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Reconceptualizing Individual Differences in Self-Enhancement Bias: An Interpersonal Approach

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Self-enhancement bias has been studied from 2 perspectives: L. Festinger's (1954) social comparison theory (self-enhancers perceive themselves more positively than they perceive others) and G. W. Allport's (1937) self-insight theory (self-enhancers perceive themselves more positively than they are perceived by others). These 2 perspectives are theoretically and empirically distinct, and the failure to recognize their differences has led to a protracted debate. A new interpersonal approach to self-enhancement decomposes self-perception into 3 components: perceiver effect, target effect, and unique self-perception. Both theoretical derivations and an illustrative study suggest that this resulting measure of self-enhancement is less confounded by unwanted components of interpersonal perception than previous social comparison and self-insight measures. Findings help reconcile conflicting views about whether self-enhancement is adaptive or maladaptive.

Is self-evaluation inherently biased and, if so, does this bias promote adjustment? This question has led to a protracted debate between those who believe that psychologically healthy individuals perceive themselves accurately and those who believe that it is more adaptive to have overly positive, self-enhancing illusions. So far, there is no resolution in sight. Indeed, in their exchange with Taylor and Brown (1994), Block and Colvin (1994) concluded, "The differing interpretations of the relation between positive illusions and well-being . . . cannot be reconciled. The authors urge motivated readers to evaluate their respective formulations closely and develop their own conclusion" (p. 28).

In this article, we suggest that these seemingly irreconcilable differences arose, in part, because two rather different conceptions of self-enhancement bias coexist in the literature: One compares self-perceptions to perceptions of others, whereas the other compares self-perceptions to perceptions by others. These two conceptions, we argue, have not been explicated and formalized sufficiently to reveal their conceptual and empirical differences. To do so, we propose a new interpersonal approach to self-enhancement bias. At the core of our approach is the recognition that self-perception is an inherently interpersonal phenomenon. Self-perception cannot be studied in isolation from a fundamental fact about interpersonal perception: The individual always acts both as a social perceiver and as a target of social perception. As the symbolic interactionists (cf. Cooley, 1902; Goffman, 1959; Mead, 1934) argued early on, the way people see themselves and the ways they are seen by others are closely intertwined. Our approach takes seriously the interplay of self-perception and social perception and reconceptualizes self-enhancement bias within a broader interpersonal context.

We begin with a brief review of the literature, which shows that self-enhancement bias has been studied from two conceptual perspectives, and we elaborate their divergent origins and assumptions. We then propose an integration: an interpersonal model of self-enhancement bias that extends Kenny's (1994) social relations model to self-perception. Using componential analyses, we show formally that although the two previous conceptions have made important contributions, each remains incomplete and confounds self-enhancement bias with another component of interpersonal perception. To test how the two previous conceptions of self-enhancement are related to each other and to adjustment, we present an empirical study, thus substantiating our theoretical claims and illustrating how our interpersonal approach can integrate the two previous conceptions within one research design.

Literature on Self-Enhancement Bias: Two Conceptions

How should self-enhancement bias be defined and measured? By definition, *self-enhancement bias* means that a self-perception

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is overly positive. But "overly positive" compared with what? What should be the criterion by which the accuracy of self-perception is evaluated? To find out how self-enhancement bias has been defined and measured in the social and personality literatures, Kwan and John (2002) reviewed relevant empirical studies published between 1970 and 2001. To be included in the review, studies had to have (a) been published in a peer-reviewed journal, (b) measured individual differences in self-enhancement bias (i.e., compared self-perceptions with a criterion), and (c) related individual differences in self-enhancement bias to a measure of adjustment. Twenty-eight articles met these three criteria.[1] Interestingly, the articles fell into two sets, each using a particular definition of self-enhancement bias. One set of articles ($n = 12$) used a definition that originated from Festinger's (1954) social comparison theory, whereas the other set ($n = 16$) used a definition that originated from Allport's (1937) notion of self-insight.

Self-Enhancement as a Social Comparison Between Perceived Self and Perceived Other

In one set of articles, self-enhancement bias was defined as the discrepancy between self-perceptions and the way the individual perceives others; *self-enhancers* are those individuals who perceive themselves more positively than they perceive others. We refer to this as the *social comparison* perspective because the underlying rationale can be traced back to Festinger's (1954) social comparison theory: People possess a "drive for self-evaluation . . . based on comparison with other persons" (p. 138). Research adopting a social comparison perspective focuses on the degree to which individuals believe they compare favorably with others. For example, in Alicke's (1985) pioneering study, self-enhancement bias was defined by the difference between college students' personality ratings of themselves and their ratings of the "average college student" (p. 1623). Indeed, Taylor and Brown (1994) note that "our claim that people hold unrealistically positive views of themselves . . . is based largely (although not exclusively) on evidence that people consistently regard themselves more positively and less negatively than they regard others" (p. 22). The idea that self-enhancement involves a social comparison process within the individual is consistent with a social cognitive perspective, focusing on the person as a social perceiver (Fiske & Taylor, 1991). Of greatest interest are the processes going on inside the individual's head, namely the perception of self and others and how these two kinds of perceptions compare.

Self-Enhancement as Self-Insight: Comparing Self-Perception and Perception by Others

The other set of articles in our review focused on a very different comparison—how the perception of self is related to something outside the individual's head, namely the observable social reality of the individual's behavior and personality. We suggest that the theoretical rationale underlying this perspective has its origin in Allport's (1937) notion of *self-insight*—the extent to which individuals accurately perceive their own behavior and personality and are thus free of self-deception: "What insight does is to make past mistakes intelligible so that one is not condemned through ignorance to repeat them" (Allport, 1937, p. 221). The basic idea goes back to the ancient Greek admonition to "know thyself"—people have a drive to acquire self-knowledge because such knowledge is necessary to function effectively (see Robins & John, 1997b). Similarly, Trope (1986) postulated a need for self-assessment, suggesting that people are motivated to reduce uncertainty about their personality characteristics and abilities by obtaining accurate knowledge of the self.

According to Allport (1937), self-insight can be defined operationally as "the relation between what a man thinks he is to what others (especially the psychologist) think he is" (p. 221). From this perspective, self-enhancement bias is not a discrepancy between two perceptions made by the same individual; rather, it is a discrepancy between the individual's self-perception and the way the same individual is perceived by knowledgeable others (see also Krueger, 1998). For example, John and Robins (1994; Robins & John, 1997a) compared how participants judged their performance in a group interaction task with evaluations of them by the other group members and by trained psychologist observers.

The social comparison and self-insight conceptions on self-enhancement have remained remarkably isolated from each other. None of the articles in our review used both kinds of self-enhancement conceptions to compare their effects on adjustment.[2]

Link Between the Two Conceptions of Self-Enhancement and Studies of Adjustment

Can the distinction between these two conceptions of self-enhancement help reconcile the divergent findings regarding adjustment? To answer that question, we first need to consider the term *adjustment*—a broad and somewhat ambiguous concept. Numerous definitions have been proposed (Allport, 1960; Jahoda, 1958; Ryff, 1989), and they have differed somewhat from each other, but three core aspects have commonly been cited: (a) *intrapsychic* aspects, including the capacity to hold positive attitudes about the self and to feel happy and contented, rather than hopeless and depressed; (b) *interpersonal* aspects, including the capacity to form and maintain warm and loving relationships and both give

[1] These 28 papers resulted from the following search criteria. First, we conducted a PsycINFO search ending in December 2001, using the key words *self-enhancement* and *positive illusions* to identify articles in the five most important and frequently cited empirical journals in social and personality psychology: (a) *Journal of Personality and Social Psychology,* (b) *Personality and Social Psychology Bulletin,* (c) *Journal of Personality,* (d) *Journal of Experimental Social Psychology,* and (e) *Social Cognition.* However, some important articles on self-enhancement have been published in other journals (e.g., in clinical psychology). Thus, second, we supplemented the PsycINFO search results with all the articles cited in the debate between Taylor and Brown (1988, 1994) and Colvin and Block (1994) that were relevant to self-enhancement bias; because our review was focused on adults, we did not include the few articles focused solely on children. Third, we reviewed the resulting list for any apparent omissions and added necessary updates (e.g., articles published in 1994 or thereafter). Finally, we did not approach this literature review with an a priori definition of adjustment to include or exclude articles; rather, we adopted an open-ended definition and included all articles that reported that they had measured aspects of adjustment, such as positive mental health and psychological well-being.

[2] We found one study that has included versions of both kinds of self-enhancement measures and reported a correlation of .52 (Sinha & Krueger, 1998, Study 3); however, that study did not examine adjustment.

and receive social support; and (c) *achievement* aspects, including the capacity for productive and creative work. Our review showed that a wide variety of measures of adjustment has been used in the literature on self-enhancement and adjustment. Across the 28 articles in our review, self-esteem (an intrapsychic aspect) was the most commonly used measure of adjustment; another frequently used measure was depression (i.e., indicating problems with intrapsychic adjustment). In terms of interpersonal adjustment, the most commonly studied measure was narcissism (i.e., indicating adjustment problems); other interpersonal indicators included relationship quality and being liked by one's peers. Achievement aspects of adjustment have also been studied (e.g., career or academic success), but less frequently. Overall, the articles defining self-enhancement according to the social comparison perspective and those defining self-enhancement according to the self-insight perspective used similar definitions of adjustment. However, in terms of measures used, two differences emerged. Although both kinds of articles used mostly self-report measures of adjustment, the self-insight articles used observer-based measures (e.g., peer or observer ratings, clinical diagnoses) much more frequently than the social comparison articles. Moreover, the self-insight articles studied narcissism more frequently.

How was self-enhancement bias related to adjustment? To find out, we classified each of the 28 articles in terms of the reported relations between self-enhancement bias and adjustment on the basis of the original-study authors' conclusions. Of the 12 articles that defined self-enhancement according to the social comparison perspective, 11 (92%) showed a positive relation between bias and adjustment. For example, Brown (1986) studied whether "individuals evaluate themselves more favorably than they evaluate others, and, if so, whether this self–other bias is more pronounced among persons with high or low self-esteem" (p. 356). Individuals relatively high in self-esteem were more likely to rate themselves higher on positive traits than they rated "others" and "most other people." This correlation between self–other bias and self-esteem was interpreted to indicate that "the use of self-enhancing strategies promotes psychological well-being" (Brown, 1986, p. 353). Only 1 article (W. K. Campbell, Reeder, Sedikides, & Elliot, 2000) showed a negative relation between self-enhancement and adjustment (i.e., a positive correlation with narcissism),[3] and 1 article (Endo, Heine, & Lehman, 2000) showed no relation with adjustment (i.e., nonsignificant correlations with self-esteem and with depression).

In contrast, for studies that defined self-enhancement in terms of self-insight, the relation between self-enhancement bias and adjustment was not consistently positive. In fact, of these 16 articles, only 2 (13%) showed a positive relation. A pioneering study by Lewinsohn, Mischel, Chaplin, and Barton (1980) found what has become known as the *depressive realism effect*: nondepressed individuals evaluated themselves more positively in a getting-acquainted group interaction than they were evaluated by undergraduate observers, but clinically depressed individuals did not. Noles, Cash, and Winstead (1985) found that nondepressed individuals "perceived themselves to be more attractive than the objective ratings would suggest to be warranted" (p. 92); however, this study did not replicate the depressive realism effect (Lewinsohn et al., 1980), because depressed individuals were found to underestimate their physical attractiveness. About half of the articles (9, or 56%) showed a negative link between self-enhancement bias and adjustment. For example, Colvin, Block, and Funder (1995) compared self-ratings with ratings by trained examiners and by peers; the personality correlates of both measures of self-enhancement bias were interpreted as reflecting poor social skills and maladjustment. The remaining 5 studies showed more complex patterns of results.[4]

Conceptual Differences Between the Social Comparison and Self-Insight Perspectives

Overall, then, studies defining self-enhancement bias from the social comparison perspective have tended to show a generally positive relation to adjustment, but studies defining self-enhancement from the self-insight perspective have not. How can these divergent findings be reconciled? Let us consider Charles Darwin as an example. First, how did Darwin perceive himself? In his autobiography, Darwin emphasized that he possessed only "moderate abilities" (Darwin, 1876/1958, pp. 144–145). Apparently, he saw himself as a rather average person. Second, how did Darwin perceive others? He wrote, "I think that I am superior to the common run of men" (Darwin, 1876/1958, p. 141). So Darwin saw others less positively. Third, how has Darwin been perceived by others? Historians have agreed that "Darwin is a prime example of genius" (Sulloway, 1996, p. 361). These quotes illustrate three essential components that we suggest are needed for a complete account of self-enhancement: (a) self-perception, (b) perception of others, and (c) perception by others.

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[3] Although some researchers have emphasized that narcissists self-report high self-esteem and happiness (W. K. Campbell, 2001), there is a general agreement that narcissism reflects a maladaptive self-regulatory style (Morf & Rhodewalt, 2001). Narcissistic tendencies are associated with a long-term pattern of psychological dysfunction, especially anger, aggression, and interpersonal problems (Baumeister, Smart, & Boden, 1996; Paulhus, 1998; Rhodewalt & Morf, 1998). Indeed, narcissism is included among the personality disorders in the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*; American Psychiatric Association, 1994), and the most commonly used measure of narcissism in normal populations (Narcissistic Personality Inventory; Raskin & Hall, 1981) was developed based on *DSM* criteria.

[4] Two studies suggested that the negative adjustment effects of self-enhancement bias emerge only over time; for example, Paulhus (1998) found that although self-enhancers initially made favorable impressions on other group members, those impressions turned negative over time, and self-enhancers were viewed as arrogant, defensive, hostile, and lacking warmth (see also Robins & Beer, 2001). Two conceptual replications of the Lewinsohn et al. (1980) study suggested the possibility that observer harshness may play an important role in explaining the depressive realism effect, because the link between self-enhancement and adjustment was found only when self-ratings were compared with ratings by uninvolved undergraduate observers (see John & Robins, 1994). For example, J. D. Campbell and Fehr (1990) had students participate in a dyadic interaction; when their self-perceptions were compared with how their interaction partner perceived them, individuals with high self-esteem were most accurate (i.e., rated just as positively by their interaction partners as they rated themselves), whereas individuals with low self-esteem showed self-effacement, rating themselves even less positively than they were rated by their interaction partner (see also Gotlib & Meltzer, 1987). One study showed mixed results: Yik, Bond, and Paulhus (1998) found that "although those who self-enhanced most reported high self-esteem, they were not rated as better adjusted by their peers" (p. 399).

The social comparison perspective on self-enhancement compares how the person perceives the self with how the person perceives others. Darwin perceived himself as having moderate abilities (maybe 7 on an 11-point scale), but he perceived others as less able than himself (maybe 6). Thus, on the social comparison index, Darwin showed self-enhancement, because there is a positive discrepancy (+1) between his self-perception and his perception of others.

In contrast, the self-insight perspective suggests that we need to compare how the person perceives the self with how the person is perceived by others. What does this index say about Darwin's self-enhancement? As before, Darwin rates himself a 7. But how is he seen by others? Experts think he is a genius, so they rate him an 11. On the self-insight index, there is a negative discrepancy (−4): Darwin does not show self-enhancement but the opposite, self-effacement!

This is a contradiction: Darwin self-enhances on one index but self-effaces on the other. The problem is, we suggest, that each of the two indices focuses on one important component but ignores the other. The social comparison index does not take into account Darwin's actual intelligence (e.g., as rated by others). However, it is hardly justified to label Darwin a self-enhancer without considering his actual intelligence when he really is smarter than others. On the other hand, the self-insight index does not take into account how Darwin perceives others. If, for example, Darwin had regarded all people as quite intelligent, including himself, he might not be self-enhancing but rather show a general person-positivity effect (Sears, 1983). In that case, we should simply conclude that he generally sees people quite positively.

Ignoring one component can lead to potential confounds. Specifically, the social comparison index may confound self-enhancement with the person's consensually agreed standing on the dimension. The self-insight index may confound self-enhancement with how the person generally perceives others. Such potentially confounded measures have led to confusion in the social perception literature before. As Cronbach (1955) noted many years ago,

> any such measure may combine and thereby conceal important variables, or may depend heavily on unwanted components. Only by careful subdivision of global measures can an investigator hope to know what he is dealing with. Our analysis makes especially clear that the investigator of social perception must develop more explicit theory regarding the constructs he intends to study, so that he can reduce his measures to the genuinely relevant components. (p. 191)

We now present an interpersonal model of self-enhancement bias, beginning with a "careful subdivision" of the two global indices discussed so far. Following the componential tradition (Gage & Cronbach, 1955), our first aim is to disentangle the various components of interpersonal perception mixed together in the existing two indices of self-enhancement. Only then can we develop more explicit theoretical accounts of each of the components and their relation to self-enhancement.

Toward an Interpersonal Approach to Self-Enhancement Bias

Our new approach to self-enhancement bias is based on the recognition that self-perception is an inherently interpersonal phenomenon. Self-perception cannot be studied without consideration of the fact that the individual is a social agent who always acts as a perceiver and is always a target of perception. Thus, we conceptualize self-perception within the broader framework of interpersonal perception, proposing that self-perception is a special case of interpersonal perception where the self is both perceiver and target. We first review the social relations model (SRM), which provides a decompositional analysis of interpersonal perception; then we extend SRM to self-perception; and finally we show how the two previous conceptions of self-enhancement can be explicated in our integrative model.

SRM as a General Framework for Interpersonal Perception

The SRM (Kenny, 1994; Kenny & La Voie, 1984) is a compelling starting point because it provides a way to decompose the variance in interpersonal perception into three basic components: the perceiver, the target being perceived, and the unique relationship between the particular perceiver and the particular target; a constant term reflects the grand mean across raters and targets. In equation form, the way a perceiver P rates a target T on an attribute X is

$$X_{PT} = \text{Perceiver effect} + \text{Target effect} + \text{Relationship effect} + \text{Constant}. \quad (1)$$

Figure 1 illustrates these terms with a hypothetical study. Alice, Betty, Calvin, David, and Ellen have worked together and reported their perceptions of each other and themselves in a round-robin format: Every group member is a perceiver as well as a target being perceived by the other members. So Alice rates how she perceives Betty, Calvin, David, Ellen, and herself; Betty rates how she perceives Alice, Calvin, David, Ellen, and herself; and so forth. For each perceiver, one of the targets is the self (the diagonal in Figure 1); thus, each perceiver rates a slightly different set of targets and each target is rated by a slightly different set of perceivers.

With a group of five members, then, the result is a 5×5 matrix of interpersonal perceptions (see Figure 1); the self-perceptions are not included in the analysis of interpersonal perceptions. The ratings are keyed so that a high rating means a positive perception. The row means reflect information about the perceivers (how positively each perceiver rated all the targets), whereas the column means reflect information about the targets (how positively each target was rated by all the perceivers). Finally, the grand mean (which is 5 in our example) is a constant in Equation 1 and can be thought of as the average rating across perceivers and targets.

The SRM analysis of this matrix specifies three effects, analogous to a two-way analysis of variance design. One main effect is the *perceiver effect*, which may be understood conceptually as whether the perceiver rated the group members positively or negatively compared with the grand mean. In our example, the perceiver effect for Alice was 3 (see Appendix for formula to compute the perceiver effect). A high perceiver effect indicates that this perceiver showed a general tendency to perceive others relatively positively (e.g., Alice), whereas a low

	Targets						
Perceivers	Alice	Betty	Calvin	David	Ellen	Row mean	Perceiver effect
Alice	Self	11	6	9	7	8.25	3
Betty	2	Self	2	5	4	3.25	-1
Calvin	3	11	Self	8	4	6.50	1
David	4	4	1	Self	2	2.75	-2
Ellen	4	7	2	4	Self	4.25	-1
Column mean	3.25	8.25	2.75	6.50	4.25	5	
Target effect	-1	3	-2	1	-1		

Figure 1. An example of a study of interpersonal perception using the round-robin design.

value indicates a tendency to perceive others negatively (e.g., David).

The second main effect is the *target effect*, which may be understood conceptually as whether the target is rated by the group members positively or negatively compared with the grand mean. In our example, the target effect for Alice was –1 (see Appendix for formula to compute the target effect). A high target effect indicates this target was generally perceived positively (e.g., David), whereas a low value indicates a generally negative perception of the target (e.g., Alice). Note that the target effect captures the social consensus about the individual. If there is no consensus or agreement among the perceivers, every target would get the same value as the mean. In that case, the target effect would have values of zero for all targets because nobody deviates reliably from the grand mean.

The third effect in SRM can be thought of as an interaction between perceiver and target. Kenny called it the *relationship effect* because it reflects the unique impression that a perceiver has of a particular target, capturing that part of the perception that cannot be explained by the two main effects. In our example, one of the strongest relationship effects occurred in David's rating of Alice, a rating of 4. Remember that David generally perceived others negatively (i.e., David's perceiver effect was -2), and Alice was a target perceived by others slightly negatively (i.e., Alice's target effect was -1). According to Equation 1, with no relationship effect, David's rating of Alice should be the sum of David's perceiver effect, Alice's target effect, plus the grand mean: $(-2) + (-1) + 5 = 2$. However, the rating was 4, indicating that David's rating of Alice cannot be fully explained by David's perceiver effect and Alice's target effect. The difference between the rating and the value expected from the two main effects is the relationship effect ($4 - 2 = 2$), indicating that David saw Alice uniquely more positively.

To summarize, SRM decomposes interpersonal perceptions into three components. In our example, David's perception of Alice is decomposed into how David generally perceives others (perceiver effect: P_{David}), how Alice is generally perceived by others (target effect: T_{Alice}), and David's unique perception of Alice (relationship effect: $R_{David,\ Alice}$).

Extending SRM: An Interpersonal Approach to Self-Enhancement Bias

SRM is focused on social perception, and self-perceptions are not included when effects are estimated. However, SRM can be extended to conceptualize self-perception as a form of interpersonal perception where perceiver and target are the same person, namely the self. Then, we can apply decomposition analysis to the self-perception on an attribute (X_{ss}; subscript indicates that self is both perceiver and target). Following Equation 1,

$$X_{ss} = P_s + T_s + R_{ss} + C_s. \quad (2)$$

Equation 2 states our basic theoretical model: Self-perceptions can be decomposed into three variable components and a constant C_s

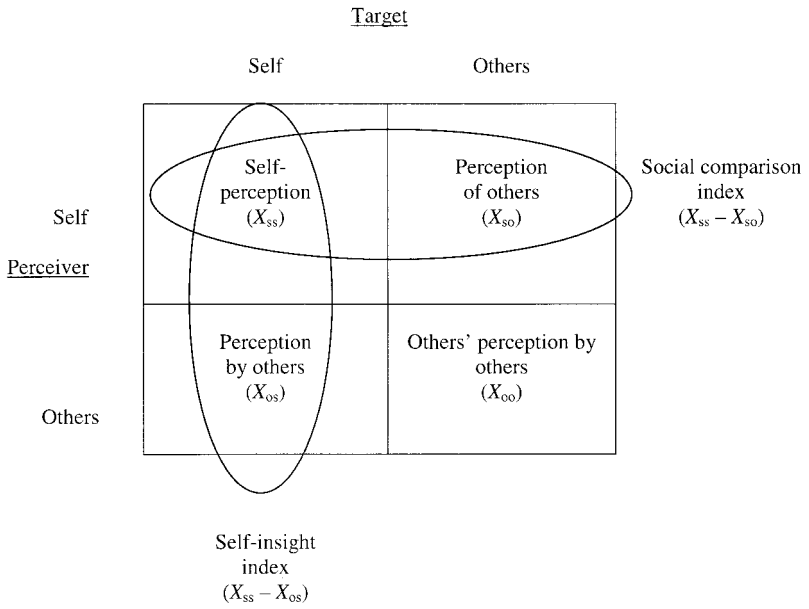

Figure 2. Conceptual representation of the two previous indices of self-enhancement (social comparison and self-insight) within our social relations model-based approach. *X* is the attribute being rated. The first subscript represents the perceiver, the second subscript represents the target being perceived: s = self; o = others.

(the mean of all self-ratings).[5] According to this model, individuals may perceive themselves positively for three reasons: (a) They generally perceive others positively (P_s), (b) they are perceived positively by others (T_s), and (c) they have an overly positive view of themselves (R_{ss}). Only R_{ss} is specifically relevant to self-perception bias. R_{ss} is akin to the relationship effect in SRM and indicates the unique component of self-perception that cannot be explained by perceiver and target effects: It is due to the unique relationship individuals have with themselves and captures their idiosyncratic self-view. We thus propose this "relationship with self" effect as our new index of self-enhancement. Equation 2 yields

$$R_{ss} = X_{ss} - P_s - T_s - C_s. \quad (3)$$

R_{ss} indicates whether the observed self-perception X_{ss} is smaller or larger than would be expected from the perceiver effect, target effect, and mean self-ratings. R_{ss} is zero if the self-perception is exactly the expected value. For example, if C_s is 5, the expected self-perception for Alice in Figure 1 is $P_s + T_s + C_s = 3 + (-1) + 5 = 7$. So if Alice rated herself 7, R_{ss} would be zero, indicating that Alice is neither a self-enhancer nor a self-effacer (note that we have set the mean of the self-ratings C_s equal to the mean of the other ratings C_o; obviously, the two means may differ). However, if Alice rated herself 9, her R_{ss} would be 2, indicating self-enhancement; if Alice rated herself 5, R_{ss} would be -2, indicating self-effacement. Thus, R_{ss} reflects the degree of bias, ranging from self-effacement to self-enhancement.

Social Comparison and Self-Insight Conceptions Represented in Our Interpersonal Model

Our decompositional analysis makes it possible to explicate the components in each index and thus compare the two indices to each other and to the SRM index we just proposed. Figure 2 illustrates how the social comparison and self-insight indices can be represented. The social comparison perspective defines self-enhancement as people seeing themselves more positively than they see others, that is, the self-rating X_{ss} minus the rating given to the other group members X_{so} (the perceiver is the self and the targets being perceived are others):

$$\text{Social comparison index} = X_{ss} - X_{so}. \quad (4)$$

In contrast, the self-insight perspective defines self-enhancement as people seeing themselves more positively than they are seen by knowledgeable others, that is, X_{ss} minus the ratings of the target by the other group members X_{os} (the perceivers are the others and the target being perceived is the self):

$$\text{Self-insight index} = X_{ss} - X_{os}. \quad (5)$$

Using the decomposition analysis, we can formalize the terms in Equations 4 and 5. X_{ss} has already been defined in Equation 2 above. X_{so} in Equation 4 involves the self as the perceiver and the other group members as the targets. In our example in Figure 1, this would be Alice's row mean, that is, the average of Alice's ratings of Betty, Calvin, David, and Ellen. The mean of this term, X_{so}, is the perception of others averaged across all group members. We can decompose this interpersonal perception rating according to SRM (Equation 1):

$$\bar{X}_{so} = P_s + \bar{T}_o + \bar{R}_{so} + C_o. \quad (6)$$

[5] This theoretical model has received good empirical support; overall, self-perceptions are correlated .40 with the perceiver effect and .49 with the target effect (Kenny, 1994, pp. 207–209). These findings suggest that the perceiver and target effects in Equation 2 capture two fundamental processes in self-perception.

C_o is the grand mean of the ratings of others $\bar{X}_{oo}$. $\bar{T}_o$ is the target effect averaged across all group members, and $\bar{R}_{so}$ is the relationship effect averaged across all dyads. For theoretical purposes, we can assume the number of perceivers and targets to be infinite; then $\bar{T}_o$ and $\bar{R}_{so}$ reduce to zero (for further explanation and the formulas for estimating these terms in actual computations, see Kenny, 1994, pp. 30–31, and the Appendix in this article), reducing Equation 6 to $\bar{X}_{so} = P_s + C_o$.

X_{os} in Equation 5 involves the other group members as perceivers and the self as the target. In our example, this would be Alice's column mean (i.e., the average of the ratings Alice received from Betty, Calvin, David, and Ellen). The mean of this term X_{os} is the perception by others averaged across all group members. Again, we can decompose this term:

$$\bar{X}_{os} = \bar{P}_o + T_s + \bar{R}_{os} + C_o. \quad (7)$$

$\bar{P}_o$ is the perceiver effect averaged across all group members and $\bar{R}_{os}$ is the relationship effect averaged across all dyads. Again, with an infinite number of perceivers and targets, these terms reduce to zero, and Equation 7 becomes $\bar{X}_{os} = T_s + C_o$.

Now we can rewrite the social comparison index (Equation 4), using Equations 2 and 6:

$$\text{Social comparison index} = (P_s + T_s + R_{ss} + C_s) - (P_s + C_o)$$
$$= T_s + R_{ss} + (C_s - C_o).$$

Analogously, we can rewrite the self-insight index (Equation 5), using Equations 2 and 7:

$$\text{Self-insight index} = (P_s + T_s + R_{ss} + C_s) - (T_s + C_o)$$
$$= P_s + R_{ss} + (C_s - C_o).$$

These last two equations show that the social comparison index and the self-insight index each have three components, only two of which they share: R_{ss} (the unique self-perception), and the constant $C_s - C_o$ (the mean level of self-enhancement in the group). The third component, however, makes the two indices conceptually different: The social comparison index includes T_s (the individual's target effect), whereas the self-insight index includes P_s (the individual's perceiver effect).[6]

Thus, on the social comparison index, individuals may obtain high values not only because they have an overly positive self-perception (R_{ss}) but also because they are seen positively by others (i.e., a high target effect T_s). On the self-insight index, individuals may obtain high values not only because they have an overly positive self-perception (R_{ss}) but also because they see others positively (i.e., a high perceiver effect P_s).

In short, both the self-insight and social comparison indices contain R_{ss}, our new measure of self-enhancement. However, both also contain an irrelevant term, and the irrelevant term in one is not present in the other. The social comparison index contains the target effect, and the self-insight index contains the perceiver effect, but neither of these effects reflects whether a person self-enhances or self-effaces. Rather, the perceiver effect reflects how one generally views others, and the target effect reflects how one is viewed by others. As Cronbach (1955) would have said, these are "unwanted components" (p. 191), and their inclusion confounds self-enhancement bias with other components of interpersonal perception, making the interpretation of these two indices ambiguous. We cannot be confident of what each index really measures and cannot trust conclusions because results may be due to the effects of the unwanted components. Ideally, both perceiver and target effects should be removed from the self-rating when computing self-enhancement bias. Our new index in Equation 3 does exactly that.

In summary, the social comparison conception implies that self-perception reflects the motive to compare self with others, focusing on evaluations of relevant others. This emphasis on the self as a social perceiver is represented in our model by the perceiver effect, P_s. The self-insight conception, in contrast, implies that self-perception reflects the motive for self-assessment, focusing on what the self is really like and how the individual is perceived by others. This emphasis on the self as a target of perception is represented in our model by the target effect, T_s. Thus, our model reflects both of these psychological processes in self-perception (see Footnote 5). Note that both previous conceptions specify additive models of self-enhancement bias: The social comparison conception is the difference between the self-perception and the perception of others, and the self-insight conception is the difference between the self-perception and the perception by others. Likewise, our conception is an additive model, based on the assumption that P_s and T_s reflect independent processes: Theoretically, there is no reason to expect a relation between the way people see other people in general and the way they are generally seen by others. Empirically, this assumption is consistent with the evidence; across 12 studies, the correlation between P_s and T_s averaged $-.01$ (Kenny, 1994, p. 107).

Illustrative Study

The theoretical derivations presented so far have yielded clear conclusions about the differences between the social comparison and self-insight indices and our proposed SRM-based measure of self-enhancement. However, these conclusions are based on several theoretical assumptions, specified in our fundamental decomposition axiom (Equation 2). We therefore conducted an empirical study to test the major predictions derived from our model, aiming to illustrate the approach and its heuristic implications in a specific

[6] Using the data from our illustrative study described below, we tested empirically whether these representations of the social comparison and self-insight indices in our model indeed correspond to the original measures. According to the decomposition axiom in Equation 2, the social comparison index can be understood as the difference between the self-perception (X_{ss}) and the SRM-estimated perceiver effect (see Equation 6). Similarly, the self-insight index can be understood as the difference between the self-perception and the SRM-estimated target effect (see Equation 7). By putting each of the confounding components back into the SRM self-enhancement index, we should be able to "reconstitute" the original self-insight and social comparison indices. If our SRM-based representations of the indices are indeed correct, the empirical correlations between the SRM-based self-insight and social comparison indices with the original indices should approach, but not reach, 1.0. Exact equivalence is not possible because the SRM corrects perceiver and target effect estimates for missing-partner biases (see Appendix) and controls for intergroup differences, whereas the two original indices do not. Indeed, the correlation was .94 for both indices, indicating an almost perfect recovery of the original indices from their SRM-based representations.

research context. As in Figure 1, we used a round-robin design: Students interacted with each other in small groups and then rated each other on desirable personality attributes, allowing us to compare in the same study all three indices of self-enhancement bias.

Note that by its very nature this integrated research design makes the two previous self-enhancement indices much more similar to each other than they would be in the diverse studies that have related either the social comparison index or the self-insight index to adjustment. Previous empirical studies have differed widely in the attributes being rated, the way self-perceptions have been measured, and in the number and nature of the "others" that provided either the social comparison standard for the social comparison index or the social consensus estimate for the self-insight index. For example, within our round-robin design, the social comparison index is defined as the comparison between the self and the individual's perception of several specific and real others (see Figure 2)—this operationalization is much more explicit than in many previous studies where the self-rating is compared with an abstract, hypothetical, or generalized other (see Klar & Giladi, 1997, 1999). In short, the present study was not designed to capture all the many differences between the social comparison and self-insight indices as they have been implemented in the literature on self-enhancement and adjustment. Instead, we used an idealized operationalization of these indices that makes them identical except in the one component identified as the central difference in our theoretical analyses. Thus, this study aimed to illustrate differences between the two previous indices and our new SRM index but, in an absolute sense, any differences found between the indices in this study (e.g., with respect to adjustment) are likely underestimates (or lower bound estimates) of the actual differences that existed in the previous research literature. Specifically, we addressed three questions.

First, are the three self-enhancement indices the same? Our theoretical analyses suggest that the three indices are conceptually distinct because the social comparison index and the self-insight index each contain an irrelevant term. However, if these irrelevant terms make little difference, the three indices should be very highly correlated because they all share the same self-rating. If, however, the irrelevant terms play an important role, convergence should be only moderate and driven entirely by the shared self-rating.

Second, are the social comparison and self-insight indices confounded? Our theoretical analyses suggest that the social comparison index confounds self-enhancement with the target effect, whereas the self-insight index confounds it with the perceiver effect. Thus, we predict that scores on the social comparison index will correlate positively with the target effect, whereas scores on the self-insight index will correlate positively with the perceiver effect.

Third, do the three indices have distinct relations with adjustment? Even if the two previous self-enhancement indices are indeed different and confounded as predicted, we still do not know whether the confounding affects their relation with adjustment. Here, we consider a measure for each of the three major aspects of adjustment: (a) self-esteem to capture intrapsychic aspects, (b) relationship harmony to capture interpersonal aspects, and (c) task performance to capture achievement aspects of adjustment.

Self-Esteem

Self-esteem (Rosenberg, 1965) has been the most commonly studied measure of adjustment in past research on self-enhancement. Thus, a central goal of the present study was to test whether in our round-robin design self-enhancement is associated with self-esteem and whether the strength of the association depends on which self-enhancement index is used.

Furthermore, our componential approach is particularly well suited to testing whether self-esteem reflects both genuine and illusory (or defensive) aspects. For example, Blascovich and Tomaka (1991) advocated a *two-factor approach to self-esteem* to separate the relative contributions of what they called *core self-esteem* and *defensive self-esteem*. Similarly, Shedler, Mayman, and Manis (1993) differentiated healthy self-esteem from the unhealthy "facade" of self-esteem, and Hoyle, Kernis, Leary, and Baldwin (1999) conceptualized *genuine high self-esteem* as distinct from *defensive high self-esteem*. In our model, genuine self-esteem should be reflected in the target effect; individuals with genuine self-esteem (whose self-worth is anchored in social reality) should be rated more positively by others (Leary, 1999). Illusory self-esteem, however, should be reflected in our SRM-based index of self-enhancement bias. In other words, we predict self-esteem to correlate positively with both the target effect and our SRM self-enhancement index.

What about the two previous self-enhancement indices? If the social comparison index is indeed confounded with the target effect, then its correlation with self-esteem should be inflated by the positive correlation between the target effect and self-esteem. Thus, the social comparison index should be correlated more strongly with self-esteem than should our new SRM index. The self-insight index, on the other hand, is not confounded with the target effect but with the perceiver effect. Thus, its correlation with self-esteem will depend on both self-enhancement bias and the perceiver effect.

Relationship Harmony

The measure of interpersonal adjustment was relationship harmony (Kwan, Bond, & Singelis, 1997). We chose this measure because we wanted to examine the psychological meaning of the perceiver effect and test the confounding hypothesis about the self-insight index. Kenny (1994) has suggested several possible interpretations for the perceiver effect, but these possibilities have yet to be tested empirically. One possibility is that the perceiver effect simply represents a response set, that is, individual differences in the usage of the rating scale: Individuals with high values on the perceiver effect give generally high ratings, whereas individuals with low values give generally low ratings. Alternatively, the perceiver effect may capture real individual differences in person positivity, that is, the way the individual perceives people in general—holding others in high regard, believing others have generally positive characteristics, and valuing relationships. If this interpretation is correct, individual differences in the perceiver effect should relate positively to relationship harmony.

Because the self-insight index is confounded with the perceiver effect, it should also relate positively to relationship harmony. The social comparison index, on the other hand, is confounded with the target effect, and its correlation with harmony will therefore de-

pend on both self-enhancement bias and the target effect. Our SRM-based index, finally, should not relate to relationship harmony, because there was no reason to try to please others by appearing overly modest; in the present study, participants completed their ratings of self and others privately and confidentially rather than in the presence of the other group members.

Task Performance

To measure achievement aspects of adjustment, we used task performance in the study group assignments, a non-self-report measure of adjustment. First, we predicted that the target effect would be related positively to task performance. That is, individuals who perform well in their study group assignments should be accepted and regarded more positively by the other group members. Second, because Bass and Yammarino (1991) found that their self-insight index of self-enhancement was related to career achievement (measured with non-self-report measures like promotion records and supervisor-judged performance), we expected the self-insight index here to relate negatively to task performance. Third, like the self-insight index, we expected our new SRM self-enhancement index to relate negatively because the perceiver effect (which differentiates the self-insight index from our SRM index) should not be related to task performance.

Finally, the correlation for the social comparison index should depend on the results for both our SRM index and the target effect. Given that we expected the correlation for the SRM index to be negative and the correlation for the target effect to be positive, the correlation for the social comparison index would be zero if these two effects were roughly equal in absolute size (i.e., they would cancel each other out). If they differ in size, however, the social comparison index could show either a positive or a negative correlation with task performance.

In short, if our SRM-based approach to self-enhancement bias is not only theoretically valid but also empirically useful, then the three indices of self-enhancement bias should show different patterns of correlations with adjustment. Moreover, the correlations for the two confounded indices should be predictable from the three components of our model, namely the perceiver effect, the target effect, and the SRM self-enhancement index.

Method

Participants and Experimental Design

The participants were 128 undergraduate students (98 women) who were on average 21 years old and received course credit for their participation. We used a round-robin design; 24 groups had 5 members and 2 groups had 4 members. To ensure that participants were sufficiently familiar with each other, they met for at least 1 hr per week outside the classroom to complete three group assignments.

Self- and Other Ratings of Personality

Personality ratings were obtained after the groups had worked together for 3 months. Ratings were made privately, and confidentiality was guaranteed. Each participant rated all other group members as well as the self. Participants rated a set of 32 bipolar traits, including kind versus unkind, wise versus stupid, and careful versus careless, using a 7-point rating scale. We keyed all 32 items in the desirable direction, so that higher scores indicate more positive perceptions.

SRM Analysis: Estimating Target and Perceiver Effects

Using the computer program SOREMO (Kenny, 1995), we conducted SRM analyses on each of the 32 trait ratings. This allowed us to evaluate the alpha reliability (internal consistency) of all indices, whereas most previous studies examined overall composites. All analyses were controlled for group differences (see Kenny & La Voie, 1984). Because both perceiver and target effects are potential confounds in self-enhancement research, we first established that there were significant amounts of perceiver variance ($M = 17\%$) and target variance ($M = 27\%$). As expected, participants differed systematically in how they perceived the other group members (i.e., perceiver variance) and in how they were perceived by these others (i.e., target variance). For each participant, we obtained target and perceiver effects separately for each trait (see Appendix). When averaged across the 32 traits, the overall perceiver effect had an alpha reliability of .92, and the overall target effect had an alpha of .84, indicating sufficient reliability of these important effects in our model.

Computing the Three Self-Enhancement Indices

Social comparison index: Self minus perception of others. We first averaged the ratings each participant assigned to the other group members to form a perception-of-others rating (X_{so}) for each of the 32 trait ratings. Second, we subtracted this averaged perception-of-others rating from the individual's self-rating; this difference is the social comparison index. Third, we averaged the 32 trait-specific indices to form a single overall index ($\alpha = .87$).

Self-insight index: Self minus perception by others. We first averaged the ratings each participant received from the other group members to form a perception-by-others rating (X_{os}) separately for each trait. Second, we subtracted this average from the individual's self-rating, forming the self-insight index of self-enhancement. Third, we averaged the 32 trait-specific indices to form a single overall index ($\alpha = .86$).

SRM index. To obtain the SRM self-enhancement index for each of the 32 traits, we subtracted the perceiver and target effects from the individual's self-rating. Then, we averaged the 32 trait-specific indices to form an overall index ($\alpha = .83$).

Adjustment Measures: Self-Esteem, Relationship Harmony, and Task Performance

The 10-item Rosenberg (1965) Self-Esteem Scale is the most widely used global measure of personal self-esteem. Self-esteem has been used frequently in studies of self-enhancement as an indicator of adjustment, and we therefore included it here.

Relationship harmony (Kwan et al., 1997) is the extent to which individuals value harmonious relationship with significant others. Participants list the five relationships most important in their life and then rate the degree of harmony characterizing each relationship on a 7-point scale. The overall relationship harmony index is the average across the five idiographically selected relationships.

The participants' performance on the three group tasks provided a non-self-report measure of a third adjustment criterion, namely the capacity for productive or creative work. At the end of the semester, after completing three graded assignments as a group, the members of each group rated each other's contribution to the three assignments, using a percentage scale ($M = 80\%$, $SD = 5\%$). We used these mean ratings as an index of productive task performance.

Results and Discussion

Are the Three Self-Enhancement Indices the Same?

The relevant correlations are shown in Table 1. Of greatest interest is the correlation between the social comparison index and

Table 1
Intercorrelations Among the Three Indices of Self-Enhancement

Index	1	2	3
1. Social comparison	(.87)		
2. Self-insight	.58	(.86)	
3. New SRM	.63	.55	(.83)

Note. $N = 128$. The numbers on the diagonal (in parentheses) indicate the alpha reliability of each self-enhancement index. SRM = social relations model.

the self-insight index, which was .58. This correlation is actually rather small because the two indices share the self-perception rating as one of their two components (i.e., by definition they share 50% of their variance). Thus, empirically these two indices of self-enhancement bias are hardly equivalent.

A more direct way to assess equivalence should be independent of the self-perception variance shared by the two indices. We therefore correlated the second, distinct components in the social comparison index (X_{so}, perception of others) and in the self-insight index (X_{os}, perception by others). This correlation was −.07, indicating that the two distinct terms in these indices did not converge at all. Except for the shared self-perception component, then, the two indices were completely different.

Table 1 also shows the correlations with our new SRM-based index. The two previous indices correlated only about .60 with that index, again indicating a lack of equivalence. In other words, given the 50% overlap, there were considerable differences among the three indices: A person may appear self-enhancing on one index but not the others.

Confounding in the Social Comparison and Self-Insight Indices of Self-Enhancement

Our componential analyses suggested that both previous indices confound self-enhancement with irrelevant components of interpersonal perception. As predicted, the social comparison index correlated positively with the target effect ($r = .31$, $p < .01$): Individuals seen more positively by others scored higher on self-enhancement as defined by the social comparison index. As in our Darwin example, the social comparison index erroneously labeled individuals as self-enhancers even though they actually performed better than the other group members.

Also as predicted, the self-insight index correlated positively with the perceiver effect ($r = .29$, $p < .01$): Individuals who saw others more positively scored higher on self-enhancement as defined by the self-insight index. Thus, the self-insight index erroneously labeled individuals as self-enhancers when they actually showed a general person-positivity effect.

Relation to Adjustment Measures

So far, we have shown that the two previous self-enhancement indices are not empirically equivalent and that they are confounded as predicted by our theoretical analysis. Now we test whether this confounding actually makes a substantive difference for three aspects of adjustment: self-esteem, relationship harmony, and task performance.

Relations with self-esteem. Table 2 shows the correlations of self-esteem with the two components of interpersonal perception (i.e., perceiver and target effects) and the three indices of self-enhancement. First, consider the target effect, which represents how the group members perceived the individual after getting to know him or her during the semester, that is, the social consensus about the individual. As predicted, self-esteem correlated positively with the target effect, indicating that individuals with high self-esteem were rated more positively by other group members than were individuals with low self-esteem; apparently, individuals with higher self-esteem exhibited more desirable personality attributes during the group meetings and attained higher social regard and acceptance from their group. This finding is consistent with the concept of genuine self-esteem that is anchored in the behavioral reality of the individual and can be observed by others.

Second, our findings also provided evidence for the concept of illusory self-esteem. As shown in Table 2, self-esteem correlated positively with the SRM index of self-enhancement bias. In other words, individuals who self-enhanced when they rated their behavior in the group also self-enhanced when they completed the self-esteem measure. In short, both the target effect and the unconfounded SRM self-enhancement index were needed to separate genuine from illusory self-esteem. Together, these findings show that including the target effect in research on self-perception provides greater conceptual clarity and is essential for a complete analysis of self-perception bias.

Third, we predicted that self-esteem should be correlated more positively with the social comparison index of self-enhancement than with our unconfounded SRM index. In particular, given that

Table 2
Correlations of the Interpersonal Perception Components and Self-Enhancement Indices With Two Aspects of Adjustment

	Interpersonal perception components		Self-enhancement indices		
Adjustment measure	Perceiver effect	Target effect	New SRM	Social comparison	Self-insight
Rosenberg's (1965) Self-Esteem Scale	.11	.24*	.25*	.45*	.39*
Relationship harmony	.21*	.11	.09	.17	.26*
Task performance	.12	.53*	−.42*	−.02	−.28*

Note. $N = 128$. SRM = social relations model.
* $p < .05$.

self-esteem correlated .24 with the target effect, the correlation between self-esteem and the social comparison index should be inflated because that index confounds self-enhancement with the target effect. Indeed, Table 2 shows that self-esteem and the social comparison index correlated at .45. This correlation was significantly more positive than the .25 correlation for our SRM index, as shown by a *t* test for differences between dependent correlations, $t(101) = 4.1$, $p < .05$. Why? As we have suggested, the difference between the social comparison and SRM indices can be explained by the target effect. Consistent with this interpretation, a multiple regression predicting self-esteem from both the SRM index and the target effect produced a multiple correlation of .44, very close to the simple correlation for the social comparison index ($r = .45$). Of course, the correlations cannot be exactly the same, because both our SRM index of self-enhancement and the target effect estimates are corrected as described in the Appendix. These findings demonstrate that the confounding in the social comparison index makes a significant difference in the relation between self-enhancement and self-esteem.

What about the self-insight index? Because this index is confounded with the perceiver effect, its correlation with self-esteem should reflect the combined effects of the SRM index and the perceiver effect. The perceiver effect correlated .11 with self-esteem (see Table 2), which should inflate the correlation between the self-insight index and self-esteem. Indeed, that correlation was .39, as compared with the correlation of .25 for the SRM index. Predicting self-esteem from the SRM index and the perceiver effect yielded a multiple correlation of .36, very close to the simple correlation for the self-insight index.

Relations with relationship harmony. As expected, relationship harmony was positively related to the perceiver effect ($r = .21$): Participants who valued harmony in their five most important relationships tended to perceive the members of their study group more positively. Relationship harmony was also related to the self-insight index ($r = .26$), which may simply reflect that this index confounds self-enhancement with the perceiver effect. Indeed, relationship harmony was not significantly related to the SRM index; individuals who valued harmonious relationships did not have positively biased self-views. The .09 correlation with the SRM index was significantly weaker than the .26 correlation with the self-insight index, $t(101) = 2.3$, $p < .01$. The multiple correlation of the SRM index and the perceiver effect with harmony was .30, quite similar to the simple correlation for the self-insight index.

If we had included only the self-insight measure of self-enhancement, we would have concluded that self-enhancement is associated with relationship harmony. However, the overall pattern of results shows that this relation was spurious, produced by the confounding of the self-insight index and the perceiver effect. When we examined our unconfounded SRM index of self-enhancement, we discovered that individuals who value relationships did not show self-enhancement bias but a general tendency (captured by the perceiver effect) to rate both self and others more positively than individuals who do not value relationships. These findings illustrate that the perceiver effect reflects important differences among individuals in the interpersonal arena and has considerable importance in a complete model of self-perception bias.

Relations with task performance. As expected, task performance was correlated positively with the target effect. That is, individuals who performed well on the group assignments were rated more positively by their group members, indicating that they attained greater social acceptance in this academic setting. Task performance was related negatively to the SRM self-enhancement index; that is, individuals who self-enhanced were less likely to perform well on the group tasks. Also as predicted, the self-insight index of self-enhancement was related negatively to task performance; however, this correlation (−.28) was smaller than that for the SRM index (−.42) because the self-insight index is confounded with the perceiver effect, which had a positive correlation (.12) with task performance. What about the social comparison index? In contrast to the other two self-enhancement indices, the social comparison index did not show the negative relation with task performance ($r = -.02$) because its confounding with the target effect cancelled out the negative effect of self-enhancement. Thus, we found a rather substantial discrepancy between the social comparison index and the other two self-enhancement indices.

Empirical Findings: Summary and Caveats

The results in Table 2 show that the three self-enhancement indices differed considerably in their relations to adjustment. As we have argued above, these differences can be explained by the confounding of the social comparison index with the target effect and the confounding of the self-insight index with the perceiver effect. When compared with the new SRM index, the social comparison index misleadingly indicated a much stronger self-enhancement effect for self-esteem and no self-enhancement effect (rather than a negative one) for task performance. Similarly, compared with the new SRM index, the self-insight index misleadingly indicated a more positive self-enhancement effect for relationship harmony and a less negative self-enhancement effect for task performance.

In short, our illustrative study shows that both of the previous self-enhancement indices differ from the SRM index in their associations with measures of adjustment, and these differences were not only significant but also predictable from our theoretical analysis. Nonetheless, our evidence is based on only one study, and some clear caveats about the generalizability of our findings are in order. In particular, the link between the different conceptions of self-enhancement and various aspects of adjustment needs to be studied much more closely and in different situations. Future research needs to use multiple measures, especially for the constructs of psychological adjustment and illusory self-esteem. Moreover, when assessing the target effect, it will be important to include more objective standards or tests, beyond the social consensus examined here. In conclusion, then, the present findings are consistent with our theoretical formulation but need to be replicated and extended before generalizing beyond the present context.

General Discussion

Confounding Effects: Boundary Conditions

Our study illustrates some of the empirical implications of our theoretical derivations, showing that the two previous indices of self-enhancement are different from each other and confound

self-enhancement with the target and perceiver effects, respectively. However, our study examined only one particular research context. How frequently should we expect to see divergences between the two previous self-enhancement indices? Using our theoretical framework, we can specify when the two indices would be the same; in particular, the difference between their components would have to be zero. Following Equations 4 and 5, this difference is

$$\Delta_{sc-si} = T_s + R_{ss} + (C_s - C_o) - [P_s + R_{ss} + (C_s - C_o)]$$
$$= T_s - P_s. \quad (8)$$

Thus, the two indices have different values, except in one special case: when the individual's target effect T_s equals the individual's perceiver effect P_s. This condition may occur when P_s and T_s are highly correlated, for example, when individuals who are perceived positively by their group members also perceive others equally positively. However, the correlation between perceiver effect and target effect was essentially zero ($r = .05$) in our study, quite similar to the mean correlation of $-.01$ in 12 studies of social perception reviewed by Kenny (1994). Future research needs to examine this issue more closely, but so far, the evidence suggests that the condition $P_s = T_s$ is unlikely to hold.

Even more important, under what conditions are the two previous self-enhancement indices not confounded and thus identical to our SRM index? Because of its confounding with the target effect T_s, the social comparison index is the same as the SRM index only when $T_s = 0$—when individuals do not differ systematically on the attributes being rated. It is hard to imagine any attributes studied in research on self-enhancement on which individuals would not differ at all. Indeed, individual differences in the target effect have been demonstrated for a broad range of personality characteristics. Analogously, because of its confounding with the perceiver effect P_s, the self-insight index can be the same as the SRM index only when $P_s = 0$—when individuals do not differ in their general perception of others. Again, that seems unlikely, given that individual differences in the perceiver effect have been widely demonstrated (see Kenny, 1994). In short, there is little reason to expect that the perceiver and target effect would be the same or equal zero in most studies of self-enhancement.

Reconsidering the Relation Between Self-Enhancement and Adjustment

As we note above, any one empirical study cannot fully represent the wide range of self-enhancement studies that have been conducted over the past 30 years; our study was designed to illustrate the predicted effects of confounds on the two previous indices of self-enhancement when studied within our unified theoretical and operational framework. In order to represent the social comparison and self-insight indices within that framework, we had to choose a particular operationalization for our empirical study.

Following the logic of the social comparison perspective, we explicated the social comparison index as a comparison between the individual's self-perception and the way the individual perceives four specific, socially relevant others known to them individually in a study-group context. In contrast, many studies adopting the social comparison conception of self-enhancement have not operationalized self-enhancement bias in such explicit comparison terms, using instead simpler operationalizations of the comparison other. Examples include asking subjects to rate themselves and a hypothetical average other (or a typical college student; e.g., Alicke, 1985; Beauregard & Dunning, 1998) or even combining self-perception and other perception into one single rating task that asks subjects to indicate how they perceive themselves compared with an average other (e.g., Taylor & Gollwitzer, 1995). These differences in operationalizations are not inconsequential; as Klar and Giladi (1997, 1999) have shown, people rate a hypothetical average person less positively than they rate several known individual other persons averaged, and thus ratings of hypothetical others yield, when compared with the self-rating, more pronounced self-enhancement bias (see also Brown, 1986).

For the self-insight index, we used four peer observers who got to know the subjects over the course of a semester, whereas other studies have used various kinds and numbers of observers or even such operational criteria as grades, IQ scores, and physical attractiveness ratings made from photographs. Moreover, a number of studies adopting the self-insight conception have used residual scores to index self-enhancement bias rather than difference scores (e.g., John & Robins, 1994; Paulhus, 1998). The widely divergent social comparison and self-insight indices used in the previous literature, if these ever were measured in the same study, might not correlate very highly. In contrast, within our unified SRM framework, they shared the same self-rating and the same four group members serving as both targets and perceivers; they were thus substantially positively correlated (about .60) in our study, hence limiting statistically the extent to which the two indices could show divergent correlations with measures of adjustment.

With these caveats, we can now ask how our findings compare with those in the self-enhancement literature. According to the literature review discussed in the introduction of this article, one would expect generally positive correlations with adjustment for the social comparison index but not for the self-insight index. What configurations of the three components in our model would yield the pattern of results we found in the literature review?

According to our model, the answer depends on the target and perceiver effects that confound the two previous self-enhancement indices. Specifically, applying Equation 8 above to correlations with adjustment, it follows that the social comparison and self-insight indices would have the same correlation with adjustment only if the target effect (T_s) and the perceiver effect (P_s) showed the same correlation with adjustment. Conversely, the two previous self-enhancement indices should diverge more in their adjustment correlations the more the target and perceiver effects differ in their correlations with adjustment (i.e., as a function of the difference between the adjustment correlations for the target effect and for the perceiver effect).

Consider two example scenarios. In the first, there is no true self-enhancement effect on adjustment (i.e., the SRM index correlates zero with an adjustment measure), but the target effect correlates .30 and the perceiver effect correlates zero. Then, according to our model, the adjustment correlation would be positive (about .30) for the social comparison index but essentially zero for the self-insight index; this divergence would simply follow from the difference in adjustment correlations for T_s and P_s, which is here .30 versus .00. In the second scenario, the new SRM index correlates $-.20$ with an adjustment measure, the target effect correlates .40, and the perceiver effect correlates zero. Then the

adjustment correlation would be positive (about .20) for the social comparison index but negative (−.20) for the self-insight index; in this case, the crucial difference in adjustment correlations for T_s and P_s is .40 versus .00. Both scenarios yield adjustment correlations that are quite typical in the self-enhancement literature—positive effects for the social comparison index but not for the self-insight index. How likely are these two scenarios?

To answer that question, we need to consider how the target and perceiver effects are correlated with adjustment. The target effect is likely to correlate positively, as we assumed in both scenarios. Specifically, being seen positively by relevant others (T_s) should engender various social, cognitive, and affective processes (e.g., acceptance, belonging, social support) that lead to generally positive consequences for adjustment. The perceiver effect, in contrast, is less likely to correlate positively with adjustment. Seeing others in a generally (and potentially indiscriminately) positive way may not always lead to the positive consequences that author E. H. Porter (1913) imagined for her heroine Pollyanna: Her unfailingly positive views somehow reformed her antagonists and righted the wrongs of the world. Instead, our study showed the perceiver effect related significantly only to relationship harmony, and it may even betray a naiveté about the world that impedes adjustment in certain contexts (e.g., when critical thinking is required or when others try to take advantage). Thus, for the sake of simplicity, our two example scenarios assumed that the perceiver effect is correlated zero with adjustment; if the correlations were negative, the discrepancy in adjustment findings for the social comparison and self-insight indices would be even more pronounced. In short, the target and perceiver effects play a crucial role in understanding the conflicting findings on self-enhancement and adjustment, because each of them is a confound in one of the two previous self-enhancement indices.

Finally, our empirical study suggests an important general conclusion about the link between self-enhancement and adjustment. So far, researchers have emphasized the question of whether self-enhancement is related to adjustment. However, our findings suggest that this question is too simple because it may not have a single answer; the relation between self-enhancement and adjustment may vary with the aspect of adjustment being studied. Specifically, using our unconfounded SRM index, self-enhancement was related positively to self-esteem, zero to relationship harmony, and negatively to task performance. Obviously, we need to be careful about drawing definitive conclusions from our illustrative study. For now, however, our findings are most consistent with the view that self-enhancement is a mixed blessing (Paulhus, 1998; Robins & Beer, 2001): Self-enhancement bias may have positive consequences for intrapsychic adjustment, allowing self-enhancers to feel good about themselves (e.g., self-esteem, subjective well-being), but not for task performance and interpersonal adjustment (e.g., being liked), especially in longer term relationships when initially positive impressions may fade over time. Moreover, there may be domain-specific effects; for example, positively biased expectations and beliefs in the health domain (e.g., Taylor et al., 1992) might prove more beneficial than biased self-perceptions in the domains of personality and achievement. In short, future research needs to provide more fine-grained analyses of the conditions under which self-enhancement bias in different domains relates to multiple aspects of adjustment.

Interpersonal Approach to Self-Enhancement

Our interpersonal approach to self-enhancement provides us with important tools: a conceptual language for defining and mathematically formalizing the key theoretical terms and components as well as a general research design. We hope our theoretical derivations and initial results will persuade researchers to study self-enhancement bias within the broader context of interpersonal perception. In particular, instead of focusing on the individual self, the self should be studied both as social perceiver and as target of social perception. Instead of studying one person at a time, multiple individuals should be studied interacting in groups, and instead of global indices, componential analysis should be used to identify and assess specific components of social perception. The perceiver and target effects are particularly important components in our approach, with distinct psychological meanings and implications.

Why Study the Perceiver Effect in Self-Enhancement Research?

A high perceiver effect implies a tendency to evaluate others positively or leniently, whereas a low perceiver effect implies a tendency to evaluate others negatively or harshly. We found that individuals who valued harmony in their closest relationships showed a high perceiver effect in their study groups. Thus, the perceiver effect has substantive psychological meaning, with high scorers likely to value and maintain close relationships.

The perceiver effect is also relevant for the phenomenon of observer harshness—the finding that some observers rate targets overly negatively. For example, observer harshness has been proposed as a possible alternative interpretation for some of Lewinsohn et al.'s (1980) depressive realism findings: Independent observers rated participants in a get-acquainted situation more negatively than those participants rated themselves, which might reflect harshness bias on the part of the observers rather than self-enhancement bias on the part of the participants (e.g., J. D. Campbell & Fehr, 1990; Coyne & Gotlib, 1983). In our model, observer harshness can be conceptualized as a low score on the perceiver effect: Observers are perceivers, and observer harshness would be reflected in the perceiver effect. Thus, observer effects—both negative and positive ones—are measured and controlled in our approach to self-enhancement bias. These considerations again highlight the importance of using multiple perceivers and targets: Studies using only a single perceiver or a single target cannot address observer effects at all. Indeed, we submit that these effects operate in all research contexts that involve human judgments about people, whether self or others, and should not be ignored.

Why Study the Target Effect in Self-Enhancement Research?

A high target effect implies that the individual was perceived positively by the consensus of the other group members. When measured across a broad set of socially desirable attributes, the target effect can be understood as a measure of social regard, esteem, or acceptance (Leary, 1999). Our findings are consistent with this view. Individuals regarded highly by their study group members (i.e., a high target effect) also scored high on two

adjustment measures: They had high personal self-esteem and performed well on group assignments.

Like the present study, much research on self-enhancement has used ratings of desirable and undesirable personality attributes, such as responsible, bright, friendly, phony, snobbish, and cruel (e.g., Brown, 1986; Hayes & Dunning, 1997). Such personality ratings are socially defined; they do not have a single or objective criterion and thus require human observation and inference. For personality ratings, then, human observers and knowledgeable informants are the only criteria that are available and meaningful: The consensual judgments of others define the social reality within which the individual functions (Funder, 1987; Kenny, 1991; Kruglanski, 1989; Robins & John, 1997b).

However, more objective or "operational" criteria do exist in some behavioral domains. For example, self-enhancement bias can be studied using specific behaviors such as interrupting others, which can be defined operationally by the number of interruptions scored from a videotape of an interaction (Gosling, John, Craik, & Robins, 1998). Self-enhancement of intelligence can be studied by comparing self-perceptions with intelligence test scores (Gabriel, Critelli, & Ee, 1994; Paulhus, 1998), and self-perceptions of academic ability can be compared with actual grades (Farwell & Wohlwend-Lloyd, 1998; Robins & Beer, 2001).

From the perspective of our model, the target effect represents individual differences among participants, whether in peer-rated friendliness, number of interruptions, or IQ test scores. Our approach offers great flexibility in terms of the data used to estimate the target effect, and future research should incorporate such operational criteria. Of course, issues of scale metric will need to be addressed; for example, if an IQ test is to be incorporated, the round-robin ratings of self and others should be made on the same scale as the IQ test scores. However, even then the perceiver effect remains important—without knowing how the individual generally perceives people on that attribute, we cannot evaluate whether the individual is self-enhancing or not.

The use of multiple criteria would also address a limitation that applies to the previous approaches to self-enhancement bias as well as to the present one. Integrating the previous approaches, our index of self-enhancement bias indicates whether the observed self-perception is more (or less) positive than would be expected from the individual's perceiver effect, target effect, and the mean of the self-ratings. This index captures the unique self-perception, that is, the idiosyncratic view the individual holds about the self. This idiosyncratic view of the self may still include some valid variance rather than consist of pure bias. For example, an individual may know that she does well on standardized tests of intelligence, but she may rarely show her intelligence in social interactions. Thus, if group members were to rate her intelligence, the target effect estimated solely from these ratings might not fully capture her general intelligence. In this case, the inclusion of additional criteria beyond observer ratings (e.g., test scores) could help bolster the construct validity of the target effect estimates.

More generally, future research on self-enhancement needs to assess and take into account real differences among individuals in their social behavior and reputation. In our conception, these differences are captured by the target effect. As we have demonstrated, the target effect itself has important links to some aspects of psychological adjustment and cannot be ignored in research on self-enhancement.

Toward a Dynamic Model of Self-Enhancement: Interaction Effects

These arguments show that if we are to understand how self-enhancement bias relates to adjustment, both target and perceiver effects must be included in the research design. Now that we have defined and separately operationalized the three components in our interpersonal model, we can theorize about how they jointly determine adjustment outcomes. That is, although we have assumed additivity in identifying and measuring the three components within the interpersonal perception paradigm, it does not follow that these three components have only additive effects on third variables, such as adjustment.

Consider, for example, one important aspect of interpersonal adjustment, namely the degree to which individuals are liked by others in their social network (e.g., Paulhus, 1998). In terms of simple effects, our model and previous findings suggest three predictions: Liking should be related positively to the target effect (i.e., people who have more desirable characteristics are better liked by others) and positively to the perceiver effect (i.e., people who like others elicit reciprocity, that is, they are in turn liked by those others) but negatively to self-enhancement bias (i.e., self-enhancers behave in self-centered ways that make them less likable). However, results may be more complicated than previously thought, because the three components may interact. For example, the link between liking and self-enhancement bias may depend, in part, on the target effect: People may dislike only those self-enhancers who have a low target effect (i.e., those who do not command socially desirable qualities). This is a compensatory model where socially desirable qualities (e.g., performance skills) of the individual can compensate for the social costs of self-enhancement bias. So this moderator account suggests that some self-enhancers, such as highly skilled actors and performers, will still be well liked because they score high on the target effect. A focused program of research is now needed to examine these kinds of interaction effects and to delineate their generality and boundary conditions. For example, the interaction between the target effect and self-enhancement bias on liking may depend on the length and the nature of the relationship. In a short-term interaction, the target effect may be particularly salient so that the target effect could fully compensate for the social cost of self-enhancement bias, and self-enhancement bias would lead to less liking only for those individuals low on the target effect. In contrast, in long-term relationships, the target effect may become less important and only partially able to compensate for self-enhancement bias.

Applications to Experimental Contexts

The present research examined self-enhancement in a naturalistic group context, but our model is also relevant to experimental research on self-enhancement processes. For example, our model can be applied to understanding the role of self-enhancement in self-esteem regulation. Research on reactions to feedback suggests that after self-esteem threat people may restore their self-worth by perceiving themselves more positively or by perceiving others more negatively (Beauregard & Dunning, 1998; Brown & Gallagher, 1992). In our model, the first process would reflect an increase in the self-enhancement effect, whereas the second would reflect a decrease in the perceiver effect. Our model would esti-

mate both self-enhancement and perceiver effects for each individual on the basis of their perceptions of themselves and multiple targets and thus allows comparisons between different experimental conditions (e.g., success vs. failure feedback). Similarly, our model could be applied to the *genius effect* (Alicke, LoSchiavo, Zerbst, & Zhang, 1997)—people's tendency to maintain self-worth by exaggerating the abilities of those who outperformed them; in our model, the genius effect is captured by an increase in the perceiver effect. More generally, the use of our model in experimental research may help to identify situational factors that influence the degree of self-enhancement as well as the magnitude of the perceiver and target effects.

Temporal Extension of the Model

Although we believe our model improves on the two previous conceptions of self-enhancement bias, it does not capture the whole range of self-enhancement phenomena studied in the literature. Like the social comparison and self-insight conceptions of self-enhancement, our model can be criticized for omitting "the temporal dimension of human experience" (Albert, 1977, p. 485). Albert (1977) postulated "a process of comparison that goes on only within a single individual [who] might compare a description of himself now with a description of himself in the past or future" (p. 485). Indeed, recent research has shown that people evaluate current selves more positively than past selves (e.g., Wilson & Ross, 2001). Just as Albert extended Festinger's (1954) social comparison theory by adding a temporal dimension, we can expand our interpersonal model of self-enhancement to incorporate time as a third dimension in addition to perceiver and target. This three-dimensional model can be tested using a research design in which multiple perceivers rate multiple targets at multiple times (e.g., how Betty perceives Alice and herself 10 years ago, now, and 10 years into the future). This extended version of our model would allow us to conceptualize rather diverse forms of self-enhancement within a single framework, such as the tendency to see oneself more positively in the present than in the past, and to address how such self-perceptions relate to changes in perceiver and target effects over time. This extended model would also facilitate integration with the literature on aging and the self (e.g., Fleeson & Heckhausen, 1997), addressing such issues as whether physical maturity entails a form of psychological maturity in which older individuals perceive others more benevolently (increases in the perceiver effect) and themselves more humbly (decreases in self-enhancement bias). The temporal extension of our model and its application to experimental studies of self-esteem maintenance processes are just two of many potential extensions and directions for future research.

Conclusion

We began this article by identifying in the literature two distinct approaches to the study of self-enhancement bias. Our Darwin example exposes a contradiction between these two approaches: According to the social comparison index, Darwin is a self-enhancer, but according to the self-insight index, he is a self-effacer. To resolve this contradiction, we reconceptualized self-enhancement bias within the broader theoretical context of interpersonal perception, isolating three conceptual components: perceiver effect, target effect, and the unique perceiver–target relationship. We then proposed a componential analysis (which Cronbach, 1955, had long recommended to social perception researchers) and derived a new SRM-based index of self-enhancement bias. This index, which captures Darwin's unique perception of himself, allows us to determine whether Darwin's self-perception was actually more or less positive than would be expected given the way he perceived others (now formalized as the perceiver effect) and the way he was perceived by others (the target effect). Using this unconfounded measure of self-enhancement bias, we can now conclude that Darwin was in fact a self-effacer, a conclusion consistent with the historical record—Darwin was very modest about his achievements.

Our empirical study served to illustrate the heuristic value of our theoretical analyses, highlighting differences among the two previous self-enhancement measures and our SRM-based index. The link between self-enhancement and adjustment, a matter of great controversy in the field, differed depending on which self-enhancement index was used. The findings for self-esteem, relationship harmony, and task performance show that both perceiver and target effects must be considered in research on self-enhancement bias; these two components of interpersonal perception bring greater conceptual clarity to analyses of accuracy and bias in self-perception.

Throughout this article, we highlight two broad perspectives on self-enhancement bias. On the one hand, we suggest, social–cognitive psychologists have long been interested in social comparisons, contrasting two kinds of perception made by the same individual: how people perceive themselves and how they perceive others. On the other hand, personality psychologists have long been interested in the accuracy of self-perception, focusing on how people's perceptions of themselves compare with an external criterion, such as ratings by others. We hope that our integrative model shows compellingly that each of these perspectives is incomplete without the other. That is, the social–cognitive perspective cannot ignore the actual standing of the individual, nor can the personality perspective ignore how the individual perceives people other than the self. Both are inherently important components of interpersonal perception and need to be taken into account when claims are made about biases in self-perception and their implications for adjustment. The interpersonal model proposed here incorporates both the social–cognitive and the personality perspectives within one integrative formulation that conceptualizes self-perception as a special case of interpersonal perception and emphasizes a socially interacting self that is both social perceiver and target of social perception.

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Appendix

Formula to Compute the Perceiver and Target Effects

1. To estimate the perceiver effect, we cannot simply take the difference between the row mean and the grand mean: The row mean is not an unbiased estimate because the self-rating (the diagonal in Figure 1) is not included, and the targets being rated by each perceiver make up a slightly different set for each group member. Thus, as Warner, Kenny, and Stoto (1979) showed, we need to "correct for this 'missing partner' bias" (p. 1747). The formula for the unbiased perceiver effect (P) for perceiver j is

$$\mathrm{P}j = \frac{(n-1)^2}{N(n-2)}\,Mj. + \frac{n-1}{N(n-2)}\,M.j - \frac{n-1}{n-2}\,M.. \qquad \text{(A1)}$$

where $Mj.$ is the mean for perceiver j averaged across $n - 1$ targets (i.e., the row mean), $M.j$ is the mean for target j averaged across $n - 1$ perceivers (i.e., the column mean), and $M..$ is the grand mean (Warner et al., 1979; see also Kenny, 1994, Appendix B). In our example, Alice rated the other group members with an average of 8.25. Alice's perceiver effect is Alice's row mean (8.25) minus the grand mean (5) plus the missing-partner correction (−.25), which equals 3. In contrast, David's row mean was 2.75; subtracting the grand mean (5) and adding the correction (.25) results in a perceiver effect of −2 for David.

2. To estimate the target effect, we compute the difference between the column mean and the grand mean and add the missing-partner correction. In our example, Alice received an average rating of 3.25 from the other group members; subtracting the grand mean (5) and adding the correction (.75), her target effect was −1. In contrast, David's column mean was 6.5 and the correction was −.5, leading to a target effect of 1. The formula for the unbiased target effect (T) for target j is

$$\mathrm{T}j = \frac{(n-1)^2}{n(n-2)}\,M.j + \frac{n-1}{n(n-2)}\,Mj. - \frac{n-1}{n-2}\,M.. \qquad \text{(A2)}$$

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