagenmakers, 2003; see also Kuperman & Bresnan, 2012). That is, we translated all hypotheses into respective statistical models and compared their support in the data.

Deriving Regression Models Representing the Competing Hypotheses

All of the above-described hypotheses can be represented by specific regression models. These model specifications can be found in Table 1, and visual representations of the models are shown in the upper part of Figure 3.

The *Beneficial PSV Hypothesis* claims a positive association between people's self-view S and their psychological adjustment Z while controlling for real ability R. This hypothesis is represented by two distinct regression models.⁶ The first model reflects a positive effect of self-perception while controlling for real ability, and real ability is constrained to have no effect when S is controlled for (see also Figure 3a):

$$\text{Beneficial PSV Only Model: } Z = b_0 + b_1S + b_2R, \text{ with } b_1 > 0, b_2 = 0. \quad (1)$$

The second model includes positive effects of both self-perceived *and* real ability on adjustment after controlling for one another (see Figure 3b):

$$\text{Beneficial PSV and Ability Model: } Z = b_0 + b_1S + b_2R, \text{ with } b_1 > 0, b_2 > 0. \quad (2)$$

Similarly, the *Detrimental PSV Hypothesis*, positing a negative effect of self-viewed ability on adjustment after controlling for real ability, is represented by the *Detrimental PSV Only Model* and by the *Detrimental PSV and Ability Model* (Figures 3c and 3d):

$$\text{Detrimental PSV Only Model: } Z = b_0 + b_1S + b_2R, \text{ with } b_1 < 0, b_2 = 0. \quad (3)$$

$$\text{Detrimental PSV and Ability Model: } Z = b_0 + b_1S + b_2R, \text{ with } b_1 < 0, b_2 < 0. \quad (4)$$

The *Beneficial SE Hypothesis* claims that individuals' discrepancy⁷ between their self-view S and the criterion R has a positive association with psychological adjustment Z. The corresponding regression model was described in Humberg et al. (2018; see also Griffin et al., 1999; see Figure 3e):

$$\text{Beneficial SE Model}^5: Z = b_0 + b_1S + b_2R, \text{ with } b_1 > 0, b_2 < 0. \quad (5)$$

Because the coefficient b_1 in Equation 5 reflects the association of S and Z when R is held constant, the constraint $b_1 > 0$ ensures that for two persons with the same real ability value R, the person with the higher self-viewed ability value S (thus the person who self-enhances more) is predicted to have a higher psychological adjustment value Z. Analogously,

the constraint $b_2 < 0$ ensures that for two persons with the same self-viewed ability value S , the person with the lower real ability value R (thus the person who self-enhances more) is predicted to have the higher adjustment value Z .

The *Detrimental SE Hypothesis*, positing that higher SE values tend to go along with lower adjustment values, is represented by the *Detrimental SE Model* (see Figure 3f):

$$\text{Detrimental SE Model: } Z = b_0 + b_1S + b_2R, \text{ with } b_1 < 0, b_2 > 0. \quad (6)$$

The regression model for the *SK Hypothesis* was described in Schönbrodt (2016a; see also Edwards, 2002, 2007; see Figure 3g):

$$\begin{aligned} \text{SK Model: } Z &= b_0 + b_1S + b_2R + b_3S^2 + b_4SR + b_5R^2, \\ \text{with } b_1 &= b_2 = 0, b_4 = -2b_3, b_5 = b_3, b_3 < 0. \end{aligned} \quad (7)$$

The constraints on the regression coefficients ensure that the highest outcome is predicted for those persons whose self-viewed ability matches their real ability (i.e., who are located on the blue line in Figure 3g), while the outcome prediction is lower the more a person's self-viewed ability deviates from their real ability in any direction (i.e., the farther his or her predictor combination (S, R) is from the blue line).

The *OM Hypothesis* is reflected in the following regression model (Edwards, 2007; Schönbrodt, 2016a; see Figure 3h):

$$\begin{aligned} \text{OM Model: } Z &= b_0 + b_1S + b_2R + b_3S^2 + b_4SR + b_5R^2, \\ \text{with } b_2 &= -b_1, b_4 = -2b_3, b_5 = b_3, b_3 < 0, C := (b_1 - b_2)/(4b_3) < 0. \end{aligned} \quad (8)$$

Here, the parameter C reflects the assumption that adjustment is maximized for a specific discrepancy between self-viewed ability and real ability (see also Figure 3h). A negative value of C corresponds to a positive optimal amount of SE ($S - R = -C$).

Completing the Initial Hypothesis Set

Up to this point, the set of models to be compared (see Table 1) consists of statistical representations of the six hypotheses that have been discussed in the debate on the adaptiveness of (more or less positive as well as more or less biased) self-perceptions.

However, the IT approach for model comparison presumes that the initial model set takes into account all plausible hypotheses that refer to the same set of variables as the hypotheses already included in the set (e.g., see Burnham & Anderson, 2002; Symonds & Moussalli, 2011). This principle ensures that no plausible alternative explanation of the data is overlooked. Therefore, we extended the model set by including six additional models that refer to the prediction of adjustment from self-viewed ability, real ability, and their interplay. In doing so, we aimed to define a model set that included as many models as necessary (i.e., representing all plausible hypotheses) but also as few as possible⁸ (see also Dochtermann & Jenkins, 2011).

First, PSV might have a curvilinear effect on adjustment, in the sense of a beneficial PSV effect that diminishes or even turns negative at high PSV levels (Pierce & Aguinis, 2013). We included the corresponding *Curvilinear PSV Model* in our model set (see Edwards & Berry, 2010; see Figure 3i):

$$\text{Curvilinear PSV Model } Z = b_0 + b_1S + b_3S^2, \text{ with } b_3 < 0. \quad (9)$$

Second, we included the *Beneficial Ability Only Model*, which represents a beneficial linear effect of real ability on adjustment and no effect of self-perception (see Figure 3j):

$$\text{Beneficial Ability Only Model: } Z = b_0 + b_1S + b_2R, \text{ with } b_1 = 0, b_2 > 0. \quad (10)$$

Adjustment benefits of intellectual ability have consistently been found in prior studies, including personal adjustment (e.g., Batty et al., 2007; Deary, Weiss, & Batty, 2010), and advantages in social contexts (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Third, we included the *Curvilinear Ability Model*, which reflects a beneficial effect of real ability that declines at higher ability levels or even turns negative after some optimal point (e.g., Antonakis, House, & Simonton, 2017; Simonton, 1985; Sternberg, 2003; for model specification, see Edwards & Berry, 2010; see Figure 3k):

$$\text{Curvilinear Ability Model: } Z = b_0 + b_2R + b_5R^2, \text{ with } b_5 < 0. \quad (11)$$

Fourth, we added the *Interaction Model*, which includes a positive interaction effect⁹ between S and R (e.g., see Kim et al., 2010). This model reflects linear effects of self-viewed ability S and real ability R, with the additional property that S is more positively (or less negatively) related to adjustment Z at higher levels of R (Edwards & Berry, 2010; see Figure 31):

$$\text{Interaction Model: } Z = b_0 + b_1S + b_2R + b_4SR, \text{ with } b_4 > 0. \quad (12)$$

Fifth, we also included the null model (intercept only), which represents the possibility that adjustment is unrelated to the predictors:

$$\text{Null model: } Z = b_0. \quad (13)$$

Finally, we included a global model in the initial model set, which is the full second-degree polynomial model in this case (e.g., see Edwards, 2002; Schönbrodt, 2016a):

$$\text{Full model: } Z = b_0 + b_1S + b_2R + b_3S^2 + b_4SR + b_5R^2. \quad (14)$$

We included this model because it served two important methodological functions. First, we tested the full model for significance in a first step of the analysis to reveal whether self-viewed ability, real ability, and their squared and interaction terms explained a meaningful amount of variance in psychological adjustment at all. Only if adjustment was actually associated with the predictors would it be informative to compare different hypotheses on the exact nature of this association (Burnham & Anderson, 2002). Second, the full model reflected all possible combinations of coefficients that were not represented in any model of the model set. Thus, when the data followed an empirical pattern that we had not included in the set, we were able to realize this because we had included the full model in our analyses (Edwards, 2002).

In sum, six prominent hypotheses on the benefits and detriments of (more or less positive as well as more or less biased) self-perceptions evolved from the literature, and we translated these into eight distinct statistical models. We extended this set by including four

additional models that reflected plausible alternative hypotheses plus the null and a global model, leaving us with a set of 14 models to be compared.

Information-Theoretic Strategy for Model Comparison

To simultaneously evaluate each of the 14 models specified in Table 1 and to rank them according to the empirical evidence in their favor, we applied an IT approach that uses the second-order Akaike Information Criterion (AICc; Akaike, 1973; Hurvich & Tsai, 1989; Sugiura, 1978). The AICc provides an estimation of the models' relative performance (models with smaller AICc values are more suitable approximations of the data than models with higher AICc values). We chose the AICc for model evaluation because it has a strong theoretical foundation, allowed us to compare non-nested models, and avoids overfitting models with many parameters (see Burnham & Anderson, 2002).

Furthermore, the AICc values could be transformed into *Akaike weights*, which reflect *model selection uncertainty*: The Akaike weight w_A of a single Model A can be interpreted as the likelihood that Model A is the best model in the set, given the data and the competing candidate models. Thus, the more similar the Akaike weights of several competing models are, the higher the model selection uncertainty, and the less reliably does the available empirical evidence distinguish between the models (Burnham & Anderson, 2002). We took model selection uncertainty into account because it provided additional information beyond the identification of one single best model for the specific data at hand.¹⁰

In sum, the IT approach enabled us to test all competing hypotheses from the literature *against* each other while accounting for the fact that several hypotheses might offer similarly good explanations for the data, moving beyond the selective focus on only one hypothesis in a classical null-hypothesis testing approach (Lukacs et al., 2007).

The Present Study

In the current research, we empirically compared competing hypotheses on the adaptiveness of self-viewed intellectual ability and its deviation from reality. Intellectual

ability has been discussed as a domain in which self-perceptions might be especially influential (e.g., Dufner et al., 2012; Dunning, 2005; Kruger & Dunning, 1999). As criterion measures of real ability, we applied objective IQ tests, which provide intellectual ability measures with high reliability and validity. Following the two-factor theory of intelligence (see Cattell, 1941; Horn, 1965), we considered both crystallized intelligence (i.e., vocabulary knowledge) and fluid intelligence (i.e., reasoning ability). Because the two domains might differ in various aspects (e.g., their relevance, availability, detection, or utilization; Funder, 1995; see, e.g., Borkenau, Mauer, Riemann, Spinath, & Angleitner, 2004), effects of self-perceived ability might depend on the specific ability domain that is considered (Ackerman & Wolman, 2007). Therefore, we addressed the two intelligence domains in separate analyses.

We investigated intra- and interpersonal adjustment indicators that could be divided into six outcome categories.¹¹ For the intrapersonal domain, we considered the categories *global self-evaluation* (e.g., self-esteem, satisfaction with oneself), which refer to individuals' positivity concerning themselves, and *well-being* (e.g., positive affect, life satisfaction). Because these intrapersonal indicators referred to subjective feelings and cognitions, we applied self-report measures for their assessment. Turning to the interpersonal context, we assessed several outcomes that can be divided into the two fundamental interpersonal domains of agency and communion (Bakan, 1966; Hogan, 1982; Wiggins, 1991). Agentic outcomes refer to indicators of social status and aspects that enable a person to "get ahead" (e.g., leadership ability, social influence). Communal outcomes, by contrast, indicate how persons "get along" with their peers and indicate the quality of their interactions and relationships (e.g., likability, trustworthiness). We assessed self- as well as peer-reports of agentic and communal outcomes (see also Church et al., 2006). This left us with the four categories *self-rated agentic outcomes*, *self-rated communal outcomes*, *peer-rated agentic outcomes*, and *peer-rated communal outcomes*. We analyzed all six categories in separate analyses to allow

differentiated result patterns, as effects might depend on the specific adjustment indicator that is considered (Dufner et al., 2018; Kurt & Paulhus, 2008; see also Gramzow, 2011).

Method

Samples

We used data from five studies (see also Table 2).¹² *Sample A* ("Study 2" in Dufner et al., 2012, see also Selfhout, Denissen, Branje, & Meeus, 2009) was assessed at Utrecht University, the Netherlands. The relevant variables were assessed in $N = 188$ psychology students (157 female; $M_{age} = 18.89$, $SD_{age} = 1.67$) using online questionnaires and round-robin ratings in three waves (T1 in the second week of the first semester, T2 four months after T1, T3 eight months after T1). *Sample B* (PILS study; see Geukes, Breil, et al., 2017; see also osf.io/q5zwp) took place at the Johannes Gutenberg University in Mainz, Germany. The variables of interest were assessed in $N = 295$ students (162 female; $M_{age} = 23.8$, $SD_{age} = 3.95$) in online questionnaires and in three laboratory group sessions (spaced exactly 1 week apart) with four to six participants per group. In *Sample C* (Connect study; see Geukes, Breil, et al., 2017; see also osf.io/2pmcr), the relevant variables were assessed in $N = 91$ psychology freshmen (74 female, $M_{age} = 20.6$, $SD_{age} = 3.38$) at the University of Münster, Germany, with five online surveys (Survey 1 at the beginning and follow-up surveys after 2 [S2], 8 [S3], 19 [S4], and 32 [S5] months), using 23 phases of time-based assessments (three diaries per week during the first 3 weeks, one diary per week until the end of the first semester, and two follow-up diaries along with the online surveys S4 and S5, respectively) and in a follow-up laboratory session approximately 1 year after the beginning of the study. *Sample D* ("Study 1" in Dufner et al., 2012) was an online investigation, where $N = 2,047$ German-speaking internet users (1,431 female, $M_{age} = 27.61$, $SD_{age} = 8.78$) completed an online survey and a vocabulary test and invited a friend to provide peer ratings (380 peers provided ratings). *Sample E* (Self-Insight study; Dufner, Arslan, Hagemeyer, Schönbrodt, & Denissen, 2015) was assessed at the Humboldt-Universität zu Berlin, Germany. The relevant variables were

assessed in $N = 202$ (134 female, $M_{age} = 27.41$, $SD_{age} = 2.96$) students in two waves of data collection (approximately 14 months apart) in which they filled out online questionnaires, participated in a laboratory session, provided daily diary assessments for a period of 14 days, and invited at least three informants to provide peer ratings.

Ethical Approval

Samples A and D were assessed during a time (Sample A: 2006-2007; Sample D: 2009) when it was not yet mandatory to obtain ethical permission for nonmedical research. The other samples were approved by the Research Ethics Committees of the respective universities where these studies were conducted (Sample B: PILS study, University of Mainz; Sample C: Connect study, University of Mainz and University of Münster; Sample E: Self-Insight study, Humboldt-Universität zu Berlin).

Measures

An overview of all relevant variables can be found in Table 2. A detailed description of their assessment is provided in OSF Material 2 (osf.io/m6pb2). Indicators of reasoning ability were assessed in three of the five studies (Samples A, B, and C) with the 15-item version (see Denissen, Schönbrodt, van Zalk, Meeus, & van Aken, 2011) of Raven's advanced progressive matrices (Raven, Raven, & Court, 1962). Indicators of vocabulary knowledge were assessed in four studies (Samples B, C, D, and E) with a German test for the assessment of vocabulary knowledge (MWTB [Mehrfachwahl Wortschatz Test], Version B; Lehrl, 2005). Self-reported reasoning ability and vocabulary knowledge were assessed with questionnaire items¹³ (see OSF Material 2). Self-reported and peer-reported adjustment measurements were used to collect data in the six outcome categories (see Table 2). For all peer-rated variables that were assessed via round-robin ratings, we computed target effects (reflecting how an individual is generally evaluated by others) according to the Social Relations Model (Kenny, 1994) with the R package *TripleR* (Schönbrodt, Back, & Schmukle, 2012). Whenever possible, we used measurements of the respective outcome variables that were assessed later in time than the

self-reported ability measures, and we always used the first assessments of self-rated and objective ability. In cases where the outcome was assessed repeatedly, we averaged each person's scores across the time points (see OSF Material 2 for details). We aggregated all measurements within each outcome category to obtain higher reliability and to ensure comparability across the five studies. Internal consistencies and descriptive statistics of all variables are presented in OSF Material 3.¹⁴

Data Preparation

We removed participants who had missing values on the ability test, self-viewed ability, or on every outcome variable (see data preparation script, available at osf.io/m6pb2). In the online sample (Sample D), we removed 258 participants (11% of the initial sample) who aborted the questionnaire or did not follow instructions¹⁵ and one 12-year old subject (initial *N* was 2,306). No other data were excluded. All variables were z-standardized within samples prior to the analyses.

Analysis

For our main analyses, we considered the two content domains (reasoning ability, vocabulary knowledge) in combination with each of the six outcome aggregates separately, resulting in 12 analyses. We used data from Samples A, B, and C for the analyses concerning the domain of reasoning ability, and we used Samples B, C, D, and E for the analyses involving vocabulary knowledge (see Table 2).

Aiming for reliable results, we integrated data from the different samples. Because we are not aware of any meta-analytical approach that can be used to synthesize Akaike weights but the weights were needed to interpret the model comparisons, we pooled the data from all samples and controlled for sample differences using dummy variables in the regression models (Curran & Hussong, 2009). Note that, in addition to these integrative analyses, we also analyzed the samples separately and found that the final conclusions were fairly consistent across studies, with only minor variations (see OSF Material 6).

Each analysis included (a) a significance test of the full polynomial model with the *lm* function in the R package *stats*, (b) when the full model was significant, the estimation of all models with the *sem* function in *lavaan* (version 0.5.20; Rosseel, 2012), and (c) computation of AICc values and Akaike weights of the models with the R package *AICcmodavg* (Mazerolle, 2016). When the full model was not significant, we did not conduct model comparisons because they are not informative in such cases (e.g., Symonds & Moussalli, 2011). When the estimations of two nested models were redundant (indicated by similar values of the maximized log-likelihood¹⁶), we computed Akaike weights that were based on a reduced model set that excluded the larger of the two redundant models (i.e., the model with more free parameters; for information about which models are nested, see OSF Material 5 at osf.io/m6pb2). The larger model has no support in such a situation because it extends the simpler model by the addition of free parameters that do not improve approximation to the data (see Arnold, 2010; Burnham & Anderson, 2002). We tested for outliers¹⁷ using the full polynomial model and three standard indicators of influence and leverage (i.e., *dfFit*, Cook's distance, and the *hat* value; see Bollen & Jackman, 1985; Cohen, Cohen, West, & Aiken, 2003; Edwards, 2002), but no outliers were identified. We estimated all models in *lavaan*, using ML estimation with robust standard errors. Missing data in the outcome variable was handled with FIML. We used the *RSA* package to plot the estimated regression surfaces (Schönbrodt, 2016b). We provide the data and R code for all analyses in the OSF (osf.io/m6pb2).

Results

As a pre-analysis, we tested whether enough participants had discrepant predictor pairs using the strategy described in Shanock, Baran, Gentry, Pattison, and Heggstad (2010). This was the case, as for both content domains of ability, roughly one third of the participants were considered discrepant with $S < R$, congruent, and discrepant with $S > R$, respectively, according to this criterion.

The essence of all model comparison analyses is summarized in Tables 3 and 4 (see OSF Material 1 at osf.io/m6pb2 for more detailed result tables). The full models' adjusted R^2 values, which were tested in the first step of the analysis, are reported in the respective table notes. Tables 3 and 4 contain the *95% confidence set* of models for each analysis (first column). The confidence set always includes the model with the largest Akaike weight, that is, the model with the highest likelihood of being the best model in the set. The next best models are added to the confidence set until the cumulated weights of all models in the set exceed 95%. Thus, with a likelihood of at least 95%, the best model out of the alternatives is one of the models in the confidence set. All models not included in this set have essentially no empirical support because their likelihood is by definition less than 5%. We therefore restrict interpretation to the models in the confidence set (Burnham & Anderson, 2002).

When interpreting the models in the confidence set, there are some important details to take into account. First, when two or more models are included in the confidence set, their empirical evidence can be compared by means of their Akaike weights w , for example, by considering their evidence ratio w_A/w_B (Model A vs. Model B). Second, when interpreting a specific model in the confidence set, we interpreted only the model-implied predictions that pertain to the range of predictor variable scores that are actually in the data. Third, when the full model was included in the confidence set, we had to integrate it into our interpretation like any other model in the set. In these cases, the effect(s) that the full model described could be revealed by considering its estimated coefficients, using tools from RSA (e.g., see Edwards, 2002; Humberg, Nestler, & Back, 2018).

Fourth, one should base theoretical inference on the whole confidence set of an analysis, rather than on one single model. If the confidence set included two or more models that reflected contradictory hypotheses, this could indicate either that distinct theoretical suggestions provided similarly good explanations for the data (if their Akaike weights were similar) or that one explanation was superior whereas the other one could not be rejected with

certainty (if one of the models had a much higher Akaike weight than the other models). Alternatively, two or more models in the confidence set could also reflect similar effects and differ only in details (e.g., in whether a beneficial PSV effect was linear vs. curvilinear). In this case, model selection uncertainty would refer only to additional information about an effect, whereas evidence would clearly support the key effect represented in all models in the confidence set. The last columns of Tables 3 and 4 include final conclusions about the confidence sets in our analyses after all four discussed issues were taken into account.

Results for the Content Domain Reasoning Ability

For the content domain reasoning ability, the results of the model evaluations can be found in Table 3 (see OSF Material 1 at osf.io/m6pb2 for more detailed result tables). All estimated models included in the confidence sets are depicted in Figure 4.

Intrapersonal adjustment. For the outcome category global self-evaluation, the confidence set consisted of only the Curvilinear PSV Model, as it had a likelihood of over 95% (its Akaike weight was $w = .96$) of offering the best explanation for the data. Here, the Curvilinear PSV Model reflected an overall beneficial but diminishing effect of self-viewed ability, as 97% of the data values of *S* were situated in the “rising” area of the curvilinear self-view effect, and only 3% of the observed self-views were higher than the model-implied inflection point. Thus, the evidence clearly spoke for the Beneficial PSV Hypothesis, and the beneficial PSV effect was stronger for lower PSV values and weaker for higher PSV values (see Figure 4a).

For the outcome category well-being, the confidence set consisted of two models: The Curvilinear PSV Model had a likelihood of 73% of being the best model, whereas the full model had a likelihood of 24%. That is, the Curvilinear PSV Model was estimated to have the highest likelihood of being the best model in the set, and it was three times more likely to be the best model than the full model (evidence ratio $.73/.24 \approx 3$).

Here, the diminishing effect of self-viewed ability described by the Curvilinear PSV Model even turned negative after a specific inflection point (the maximal outcome occurred for $S = 1.29$). The percentage of data points (11%) larger than this optimal S value was small so that the detrimental PSV effect for S values larger than the optimal value should be interpreted with care.¹⁸ This effect would indicate that persons with a specific self-view value (here: quite high) reported higher well-being than persons with lower self-views, but persons with self-views even higher than that specific “optimal” value were again worse adjusted (see Figure 4b). It is important to note that the optimal self-view value did not depend on the persons’ real ability levels (contradicting the SK and OM Hypotheses).

The coefficients of the full model included an interaction effect in addition to a curvilinear PSV effect. This model indicated that the position of the optimal PSV level might differ for different levels of real ability (see also Figure 4c; optimal combinations of self-viewed and real ability lie on the dotted line on the bottom of the cube). Both models in the confidence set thus indicate that persons with higher self-viewed reasoning ability reported higher well-being (at least up to a quite high, optimal level of self-viewed ability), and the association was comparatively weaker on higher self-view levels than on lower levels.

Interpersonal adjustment. For the outcome category self-rated agentic outcomes, there was unequivocal evidence for the Beneficial PSV Hypothesis ($w = 1$): Persons with more favorable views of their own reasoning ability evaluated their agentic attributes higher than persons with lower self-views. For self-rated communal outcomes, the full model was not significant (adjusted $R^2 = 0$, $p = .72$); self-rated ability, real reasoning ability, and their quadratic and interaction terms did not explain a meaningful amount of variance in the outcome.

For peer-rated agentic outcomes, there was strong evidence for beneficial effects of both PSV and real reasoning ability (with $w = .77$). The confidence set also included the full model ($w = .18$). Its coefficients indicated a beneficial effect of PSV and real ability, but the effect

was curvilinear rather than linear (see also Figure 4f), that is, the effect was weaker for higher levels of self-viewed and real ability than for lower levels.

For peer-rated communal outcomes, the Detrimental SE Model ($w = .69$) was about twice as likely as the Beneficial Ability Only Model ($w = .30$) to provide the best explanation for the data. Both models in the confidence set included a positive effect of real ability when self-viewed ability was controlled for (i.e., positive coefficient b_2). The Detrimental SE Model additionally included a negative coefficient b_1 of self-rated ability, and the model thereby reflected not only a positive ability effect but also a detrimental SE effect (see Figure 2, see also Table 1). Thus, both models in the confidence set pointed toward beneficial effects of real reasoning ability, and evidence for the Detrimental SE Model indicated an additional detrimental effect of SE.

Results for the Content Domain Vocabulary Knowledge

For the content domain vocabulary knowledge, the model evaluation results can be found in Table 4, and all estimated models included in the confidence sets are depicted in Figure 5.

Intrapersonal adjustment. For the outcome category global self-evaluation, three models were included in the confidence set. The full model ($w = .58$) reflected a strong beneficial PSV effect combined with a weak beneficial effect of SE, and the PSV effect was slightly stronger at lower levels of self-viewed ability than at higher levels (Figure 5a). The Curvilinear PSV Model ($w = .34$) described a beneficial but diminishing effect of self-viewed ability (100% of the S values in the data were smaller than the “optimal” S value). Finally, the Beneficial SE Model ($w = .07$) reflected a weak beneficial SE effect in addition to a strong beneficial PSV effect. Thus, overall, we found strong evidence for the Beneficial PSV Hypothesis and tentative evidence for an additional beneficial SE effect.

For the outcome category well-being, the pattern was similar: The Curvilinear PSV Model had the highest likelihood ($w = .76$) and described a beneficial but diminishing effect

of self-viewed ability. The full model ($w = .23$) was about one third as likely as the Curvilinear PSV Model, and reflected a beneficial but diminishing effect of SE combined with a stronger beneficial PSV effect (see Figure 5e). Thus, there was strong evidence for the Beneficial PSV Hypothesis, and some evidence also for the Beneficial SE Hypothesis.

Interpersonal adjustment. For self-rated agentic outcomes, we found clear support for the Beneficial SE Hypothesis with no uncertainty in model selection ($w = 1$). For self-rated communal outcomes, evidence also pointed toward the Beneficial SE Hypothesis ($w = .64$), and the full model ($w = .36$) provided strong evidence that the shape of this effect was curvilinear (Figure 5h). Here, the shape of the curvilinear effect differed from the effects of the other outcomes: The beneficial SE effect was weaker for lower levels of SE and stronger for higher levels of SE.

Peer-rated agentic outcomes were positively associated with self-viewed ability; the only uncertainty referred to whether the beneficial PSV effect diminished at higher PSV levels (Curvilinear PSV Model with 100% of the self-perception data in the “rising” area of the effect, $w = .59$) or whether it was equally strong at all PSV levels (Beneficial PSV Only Model, $w = .41$). For peer-rated communal outcomes, the full model was not significant (adjusted $R^2 = .004$, $p = .18$), indicating that self-rated vocabulary knowledge, real vocabulary knowledge, and their quadratic and interaction terms did not explain a meaningful amount of variance in the outcome.

Discussion

In the present research, we explicitly spelled out and tested competing hypotheses concerning the adaptiveness of intellectual self-perceptions and their deviations from reality. To this aim, we provided a methodological framework to empirically compare these hypotheses. We investigated two ability domains (reasoning ability and vocabulary knowledge) and six intra- and interpersonal adjustment indicators, and we analyzed data from five different multi-methodological samples (total $N = 2,823$). For each combination of ability

domain and outcome category, we compared the empirical evidence for the competing hypotheses from the literature. Results spoke against benefits of accurate or of slightly inflated self-views (SK Hypothesis and OM Hypothesis). Instead, we found strong and consistent evidence for beneficial effects of self-viewed ability (Beneficial PSV Hypothesis). In some specific analyses, results indicated effects of SE (Beneficial SE Hypothesis and Detrimental SE Hypothesis).

Are Persons with More Accurate Intelligence Self-Perceptions Better Adjusted?

Altogether, the SK Hypothesis was unable to compete against the other hypotheses for any of the regarded outcome categories: Each analysis suggested that it was unlikely that SK effects underlie the empirical data.¹⁹ That is, persons with accurate knowledge of their intelligence did not seem to be better adjusted than persons with less accurate self-perceptions (Allport, 1937; Higgins, 1996; Jahoda, 1958). Similarly, our findings did not support the conjecture that persons who see their intelligence slightly more positively than it really is are better adjusted (OM Hypothesis; Baumeister, 1989).

Are Persons with More Favorable Intelligence Self-Perceptions Better Adjusted?

For many adjustment indicators, the results suggest that persons who maintained more favorable self-views of their intelligence were also better adjusted. Specifically, intrapersonal and self-perceived interpersonal adjustment were best explained by hypotheses that included beneficial effects of self-viewed ability while controlling for real ability (see also Tables 3 and 4 and Figure 2). These findings are in line with recent meta-analytic evidence that indicated that favorable self-views predicted intrapersonal adjustment (Dufner et al., 2018) and they support the notion that higher self-perceptions are linked to higher subjective well-being and adjustment (Taylor & Brown, 1988; see also Sedikides & Alicke, 2012). Potential explanations of these effects can be tracked down in Figure 1: They include people's tendency to generalize the positivity of self-perceptions across different attributes (i.e., intelligence and adjustment; Markus, 1977; Wojcik & Ditto, 2014; process P0 in Figure 1), and the idea that

favorable self-views might provide people with a sense of efficacy and motivation, which enables them to tackle difficult tasks and to cope with life's challenges (Bonanno et al., 2005; Taylor & Brown, 1988; P1). Moreover, peers might perceive someone who maintains a favorable self-view as self-confident or as committed to a difficult task, and when they report these perceptions back to the person, it might increase his or her well-being or the feeling of being socially accepted (P5).

In terms of peers' perceptions of interpersonal adjustment, by contrast, the effects of self-viewed ability were content-specific. For peer-ratings in terms of agency, we found beneficial effects of self-viewed ability (see also Anderson et al., 2012), which might be explained by behavioral expression and social perception processes. Peers tend to rely on their perception of others' expressions of self-views when they judged others' agentic attributes (e.g., Anderson et al., 2012). In other words, people who maintain a favorable image of themselves in a given domain might broadcast this image to others, who then subsequently judge them positively in this or related domains (Von Hippel & Trivers, 2011; process P2 in Figure 1). For peer-perceived communal outcomes, by contrast, more favorable self-perceptions rather seemed to be detrimental (see also Colvin et al., 1995). This differentiated pattern for peer-perceived agentic versus communal outcomes also matches recent meta-analytic evidence (Dufner et al., 2018).

One promising approach for explaining these differentiated effects is via differences in the expression or utilization of observable cues (see the lens model, Back & Nestler, 2016; Brunswik, 1956; Nestler & Back, 2013; see also the Realistic Accuracy Model, Funder, 1995). For example, peers might value confident self-presentations when judging someone's agentic attributes (e.g., leadership ability), whereas they might prefer modest behavior over self-assuredness when judging a person's friendship potential or trustworthiness (Dufner, Leising, & Gebauer, 2016).

Are Persons with Higher Intellectual Self-Enhancement Better Adjusted?

For the domain of reasoning ability, there was no evidence for beneficial SE effects for any of the adjustment indicators. For peer-perceived communal outcomes, higher levels of reasoning ability SE even had a detrimental effect. Potentially, when peers perceive a person's expression of his or her self-viewed ability (V2 in Figure 1) and real ability (V4), they compare these two perceptions ("within-peer discrepancy") and (dis)like or (dis)trust the person on the basis of this comparison. For example, a person with a high discrepancy might be perceived as having an inflated ego, and is consequently despised (see also, e.g., Paulhus, 1998).

SE concerning vocabulary knowledge, by contrast, was positively related to self-perceived adjustment. For the two intrapersonal adjustment indicators (global self-evaluation, well-being), these effects were only weak (and model selection uncertainty was high), indicating that people's levels of SE had little, if any, relevance for their intrapersonal adjustment. For self-perceived interpersonal adjustment (agentic and communal outcomes), by contrast, evidence strongly supported the notion that SE was beneficial beyond effects of self-viewed ability. In other words, not only did those persons who held more favorable self-views of their vocabulary knowledge see themselves as better interpersonally adjusted, but out of two persons with equal self-views, the person who had a higher (i.e., more positive or less negative) discrepancy between self-viewed and real vocabulary knowledge reported higher adjustment levels.

This is surprising because it does not follow from any of the prior theoretical accounts that we are aware of (see also Footnote 3). Also, there is no straightforward explanation for these findings (see also Figure 1). Explanations of SE effects would need to include within-self discrepancy or within-peer discrepancy processes; only then can they explain why persons with a higher *discrepancy* of self-viewed and real ability should be better adjusted (and not "only" persons with higher self-views). However, we consider it unlikely that within-self discrepancies are involved in beneficial SE effects on intrapersonal adjustment, because it

does not seem plausible that social or performance feedback that does not live up to a person's own expectations increases self-evaluations, personal well-being, or self-perceptions of agentic and communal attributes. A more likely alternative explanation is that the beneficial SE effects arose from within-peer discrepancy and related feedback processes (see also Polzer et al., 1997), for example, when peers provide different kinds of feedback, depending on whether they perceive someone as having a low versus high degree of SE. Therefore, we believe that future research on SE effects needs to better understand the processes underlying peer perceptions of others' SE (e.g., How accurately do peers perceive the discrepancy between persons' self-viewed and real ability? see also Dufner et al., 2013), the role of peer-perceived SE as a cue for interpersonal judgments, and peers' decisions about whether and how they provide feedback about the discrepancy they perceive. In sum, intellectual SE seemed to be beneficial only when it referred to one's vocabulary knowledge and only relevant for self-perceived adjustment.

Advantages of the IT Approach as Compared to Null-Hypothesis Testing

To test the competing hypotheses from the literature, we combined IT model comparison with methods of RSA. This approach has a number of advantages above classical null-hypothesis testing (NHT) approaches, so that we could gain more robust and fine-grained insights than would be possible with NHT (see also Burnham, Anderson, & Huyvaert, 2011; Lukacs et al., 2007; see also Meehl, 1967; Rodgers, 2010).

First, the IT approach allowed us to identify hypotheses that were clearly inferior to their opponents (e.g., the SK Hypothesis). A NHT approach, by contrast, accepts a hypothesis as soon as it explains the data better than the uninformative null hypothesis ("significant effect"), *even if* clearly superior hypotheses exist. The IT approach prevents researchers from this pitfall (see also Burnham & Anderson, 2002; Lukacs et al., 2007).

Second, the IT approach can help to increase theoretical precision, because it requires that the hypotheses in question are specified precisely enough to be translated into

mathematical models (Anderson & Burnham, 2002). In the present study, we defined RSA models that reflect the competing hypotheses as they were described in the literature. The resulting model set described clearly separable and testable hypotheses on the (mal)adaptive effects of self-perception. We believe that the increase in theoretical precision that is needed to identify such mathematically precise models improves theory development (see also Edwards & Berry, 2010; Rodgers, 2010).

Third, by interpreting all models in the confidence set instead of just a single “significant” hypothesis, we could derive alternative working hypotheses. For many analyses, the second best model in the confidence set indicated a curvilinear (but monotone) rather than linear main effect. For example, the beneficial effect of reasoning ability on peer-perceived agentic outcomes diminished²⁰ at high ability levels, which could indicate that persons who are extremely intelligent are prone to explaining content in ways that most of their peers cannot understand (Antonakis et al., 2017; Simonton, 1985). By including respective curvilinear hypotheses into the initial hypothesis set, future investigations could clarify and explain the exact functional form of the effects, thereby further increasing theoretical precision (Edwards & Berry, 2010; Guion, 1998; Pierce & Aguinis, 2013).

Fourth, by taking model selection uncertainty into account, application of the IT approach can increase the replicability of a study. When model selection uncertainty is high, the approach can prevent a researcher from picking an (in this situation) arbitrary “best” model that would have a relatively low likelihood of being selected again in a future study (“not replicated”). Instead, the likelihood that this model versus other models would turn out to be the best in other samples is transparent so that we know what to expect in replication attempts. Moreover, the strategy of considering multiple hypotheses instead of a single one can reduce “parental affection” for the respective hypothesis (Chamberlin, 1890) and can lead to faster scientific progress (Platt, 1964).

Methodological Limitations and Considerations

Our results can be evaluated in the light of several methodological challenges. None of these challenges is unique to the present research objective or to the applied analytical approach, but they warrant attention when evaluating our research or when conducting similar studies.

Shared method variance. The adjustment outcomes that referred to subjective emotions and cognitions (i.e., the categories global self-evaluation and well-being) and the indicators of self-perceived agentic and communal outcomes were assessed via self-report measures to allow a valid reflection of the intrapersonal constructs of interest. Because self-viewed ability was naturally also assessed via self-reports, the detected beneficial PSV effects might partly result from shared method variance and their magnitude might thus be inflated. One challenge for future research will be to assess data that allows a quantification of shared method bias (e.g., see Podsakoff, MacKenzie, Lee, & Podsakoff, 2012).

Measurement error. The statistical models that we used to represent the hypotheses require predictor assessments that are reliable enough to detect second-order effects (i.e., quadratic or interaction effects; e.g., see Lubinski & Humphries, 1990). According to results of respective simulation studies (e.g., MacCallum & Mar, 1995), reliability of most of our measures was acceptable, and the fact that our analyses revealed quadratic effects in several analyses supports this notion. However, research on information-theoretic model comparison has not yet explored how strongly reliability issues influence the results. Therefore, future research should take further efforts to reduce or deal with measurement error, for example, by application of longer tests to measure self-viewed and objective ability, or by integrating the here applied approach with latent modeling strategies (Bollen, 1989).

Analytical Decisions. We made several analytical decisions that should be carefully evaluated (and adjusted if needed) when adopting our analytical approach. First, we standardized the self-viewed ability and objective ability measures to obtain commensurable scales so that a comparison of these two variables was theoretically meaningful (enhancement

of one's rank-order position).²¹ Second, we applied a rather liberal outlier treatment (i.e., removing only few, in our case even zero, data points; see Footnote 17; Edwards, 2002; see OSF Material 10 at osf.io/m6pb2 to see that results with a more conservative treatment were fairly similar). Third, besides the AICc, other methods exist that can be used to empirically compare competing models (e.g., the BIC, Schwarz, 1978, or Bayes factors, Dienes, 2016). The choice for an appropriate method must equally depend on philosophical, theoretical, and statistical considerations (see Burnham & Anderson, 2004; Wagenmakers & Farrell, 2004; Ward, 2008).

Future Research Directions

Future research should aim at further increasing the generalizability of the present findings and at better understanding the underlying intra- and interindividual processes.

Test generalizability. The present results for the meta-analytically integrated samples were fairly consistent across studies, with only minor variations (see OSF Material 6 at osf.io/m6pb2). Future research could tackle the broader generalizability of our results by applying systematic variations, which could regard sample characteristics (e.g., age groups, situational characteristics, stage or type of relationship to peers who provide adjustment ratings; Paulhus, 1998; see also Carlson, 2016; Leckelt, Küfner, Nestler, & Back, 2015), content domains of self-perceptions (e.g., agentic vs. communal traits, see also Abele et al., 2016; Paulhus & Trapnell, 2008; see public goods games as a potential reality criterion for communal traits, Thielmann, Zimmermann, Leising, & Hilbig, 2017), or the considered adjustment indicators and their measurement perspectives (e.g., mental health ratings provided by acquaintances or by trained observers; Kwan, John, Robins, & Kuang, 2008; physiological and biological health markers, Gramzow et al., 2008).

Investigate specific behavioral and perceptual mechanisms. Future research might also zoom into the processes that are potentially involved in the effects (also see Figure 1), shedding light on the relevant self-related consistency processes (e.g., Heider, 1958),

interpersonal perception processes (e.g., Back et al., 2011; Back, Schmukle, & Egloff, 2011), and feedback processes (e.g., Back & Vazire, 2012). The role of these mechanisms can be approached by increasingly fine-grained assessments, targeting behavioral cues of self-viewed and of real ability, self- and peer-perceptions of these cues, and within-self and within-peer discrepancy processes (e.g., accuracy in perceiving one's own or others' discrepancy).

Analyze longitudinal associations. Beyond considering effects of trait-wise PSV, ability, and SE, one could also transfer the present research objective to a longitudinal framework. One can, for example, consider *development* in psychological adjustment as the outcome of interest (see also Dufner et al., 2012; Kurman, 2006; Robins & Beer, 2001), consider the predictor variables (e.g., PSV, ability, or SE) as state- instead of trait-wise qualities, or even consider variability in these states as a potential predictor of (mal)adjustment (see also Geukes, Nestler, et al., 2017).

Conclusions

In the present article, we theoretically disentangled all central hypotheses on the adaptiveness of self-perceptions, highlighted the need for a simultaneous empirical evaluation of these hypotheses, presented a methodological framework to this aim, and employed it to five substantive datasets. With some exceptions, the rule “the higher self-perceived intelligence, the better adjusted” seemed to hold for most outcomes we considered. By contrast, we found that individual differences in neither the accuracy of self-perceptions nor an optimal margin of self-viewed versus real ability predicted intra- or interpersonal adjustment. Similarly, intellectual self-enhancement was largely found to be unrelated to the considered adjustment indicators, with two exceptions (i.e., SE concerning reasoning ability seemed detrimental for peer-perceived communal attributes; SE concerning vocabulary knowledge seemed beneficial for some self-perceived adjustment indicators). We hope that future research will make use of the approach outlined here to replicate and extend our results, thereby shedding more light on the intra- and interpersonal consequences of self-perceptions.

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Footnotes

¹Note that, equivalently, we could of course use the term "self-effacement" to refer to the lower pole of the construct, but we will refrain from doing so to avoid confusion with the mentioned alternative terminology.

²Note that the semi-partial correlation between self-views and adjustment while controlling for the correlation of real ability and adjustment, by definition, equals the correlation of the residuals in the regression predicting self-perceptions from real ability with the adjustment variable (see also Krueger & Wright, 2011). Thus, both procedures test for effects of self-viewed ability on psychological adjustment while controlling for potential effects of real ability (i.e., the Beneficial PSV Hypothesis).

³A reasoning which was sometimes suggested to support the Beneficial SE Hypothesis is that people who see themselves more positively than is justified by reality might thereby protect themselves from negative consequences, and should therefore be better adjusted than would be the case if they for example had more accurate insight into their real ability. Similarly, it was argued that persons with high levels of SE set themselves higher goals and therefore experience more success than would be the case if their self-view was accurate. These theoretical rationales take a purely within-subject perspective and not a differential between-subject perspective which would be required for the Beneficial SE Hypothesis: When we suggest that Ann (e.g., self-view = 5, real ability = 2) should be better adjusted than her hypothetical alter ego with an accurate self-perception, this would not explain why she should be better adjusted than other persons who have lower SE (e.g., Ben, with self-view = 5, real ability = 5).

⁴In a nutshell, the problem with the two-step approach lies in the fact that in the first step of analysis, information about the levels of self-views and real ability is lost by reducing these two variables to a single SE variable. For example, when Kate and Tom have the same algebraic difference score of 1, they could have the same values of self-viewed and real

ability (e.g., self-view = 6, real ability = 5) or they could have very different values (e.g., self-view_{Kate} = 6, reality_{Kate} = 5; self-view_{Tom} = 3, reality_{Tom} = 2). However, this level information is crucial in the second step because, for example, it is needed to differentiate SE effects from simple main effects of PSV.

⁵In the present research, we used statistical models that are based on a definition of SE as the algebraic difference of self-view S and real ability R (i.e., $SE = S - R$). Note that various alternative difference score operationalizations of SE have been suggested, for example, residual scores (John & Robins, 1994), the Kwan index (Kwan, John, Kenny, Bond, & Robins, 2004), or a residualized version of the Kwan index (Leising, Locke, Kurzius, & Zimmermann, 2016). When effects of such a SE “variable” are of interest, the two-step approach should be avoided for any of these scores because they all include information loss when two (or more) variables are reduced to a one-dimensional SE score. If one aims to conduct IT model comparisons by using SE operationalizations that differ from the algebraic difference, one would need to adapt the Beneficial SE, the Detrimental SE, the SK, and the OM Models (see also Humberg et al., 2018).

⁶A model that directly reflects the verbal Beneficial PSV Hypothesis is the regression model $Z = b_0 + b_1S + b_2R$ where $b_1 > 0$. However, this model contains the Beneficial SE Model (introduced below) as a special case: The Beneficial SE Model includes the additional constraint $b_2 < 0$ on the coefficient of R . In our analyses, we needed to be able to differentiate between whether adjustment was related to SE or “only” to self-perceptions but not to the discrepancy between S and R . The former assumption is represented by the Beneficial SE Model, whereas the latter assumption is represented by two models that are in line with the Beneficial PSV Hypothesis but not with the Beneficial SE Hypothesis: the Beneficial PSV Only Model and the Beneficial PSV and Ability Model.

⁷Note that the Beneficial SE Model and the Detrimental SE Model defined here allow main effects of S and R in addition to an effect of the S - R discrepancy. This implies that the

model can predict different adjustment values for two persons who have the same discrepancy between S and R if they differ in their common levels of S and R. The model specified here therefore more concretely describes the hypothesis “For two persons with the same levels of S or of R, adjustment is higher for the person with the higher discrepancy between S and R.”

⁸Note that, because we are simultaneously comparing all models in the model set with an IT approach, additional models can be added to the set at rather low costs in comparison with classical null-hypothesis testing. However, it is still recommended that researchers include only (and exactly) the models that represent theoretically defensible alternative hypotheses. If, by contrast, we included models that go beyond those with a priori justification, the nature of the analysis would shift from a confirmatory to an exploratory mode, which would make it impossible to generalize findings beyond the present data set (e.g., Doctermann & Jenkins, 2011).

⁹Note that the Interaction Model has sometimes been falsely used to represent the Beneficial SE Hypothesis or the SK Hypothesis (see also Asendorpf & Ostendorf, 1998; Edwards, 2001). To see why this approach is not conceptually valid, note the crucial differences between the three hypotheses (consider also the respective graphical representations of the three regression models, Figure 3): An interaction effect reflects a situation in which the association between self-viewed ability and adjustment *differs* for different levels of real ability (Figure 3f). The Beneficial SE Hypothesis, by contrast, states that persons with higher *discrepancies* between self-report and criterion should tend to have higher adjustment values (Figure 3e), and the SK Hypothesis posits that adjustment should be highest for values of self-view and criterion that agree (Figure 3g). For a comprehensive technical explanation of this fallacy, see, for example, Edwards (2001).

¹⁰Note that an alternative information criterion that can be used to approach this aim is the Bayesian Information Criterion (BIC; Schwarz, 1978). We chose the AICc above the BIC due to its sound theoretical foundation in Kullback-Leibler information theory (Akaike,

1973). However, based on a reviewer's question, we also repeated our analyses using BIC, which provided essentially the same conclusions as model comparison with AICc (see OSF Material 8 at osf.io/m6pb2). Moreover, a further approach that combines a null-hypothesis testing framework with AIC model evaluation is to compute confidence intervals around the models' AIC values to test whether one model fits significantly better than the other (Merkle, You, & Preacher, 2016; but see Burnham, Anderson, & Huyvaert, 2011, for a critical view on such approaches). Again, using AIC confidence intervals in our data led to the same conclusions as we present here (see OSF Material 9 at osf.io/m6pb2).

¹¹Note that we initially considered an additional outcome category that included achievement variables in combination with both ability domains (reasoning ability and vocabulary knowledge). Because the full model was not significant for either analysis, no model comparisons could be conducted. Details on these analyses can be found in OSF Material 4 (osf.io/m6pb2). The respective data and the significance tests of the respective full models are included in the data and R code files downloadable at osf.io/m6pb2.

¹²Two of the studies (Samples A and D) were already used in two articles that tested the Beneficial PSV Hypothesis (Dufner et al., 2012; Dufner et al., 2013), and selective variables from three Samples (A, B, and C) were used in an illustrative analysis in a paper that introduced the Beneficial and Detrimental SE Models (Humberg et al., 2018). These analyses applied classical null-hypothesis testing to test the respective hypotheses. In the present analyses, all competing hypotheses from the literature (including the SE hypotheses) were tested against each other, thereby drawing novel information from these data.

¹³Note that we used self-rating and objective ability measures that reflect a trait-wise (rather than state-wise) understanding of the constructs in the focus: SE, for example, refers to the general tendency of perceiving one's intelligence as higher or lower (or accurate) than it really is, rather than to a specific test situation or time point.

¹⁴Note that the reliability of the vocabulary knowledge measure in Sample C was low ($\alpha = .19$; see Table 1 in OSF Material 3 at osf.io/m6pb2), but a sensitivity analysis showed that this had no effect on the results.

¹⁵In Sample D, we identified participants who aborted the questionnaire or did not follow instructions by applying the following criteria: We removed subjects who (a) did not finish the questionnaire, (b) finished the questionnaire faster than a student assistant could finish it when answering as quickly as possible, (c) stated that they used external resources on the vocabulary test, (d) stated that another person helped them on the vocabulary test, or (e) stated that they did not take the vocabulary test seriously.

¹⁶As far as we know, the literature does not provide a recommendation as to when the maximized log-likelihood (LL) of two models can be considered "similar enough" to consider the models redundant. We considered the LL of two models to be essentially the same when their LL difference was smaller than 1. We decided to use this rule on the basis of the following rationale: An LL difference of 1 between two models translates into an $AICc$ difference of 2 when the number of free parameters is held constant (as $AICc = -2LL + 2K +$ correction term depending on n and K , where K = number of free parameters, n = sample size), and the literature consistently recommends that two models with an $AICc$ difference of 2 be considered to offer equally good explanations for the data (e.g., see Symonds & Moussalli, 2011). We cross-validated this criterion by inspecting the estimates of the coefficients of the models that would be removed by this rule.

¹⁷More specifically, we considered a data point as an outlier when it satisfied all of the following three conditions (see also the R code for our analyses, which we provide at osf.io/m6pb2):

$$(a) |dfFit| > 3 \sqrt{\frac{k}{n - k}}$$

(b) $D > 50\text{th percentile of } F(k, n - k)$

and $\hat{c} > \frac{3k}{n}$

Here, $dfFit$ and D (Cook's distance) are global indicators of influence which measure the effect of deleting a given observation, the $\hat{c}$ value is a measure of leverage, k denotes the number of estimated parameters in the model and n is the sample size (e.g., see Cohen et al., 2003).

¹⁸Also note that when we repeated our analyses applying a more conservative outlier treatment (due to a reviewer's question), this was the only analysis in which results slightly changed (see OSF Material 10 at osf.io/m6pb2): There was no longer evidence for a detrimental PSV effect for large S values, but the beneficial PSV effect was monotonous for the whole range of the self-view variable. This observation further emphasizes that the reversing effect should not be over-interpreted.

¹⁹Note that the fact that we did not find evidence for the SK (or the OM) Hypothesis cannot be explained by model complexity: The SK Model has the same number of free parameters as the Beneficial PSV Only Model (see Table 1), and the latter model was supported in many of the analyses. A similar observation is true for the OM Model, which has the same number of parameters as the Curvilinear PSV Model. Moreover, although squared and interaction effects as involved in the SK and OM Model are generally harder to detect than linear effects, this issue did not seem to be a problem in our analysis, given that we found essential evidence for curvilinear PSV effects.

Also note that when conducting the analyses for all samples separately, tentative evidence for curvilinear SE effects as formulated in the SK and OM Hypothesis emerged in two analyses for Sample C (see OSF Material 6 at osf.io/m6pb2). Because Sample C was the smallest sample, its characteristics did not systematically differ from the other involved samples, and the other samples consistently indicated beneficial PSV effects but no curvilinear SE effects, these specific findings for one sample should, however, not be over-interpreted.

²⁰Note that the diminishing nature of the associations cannot be explained by ceiling effects, as all variables' distributions had a skewness between -2 and +2 (see OSF Material 3 at osf.io/m6pb2), so their distributions were sufficiently symmetric.

²¹To reveal potential influences of z-standardization, we inspected the full models of all analyses and found that only three out of ten analyses could have, in principle, shown slightly different effects when transforming the predictors (see OSF Material 7 at osf.io/m6pb2). For these analyses (first three rows in Table 3), it will be especially interesting to compare our results to similar investigations that apply directly commensurable predictor scales instead of z-standardization.

Table 1. *Initial Set of Hypotheses and Respective Statistical Models*

Hypotheses from the debate on the adaptiveness of (biased) self-perceptions		Regression models	Figure
Beneficial PSV Hypothesis: “For two persons with the same value of real ability R, adjustment is higher for the person with the higher self-view S.”	Beneficial PSV Only Model	$Z = b_0 + b_1S + b_2R$ with $b_1 > 0, b_2 = 0$	3a
	Beneficial PSV and Ability Model	$Z = b_0 + b_1S + b_2R$ with $b_1 > 0, b_2 > 0$	3b
Detrimental PSV Hypothesis: “For two persons with the same value of real ability R, adjustment is <i>lower</i> for the person with the higher self-view S.”	Detrimental PSV Only Model	$Z = b_0 + b_1S + b_2R$ with $b_1 < 0, b_2 = 0$	3c
	Detrimental PSV and Ability Model	$Z = b_0 + b_1S + b_2R$ with $b_1 < 0, b_2 < 0$	3d
Beneficial SE Hypothesis: “The higher the S-R discrepancy between self-viewed and real ability, the higher is adjustment.” ⁴	Beneficial SE Model	$Z = b_0 + b_1S + b_2R$ with $b_1 > 0, b_2 < 0$	3e
Detrimental SE Hypothesis: “The higher the S-R discrepancy between self-viewed and real ability, the lower is adjustment.” ⁴	Detrimental SE Model	$Z = b_0 + b_1S + b_2R$ with $b_1 < 0, b_2 > 0$	3f
Self-Knowledge Hypothesis: “For two persons, adjustment is higher for the person whose discrepancy between S and R is closer to zero.”	Self-Knowledge Model	$Z = b_0 + b_1S + b_2R + b_3S^2 + b_4SR + b_5R^2$ with $b_1 = b_2 = 0, b_4 = -2b_3, b_5 = b_3, b_3 < 0$	3g
Optimal Margin Hypothesis: “For two persons, adjustment is higher for the person whose discrepancy between S and R is closer to a positive constant C.”	Optimal Margin Model	$Z = b_0 + b_1S + b_2R + b_3S^2 + b_4SR + b_5R^2$ with $b_2 = -b_1, b_4 = -2b_3, b_5 = b_3, b_3 < 0,$ $C := (b_1 - b_2)/(4 \cdot b_3) < 0$	3h

Supplementary hypotheses		Regression models	Figure
Curvilinear PSV Hypothesis: “The association of S and Z diminishes at higher levels of S or even becomes negative after some inflection point.”	Curvilinear PSV Model	$Z = b_0 + b_1S + b_3S^2$ with $b_3 < 0$	3i
Beneficial Ability Only Hypothesis: “For two persons, adjustment is higher for the person with the higher real ability R.”	Beneficial Ability Only Model	$Z = b_0 + b_1S + b_2R$ with $b_1 = 0, b_2 > 0$	3j
Curvilinear Ability Hypothesis: “The association of R and Z diminishes at higher levels of R or even becomes negative after some inflection point.”	Curvilinear Ability Model	$Z = b_0 + b_2R + b_5R^2$ with $b_5 < 0$	3k
Interaction Hypothesis: “The association of S and Z is more positive/less negative at higher levels of R than at lower levels of R.”	Interaction Model	$Z = b_0 + b_1S + b_2R + b_4SR$ with $b_4 > 0$	3l
<i>Null model</i>	Null model	$Z = b_0$	
<i>Global model</i>	Full model	$Z = b_0 + b_1S + b_2R + b_3S^2 + b_4SR + b_5R^2$	

Note. Z denotes the outcome variable, S denotes the self-rating, R denotes real ability.

Table 2. *Overview of the Five Samples*

Study	Ability measures	Intrapersonal adjustment outcomes	Interpersonal adjustment outcomes
A “Study 2” by Dufner et al. (2012); $N = 188$ (157 f.); Age 17 to 31 ($M = 18.89$, $SD = 1.67$)	Reasoning ability	Global self-evaluation: self-esteem, self-liking Well-being: positive affect, negative affect ⁻¹ , depression ⁻¹	Self-rated agentic outcomes: group influence Self-rated communal outcomes: <i>None</i> . Peer-rated agentic outcomes: reasoning ability, group influence Peer-rated communal outcomes: liking, friendship quality, emotional support
B PILS study by Geukes, Breil, et al. (2017); $N = 295$ (162 f.); Age 18 to 39 ($M = 23.8$, $SD = 3.95$)	Reasoning ability, Vocabulary knowledge	Global self-evaluation: satisfaction with the self, self-liking Well-being: determined, active, optimistic, valence	Self-rated agentic outcomes: trust in one’s own abilities, leadership ability Self-rated communal outcomes: friendship potential, trustworthiness Peer-rated agentic outcomes: leadership ability, intelligence Peer-rated communal outcomes: friendship potential, liking, trustworthiness
C Connect study by Geukes, Breil, et al. (2017); $N = 91$ (74 f.); Age 18 to 42 ($M = 20.6$, $SD = 3.38$)	Reasoning ability, Vocabulary knowledge	Global self-evaluation: self-esteem, satisfaction with the self (online survey), satisfaction with the self (App), likability Well-being: determined, active, optimistic, good mood, bad mood ⁻¹	Self-rated agentic outcomes: leadership ability, assertive, independent, ambitious, leadership/authority, trust in one’s own abilities Self-rated communal outcomes: trustworthiness, unfriendly ⁻¹ , warmhearted, coldhearted ⁻¹ Peer-rated agentic outcomes: knowing, leadership ability, unintelligence ⁻¹ Peer-rated communal outcomes: likability, friendship, relationship satisfaction, relationship importance, conflicts ⁻¹ , emotional support, acceptance, warmhearted, coldhearted ⁻¹ , negativity of interactions ⁻¹ , unfriendly ⁻¹

Study	Ability measures	Intrapersonal adjustment outcomes	Interpersonal adjustment outcomes
D “Study 1” by Dufner et al. (2012); <i>N</i> = 2047 (1431 f.); Age 17 to 76 (<i>M</i> = 27.61, <i>SD</i> = 8.78)	Vocabulary knowledge	Global self-evaluation: self-esteem Well-being: optimism, pessimism ⁻¹ , positive affect, negative affect ⁻¹ , depression ⁻¹ , life satisfaction	Self-rated agentic outcomes: leadership/authority, agentic outcomes compared to average Self-rated communal outcomes: communal outcomes compared with average Peer-rated agentic outcomes: agentic outcomes compared with average Peer-rated communal outcomes: communal outcomes compared with average, liking, emotional support
E SI-Study by Dufner, Arslan, et al. (2015); <i>N</i> = 202 (134 f.); Age 22 to 36 (<i>M</i> = 27.41, <i>SD</i> = 2.96)	Vocabulary knowledge	Global self-evaluation: self-esteem (survey), self-esteem (diary) Well-being: positive affect, negative affect ⁻¹ , depression ⁻¹ , life satisfaction, optimism	Self-rated agentic outcomes: leadership/authority, agentic outcomes compared with average abstract other, agentic outcomes compared with average concrete other Self-rated communal outcomes: communal outcomes compared with average abstract other, communal outcomes compared with average concrete other Peer-rated agentic outcomes: social influence Peer-rated communal outcomes: liking, quality of interactions, conflict potential ⁻¹

Note. See OSF Material 2 at osf.io/m6pb2 for more details on the studies and on the applied measurements.

⁻¹Variable is coded in the opposite direction.

Table 3. *Results of Model Evaluation Analyses for the Content Domain Reasoning Ability*

95% Confidence set of models	w	b_1	b_2	b_3	b_4	b_5	Final conclusion
Global self-evaluation							Beneficial PSV Hypothesis
Curvilinear PSV	.96	0.241	0	-0.074	0	0	
Well-being							Evidence for both:
Curvilinear PSV	.73	0.191	0	-0.074	0	0	Beneficial PSV effect up to optimal PSV value
Full model	.24	0.188	0.018	-0.088	0.08	-0.014	Optimal PSV level varying for different real ability levels
Self-rated agentic outcomes							Beneficial PSV Hypothesis
Beneficial PSV Only	1	0.238	0	0	0	0	
Self-rated communal outcomes	Full model not significant						
Peer-rated agentic outcomes							Beneficial PSV effect and beneficial ability effect
Beneficial PSV and Ability	.77	0.115	0.2	0	0	0	
Full model	.18	0.099	0.196	-0.036	-0.029	-0.009	
Peer-rated communal outcomes							Evidence for both:
Detrimental SE	.69	-0.082	0.155	0	0	0	Detrimental SE Hypothesis
Beneficial Ability Only	.30	0	0.141	0	0	0	Beneficial Ability Only Hypothesis

Note. For each analysis, the 95% confidence set of models is provided. w = Akaike weight of the respective model = the model's likelihood of being the best model in the set. Regression coefficients b_1 to b_5 refer to the full polynomial model $Z = b_0 + b_1S + b_2R + b_3S^2 + b_4SR + b_5R^2$. The final conclusions were drawn after considering the area of data, interpreting of the full model if included in the confidence set, and identifying common effects of the models in the confidence set. Adjusted R^2 of the respective full models were: Global self-evaluation: $R^2_{adj} = .08$ ($p = 0$); Well-being: $R^2_{adj} = .06$ ($p = 0$); Self-rated agentic outcomes: $R^2_{adj} = .04$ ($p = 0$); Self-rated communal outcomes: $R^2_{adj} = -.007$ ($p = .718$); Peer-rated agentic outcomes: $R^2_{adj} = .05$ ($p = 0$); Peer-rated communal outcomes: $R^2_{adj} = .01$ ($p = .044$).

Table 4. *Results of Model Evaluation Analyses for the Content Domain Vocabulary Knowledge*

95% Confidence set of models	w	b_1	b_2	b_3	b_4	b_5	Final conclusion
Global self-evaluation							Evidence for both:
Full model	.58	0.319	-0.041	-0.036	0.027	-0.001	Beneficial SE Hypothesis
Curvilinear PSV	.34	0.308	0	-0.035	0	0	Beneficial PSV Hypothesis
Beneficial SE	.07	0.343	-0.045	0	0	0	
Well-being							Evidence for both:
Curvilinear PSV	.76	0.193	0	-0.045	0	0	Beneficial PSV Hypothesis
Full model	.23	0.202	-0.037	-0.043	-0.002	-0.01	Beneficial SE Hypothesis
Self-rated agentic outcomes							Beneficial SE Hypothesis
Beneficial SE	1	0.386	-0.147	0	0	0	
Self-rated communal outcomes							Beneficial SE Hypothesis
Beneficial SE	.64	0.088	-0.126	0	0	0	
Full model	.36	0.107	-0.127	0.027	-0.002	0.005	
Peer-rated agentic outcomes							Beneficial PSV Hypothesis
Curvilinear PSV	.59	0.153	0	-0.039	0	0	
Beneficial PSV Only	.41	0.17	0	0	0	0	
Peer-rated communal outcomes							Full model not significant

Note. For each analysis, the 95% confidence set of models is provided. w = Akaike weight of the respective model = the model's likelihood of being the best model in the set. Regression coefficients b_1 to b_5 refer to the full polynomial model $Z = b_0 + b_1S + b_2R + b_3S^2 + b_4SR + b_5R^2$. The final conclusions were drawn after considering the area of data, interpreting of the full model if included in the confidence set, and identifying common effects of the models in the confidence set. Adjusted R^2 of the respective full models were: Global self-evaluation: $R^2_{adj} = .11$ ($p = 0$); Well-being: $R^2_{adj} = .05$ ($p = 0$); Self-rated agentic outcomes: $R^2_{adj} = .14$ ($p = 0$); Self-rated communal outcomes: $R^2_{adj} = .02$ ($p = 0$); Peer-rated agentic outcomes: $R^2_{adj} = .02$ ($p = .001$); Peer-rated communal outcomes: $R^2_{adj} = .004$ ($p = .180$).

Figure 1. A working model of the processes that can underlie the (mal)adaptive effects of self-perceived ability, real ability, and their interplay. The variables in solid frames were assessed in the present investigation; variables in dashed frames represent potential processes mediators that might underlie the effects.

Figure 2. A visual representation of the (in)compatibility of the six empirical hypotheses. Arrows indicate the implications of the hypotheses. Lightning bolts indicate contradictory empirical hypotheses.

Figure 3. Regression models representing 12 hypotheses on the adaptiveness of self-perceived ability, real ability, and their interplay. The x-axis reflects self-viewed ability S , the y-axis reflects real ability R , and the vertical z-axis reflects the adjustment variable Z .

Figure 4. Response surfaces for the analyses concerning reasoning ability. This figure includes all models contained in the respective confidence set. *Reasoning (self)* denotes self-rated reasoning ability. *Reasoning (obj.)* denotes objectively assessed reasoning ability. The vertical z-axis represents the respective outcome category.

Figure 5. Response surfaces for the analyses concerning vocabulary knowledge. This figure includes all models contained in the respective confidence set. *Vocabulary (self)* denotes self-rated reasoning ability. *Vocabulary (obj.)* denotes objectively assessed reasoning ability. The vertical z-axis represents the respective outcome category.