

RATIONALITY AND SOCIAL RESPONSIBILITY

Essays in Honor of Robyn Mason Dawes

Edited by
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THE ROBUST BEAUTY OF SIMPLE ASSOCIATIONS

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Since Festinger's (1954) exposition of social comparison theory, the presumed relative nature of human judgment has loomed large in theories of self-perception, stereotyping, and intergroup relations. The core assumption of this meta-theoretical orientation is that when people cannot judge themselves in absolute terms, they focus on the ways in which they differ from others. Karniol (2003) suggested that self-concepts are primarily composed of traits that people know, or think they know, set them apart from others. McCauley and Stitt (1978) offered an analogous proposal with respect to group perception. Here, an image of a group (or stereotype) is composed of all those traits perceivers consider distinctive, that is, traits that are either more or less common in the group than in the general population. Social identity theory (Tajfel & Turner, 1979) and its offshoots (e.g., self-categorization theory [Turner, Hogg, Oakes, Reicher, & Wetherell, 1987]) combine these two levels of distinctiveness by suggesting that perceived group differences give rise to both the stereotyping of other groups (i.e., outgroups) and to a person's own "socialized" self. These theories assume that people are motivated to perceive and even exaggerate group differences and to seek comparisons that allow the ingroup and the self to appear in a favorable light (Brown & Capozza, 2007).

Relativistic theories place the burden of explaining self-perception and group perception on the perceived differences between two social objects: the self relative to the average person or the ingroup relative to

the outgroup. These differences thereby attain a theoretical status that must be justified ontologically or pragmatically. Both types of justification lead to a search for correlations between the relevant differences and criterion variables. In the area of self-perception, positive differences between self-judgments and judgments of the average person are said to capture a self-enhancement bias. Taylor and Brown (1988) argued that these differences are ontologically valid indices of bias because not everyone can be better than average (but see Moore & Small, chapter 7). In the words of my 8-year-old daughter Lauren, "If everyone were above average, above average would be average." Taylor and Brown further argued that self-other differences are pragmatically valid because they predict other desirable attributes, such as self-esteem. In the area of group perception, differences between ingroup and outgroup perception (or between ingroup perception and the perception of the general population) are ontologically justified inasmuch as such differences indeed exist (McCauley & Stitt, 1978); they are pragmatically justified inasmuch as they are related to people's well-being. Again, self-esteem is the typical variable of choice (Hogg & Abrams, 1990).

The appeal of the relativistic approach to self- and social perception is that it capitalizes on the idea that judgments make sense in context. Whenever statistics are gathered, the question is, "Compared to what?" (Dawes, 2001). Experimentalists routinely compare data observed in a treatment group with data obtained in a control group. It is the statistically significant difference that leads to the conclusion that a phenomenon has been detected (Krueger, 2001). An effect exists if there "is not nothing" (Dawes, 1991). Similarly, Bayesians know that learning by induction requires a likelihood ratio large enough to yield credible changes from the ratios of base rates to the ratios of posterior probabilities.

In a correlational world, however, the question is whether differences (or ratios) predict criterion variables better than their component variables. Thus, there is an alternative to the idea that social comparisons are necessary ingredients of self- and social perception. Conceivably, people have access to at least some of their own attributes without comparing themselves to others, and perhaps they evaluate their ingroups positively or negatively regardless of how they view a salient outgroup (see Brewer, chapter 10). Even Festinger (1954) granted that social comparison is a strategy of last resort, which is deployed when no direct assessment is possible.

In this chapter, I review classic and recent work relating to the issue of relative versus absolute perception. Based on methodological considerations and empirical evidence, I suggest that theories staked on discrepancies must meet a higher standard of proof than has hitherto been

assumed. Often, absolute judgments of the self or of social groups work quite well as predictors of socially relevant outcomes such as subjective well-being or intergroup harmony. A parsimonious model can integrate the egocentric biases of self-enhancement and social projection with the intergroup biases of ingroup-outgroup differentiation and ingroup favoritism. Questioning the search for complex interactions among clinical predictor variables, Dawes (1979; see Appendix 1, this volume) demonstrated the "robust beauty" of simple weighted-average models. His insights provide valuable lessons for efforts to trim away unnecessary complexity from relativistic models of social perception.

SELF-PERCEPTION AND ENHANCEMENT

How much more intelligent, soulful, better, is everything about us than about anyone else? (Horowitz, 1878, p. 267)

The most popular index of self-enhancement is a direct comparative judgment. Most people, for example, believe they are better than average drivers (Svenson, 1981) and less likely to succumb to genetic diseases (Dawes, 1994). Assuming that people engage in social comparisons, they might as well express them in a single number. Alas, this method conflates accurate self-perception with bias. If the sample of respondents is representative of the population and if the distribution of "true scores" is symmetrical, the average comparative self-judgment should lie at the midpoint of the scale. If it is higher, there must be more false positives (people claiming to be better than average when they are not) than false negatives (people claiming to be worse than average when they are not). The method does not discriminate between the false and the true positives, or between the false and the true negatives. Therefore, correlations between the comparative judgments and criterion variables (e.g., self-esteem) say nothing about the ontological or pragmatic status of these comparisons. It gets worse when judges become more accurate. If everyone accurately ranked the self relative to the average group member, every true positive would be wrongly accused of self-enhancement, and every true negative would be wrongly accused of self-deprecation. A positive correlation between comparative self-judgments and self-esteem would not reveal the benefits of self-enhancement, but simply reveal that positive self-assessment on different instruments tend to go together (Baumeister, Campbell, Krueger, & Vohs, 2003).

Klar and Giladi (1999) recognized the need to understand comparative judgments in light of the absolute judgments that presumably underlie them. They found that comparative self-judgments are closely

related to absolute self-judgments and independent of absolute other-judgments (see Chambers & Windschitl, 2004, for a review). When people judge how happy they are relative to the average person, they simply report how happy they are, while ignoring how happy they think the average person is. Fox and Kahneman (1992, p. 224) anticipated this result when writing that

it is plausible to assume, for example, that most people are keenly aware of their own happiness or misery in the domain of love, but relatively ignorant of the love lives of others. In the absence of more direct information about other people, one's own satisfaction can be used to guess how one compares to others.

The selective reliance on self-judgments suggests that comparative judgments are not really comparative and only self-enhancing by accident.¹ Indeed, for difficult items (e.g., acting), people make low absolute self-judgments, which in turn lead to low comparative judgments suggesting self-deprecation (Kruger, 1999). There are currently three different ways to explain the relative dominance of absolute self-judgments. According to one view, people weight self-referent information more strongly than other-referent information because the former is richer, more deeply encoded, and more accessible. According to another view, people weight whichever information they happen to be attending to most strongly. The information they focus on happens to be self-referent information most of the time, but it does not have to be (Moore & Kim, 2003). A third view also assumes psychological differences in attention to and memory of self- versus other-referent information, but it stresses the statistical differences in regressiveness (Krueger, 2000). Inasmuch as other-judgments contain a larger random error component than self-judgments do, they are more regressive; that is, they are less strongly correlated with judgments of criterion variables (e.g., success at a task or possession of desirable personality traits). It follows that people make positive comparative judgments when they themselves think they succeed, and negative comparative judgments when they think they fail, even if they do not ignore their absolute judgments of others (Moore & Small, chapter 7).

Sedikides, Gaertner, and Toguchi (2003) used comparative judgments to defend the universalist view of self-perception. They noted that evidence for self-enhancement, much like evidence for other biases, was long accepted as valid across cultures. Most people were thought to possess a need for positive self-regard and to rely on self-enhancement to meet this need. This view was later challenged as an instance of, if not scientific imperialism, then at least as an instance of unwarranted

generalization (Markus & Kitayama, 1991). In time, empirical studies began to appear showing that members of some collectivist cultures do not self-enhance, but rather self-deprecate (Heine, Lehman, Markus, & Kitayama, 1999).

Sedikides et al. (2003) countered this challenge with a challenge of their own. Retaining the premise that there is a universal need for positive self-regard and the idea that self-enhancement meets this need, they suggested that culture does not moderate the overall level of self-enhancement, but that it directs people to domains in which self-enhancement is most effective. Sedikides et al. found that Americans (and people with independent self-construals) rated themselves higher than the average person on individualist traits (e.g., self-reliant, unique), whereas the Japanese (or people with collectivist self-construals) rated themselves higher than the average person on collectivist traits (e.g., cooperative, respectful).

The decomposability of comparative judgments raises a challenge to this challenge of a challenge. Western individualists may simply ascribe individualist traits to themselves, and Easterners may simply ascribe collectivist traits to themselves without being overly concerned about how they might differ from the average person in their culture. High self-judgments on culturally prominent traits then merely signal that a person is effectively acculturated. The implication of this analysis is that cultural stereotypes, on which comparisons between individualist and collectivist societies are predicated, may be at least partially accurate (Jussim, 2005).

How can some people come to see themselves in individualist terms, whereas others come to see themselves in collectivist terms? Self-categorization theory attributes group differences in self-perception to processes of self-stereotyping or "depersonalization." For these processes to work, social categorization needs to be salient, which was not the case for the participants in the study by Sedikides et al. (2003). Neither can self-stereotyping account for the differences between individualist and collectivist self-construals within a culture. Act-frequency theory offers a simpler account. Participants might have agreed on what constitutes an individualist or a collectivist behavior and simply summed their own acts within the two trait domains (Buss & Craik, 1983). Comparisons could then take place, but they would involve categories of acts instead of categories of people. In the West, most people may note that they more often act individualistically than collectivistly and draw the corresponding trait inference. The advantage of this comparative strategy is that access to one's own relative act frequencies is easy compared with access to act frequencies in other cultures.

SOCIAL PROJECTION

We are most likely to touch something universal when each of us speaks personally and witnesses to the sliver of truth we have refined from our individual experience. (Keen, 1992, p. 9)

Unlike self-enhancement, social projection generates perceptions of similarity between the self and others. The typical measure is a correlation between judgments of the self and judgments of others (Krueger, 1998a). Experimental work shows that these correlations reflect a projective path from self-assessments to group estimates, instead of the inverse path from group assessments to self-estimates, which would indicate self-stereotyping (Cadinu & Rothbart, 1996; Otten & Epstude, 2006). Inasmuch as most self-knowledge is more deeply encoded than knowledge of others, it is more accessible. Judgments about others are in part constructed (or "projected") on the basis of this self-knowledge, a process that works most effectively when little individuating knowledge about others or relevant stereotypes regarding their group are available.

Dawes, McFlavish, and Shacklee (1977; see Appendix 2, this volume) found social projection in the prisoner's dilemma game. Most cooperators expected others to cooperate, and most defectors expected others to defect. Moreover, the variance in players' predictions was larger than the variance of predictions made by uninvolved observers, which suggests that players used their own choice in the game to infer what their opponents would do (see Krueger, Acevedo, & Robbins, 2006, for replications).

Social projection has traditionally been deemed a cognitive illusion (Ross, Greene, & House, 1977), and some still argue that it is a form of "epistemic egocentrism" that stands in the way of effective perspective-taking (Royzman, Cassidy, & Baron, 2003). According to this view, people ought to do a better job setting aside their own privileged self-knowledge when making predictions about others. Dissenting, Dawes (1989; 1990; Dawes & Mulford, 1996) showed analytically and empirically that people should treat their own behaviors as data because they are lawfully related to what most others do. Through projection, people can reap an accuracy benefit. Their social predictions are less erroneous than they would be without projection.

Self-enhancement and social projection can co-occur. People can think that they are better than others, while also being similar. Whereas self-enhancement is typically studied as a mean difference between self-judgments and other-judgments, social projection is studied as a matter of profile similarity (Krueger, 2000). Nevertheless, increases in projection should reduce self-enhancement effects. If people were to

judge others exactly like themselves, no self-enhancement could occur (Krueger, 2002).

With respect to both phenomena, it is interesting to note that the bias is not so much an overuse of self-referent information, but a relative neglect of other-referent information. In the case of self-enhancement, we have seen that people dismiss their own absolute judgments of the average person when judging themselves relative to that person. In the case of projection, they base their judgments of the group primarily on their own behaviors, while putting little weight on the behaviors of individual others whom they know (Krueger, 2003).

An integrative model of social judgment needs to account for the interplay among diverse heuristics and biases. Recall Taylor and Brown's (1988) pragmatic justification of self-enhancement, namely, the claim that greater enhancement is associated with better personal adjustment. Statistically, this claim takes the form of a positive difference-score correlation. In $r_{\text{self-other, criterion}}$ "self" refers to absolute self-judgments with regard to a desirable attribute, "other" refers to absolute judgments of the average person with regard to the same attribute, and "criterion" refers to a measure of personal adjustment, usually self-esteem. The difference-score correlation can be recovered from the three correlations among the three measures and the variances of these measures. When the difference-score correlation is written as

$$\frac{s_{\text{self}} \cdot r_{\text{self, criterion}} - s_{\text{other}} \cdot r_{\text{other, criterion}}}{\sqrt{s_{\text{self}}^2 + s_{\text{other}}^2 - 2 \cdot s_{\text{self}} \cdot s_{\text{other}} \cdot r_{\text{self, other}}}},$$

three dependencies are evident. First, self-enhancement (self-other) is positively correlated with the criterion inasmuch as people weight their self-judgments more strongly than their other-judgments (i.e., $r_{\text{self, criterion}} > r_{\text{other, criterion}}$). Second, the difference-score correlation is positive inasmuch as self-judgments are less regressive than other-judgments (i.e., $s_{\text{self}} > s_{\text{other}}$).² Third, the difference-score correlation is positive inasmuch as people project to others (i.e., $r_{\text{self, other}} > 0$). To illustrate these dependencies, I created eight combinations by selecting reasonable values for each. I assumed that people either weigh self-judgments and other-judgments equally ($r_{\text{self, criterion}} = r_{\text{other, criterion}} = .7$) or egocentrically ($r_{\text{self, criterion}} = .7$; $r_{\text{other, criterion}} = .2$), that other-judgments are nonregressive ($s_{\text{self}} = s_{\text{other}} = 1$) or regressive relative to self-judgments ($s_{\text{self}} = 1$, $s_{\text{other}} = .5$), and that other-judgments reflect either social projection ($r_{\text{self, other}} = .8$) or a bias toward uniqueness ($r_{\text{self, other}} = -.2$).

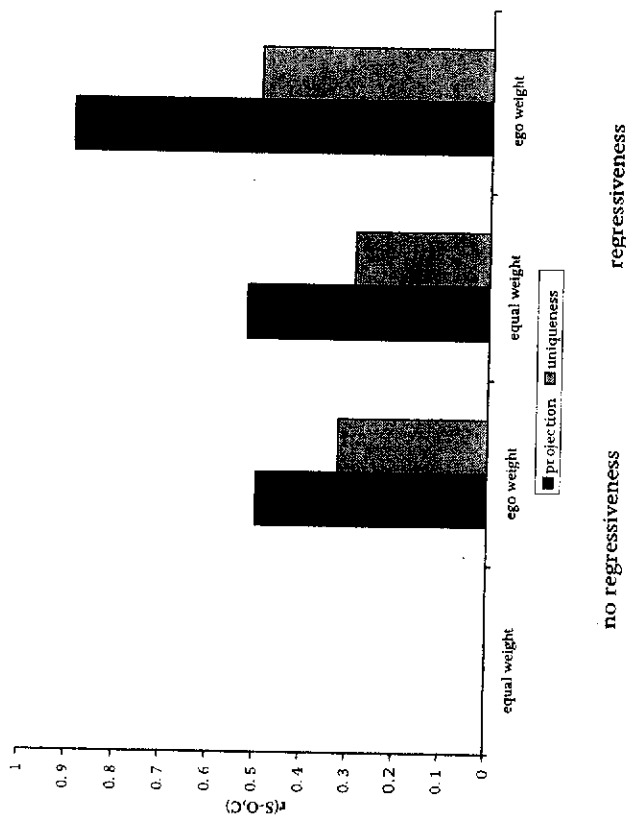


Figure 6.1 The correlation between self-enhancement and a criterion variable, $r(S-0,C)$ as a function of the regressiveness of other-judgments, the weight put on other-judgments, and social projection.

Figure 6.1 shows the expected variations in the size of the difference-score correlation. Also note that the effect of projection versus uniqueness is stronger under the empirically plausible conditions of egocentric weighting. Because social projection is rather common and because it protects other-judgments from being strongly regressive, the most likely empirical case is given by the combination of egocentric weighting, nonregressive other-judgments, and the presence of social projection. In the present simulation, this set of assumptions yields a difference-score correlation of .50. To infer that this correlation reveals the adaptiveness of self-enhancement is to go beyond the data given. A more reductive interpretation focuses on the underlying statistical associations and the variability of the measures. This level of analysis and interpretation recognizes the possibility that any particular difference-score correlation can arise from data patterns that are dramatically different from one another.

Difference scores and correlations involving difference scores have been criticized for their unreliability and for their inability to yield information that is not already contained in the component variables

(Harris, 1963). Regression methods present an alternative. To examine self-enhancement, one can regress self-judgments on other-judgments and correlate the residuals with a criterion variable. The resulting semipartial correlation is then thought to reveal a "weighting bias" accorded to self-knowledge (Kahneman, 2000). This method also raises the question of how social projection might contribute to inferences about the adaptiveness of self-enhancement.

The residual-score correlation is given by

$$\frac{r_{\text{self, criterion}} - r_{\text{self, other}} \cdot r_{\text{criterion, other}}}{\sqrt{1 - r_{\text{self, other}}^2}}$$

Like the difference-score correlation, the residual-score correlation increases with egocentric weighting, but it is not directly affected by regressive other-judgments.³ In contrast to the difference-score correlation, the residual-score correlation is influenced by social projection in both its numerator and its denominator. Within an individual study, difference scores and residuals may be correlated because both depend on absolute self-judgments.⁴ It is less clear, however, whether difference-score correlations and residual-score correlations yield comparable results across studies when the level of social projection varies.

To illustrate the differences between the two types of correlation, consider again a case in which self-judgments and other-judgments are weighted equally ($r_{\text{self, criterion}} = r_{\text{other, criterion}} = .7$) and a case of egocentric weighting ($r_{\text{self, criterion}} = .7$; $r_{\text{other, criterion}} = .2$). In the four panels of Figure 6.2, difference-score and residual-score correlations are plotted against levels of social projection ranging from $-.2$ to $.8$. The correlation between the two types of discrepancy correlation varies considerably depending on the underlying assumptions. Even for the empirically most likely case (panel C), the two discrepancy correlations converge only when projection is very high. In contrast, when participants rationally weight the two absolute judgments equally, investigators might falsely conclude that their choice of discrepancy correlation is of no consequence for the question of whether self-enhancement is adaptive.

The lack of a clear correspondence between difference-score and residual correlations should guard against temptations to reify either discrepancy as a construct in its own right. It may not be surprising that people with global self-esteem are also more likely to endorse specific positive attributes as self-descriptive. It would be wrong to assume, however, that high self-esteem is necessarily a sign of an *inflated* self-image. A further implication of this analysis concerns wor-

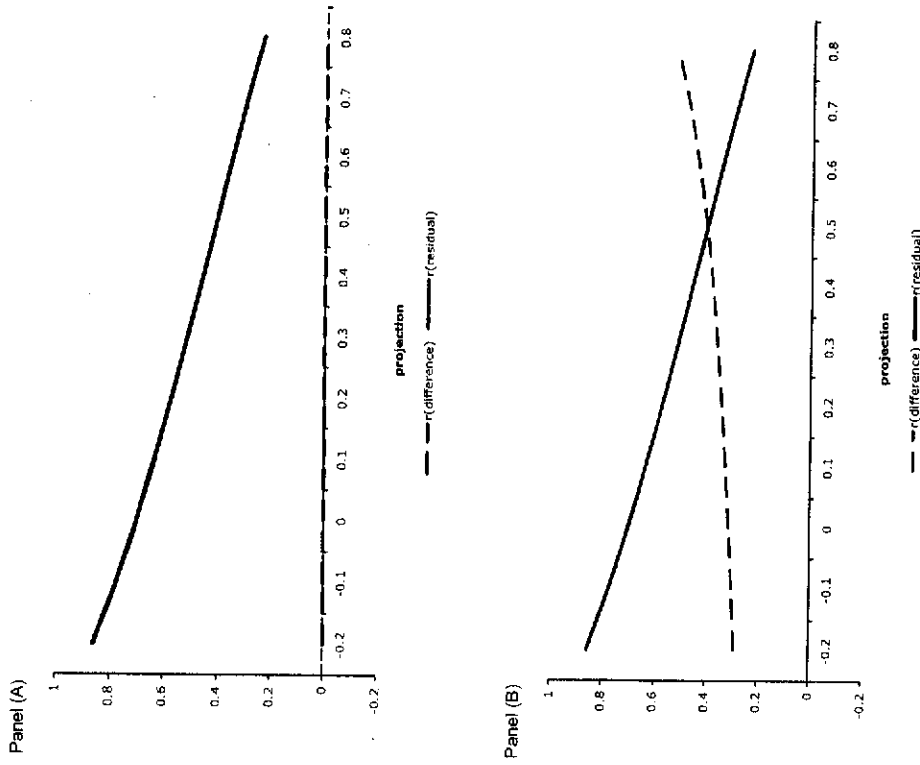


Figure 6.2 Difference-score correlations and residual-score correlations plotted against social projection. Panel A: Equal weighting and equal variances (r between the two discrepancy correlations not defined). Panel B: Equal weighting and regressive other-judgments ($r = -.96$).

understand how people generate comparative judgments. Correlational studies have shown a close and unique dependence of these judgments on absolute self-judgments (Chambers & Windschitl, 2004). Studies on the relative accessibility of self- and other-judgments have shown that people make self-judgments more rapidly, more reliably, with greater confidence, and with less subjective difficulty (Krueger, 2003). If comparative self-other judgments are merely absolute self-judgments in disguise, even comparative judgments might be made with greater efficiency than absolute other-judgments.

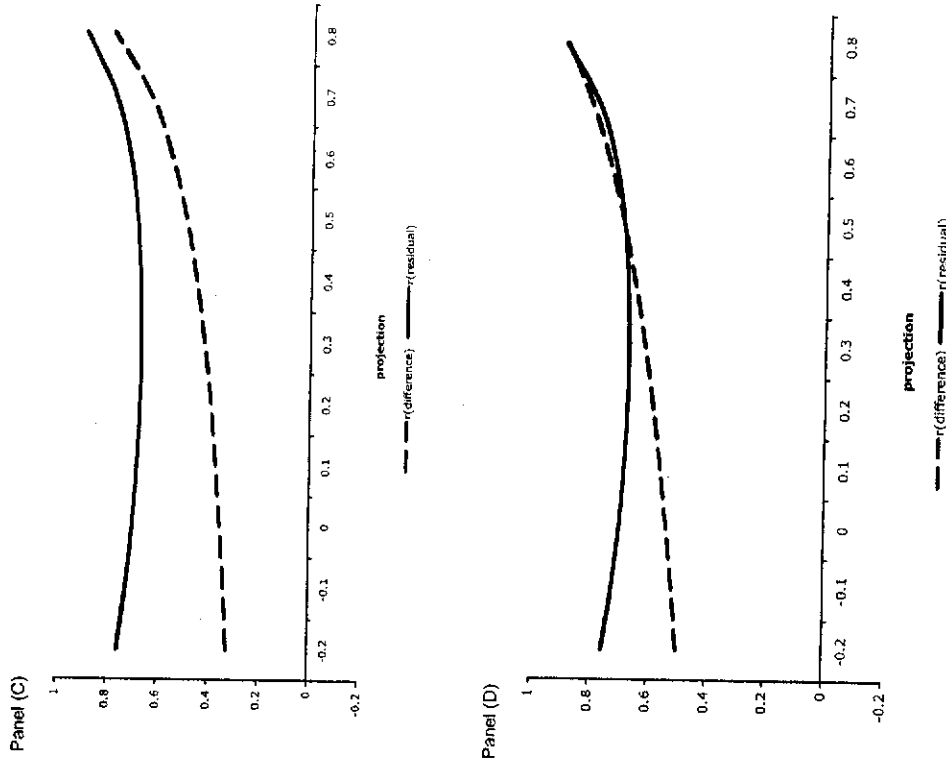


Figure 6.2 Panel C: Egocentric weighting and equal variances ($r = .76$). Panel D: Egocentric weighting and regressive other-judgments ($r = .67$).

One chapter in the history of research on social projection involved the search for the truly false consensus effect (TPCE), a term coined by Robyn Dawes. Following Robyn's advice, Joanna Zeiger and I computed idiographic correlations between participants' self-judgments and their judgment errors, that is, the differences between their consensus estimates and actual base rates (Krueger & Zeiger, 1993). Most of these correlations were positive, suggesting that people's self-judgments predicted their estimation errors. Participants who endorsed a judgment item (e.g., "I like poetry") were more likely to overestimate the percentage

of people who endorse it than to underestimate it, whereas the opposite was true for participants who rejected the item.

The difference-score correlation representing the TFCE, $r_{\text{estimate} - \text{actual}, \text{self}}$, can be written as

$$\frac{S_{\text{estimate}} \cdot r_{\text{estimate, self}} - S_{\text{actual}} \cdot r_{\text{actual, self}}}{\sqrt{S_{\text{estimate}}^2 + S_{\text{actual}}^2 - 2 \cdot S_{\text{estimate}} \cdot S_{\text{actual}} \cdot r_{\text{estimate, actual}}}}$$

The three critical correlations underlying the derived difference-score correlation are $r_{\text{estimate, self}}$ (projection), $r_{\text{actual, self}}$ (validity; or the typicality of the self with respect to the group), and $r_{\text{estimate, actual}}$ (accuracy). If we assume that the variances of the three variables are equal, we find that the TFCE is zero if projection equals validity. We did not realize at the time that under this assumption the TFCE measure is identical to Hoch's (1987) proposal that projection is biased if it exceeds validity. What remains, however, is the tendency of projection to also increase the variance of the estimates, which, as the formula shows, will contribute to positive TFCE values.

This feature of the TFCE measure led de la Haye (2001) to note that the presence of bias is overestimated to the extent that the selection of judgment items yields a regressive distribution of actual percentage scores. In a proposal echoing earlier developments in the self-enhancement literature, she recommended that a residual-score correlation be used. Now estimated consensus is regressed on actual consensus, and the residuals are correlated with self-judgments. The formula for this measure is

$$\frac{r_{\text{estimate, self}} - r_{\text{estimate, actual}} \cdot r_{\text{self, actual}}}{\sqrt{1 - r_{\text{estimate, actual}}^2}}$$

Again, within a given study, difference scores and residuals can be expected to be highly correlated and the two discrepancy-score correlations to lead to similar conclusions. Returning to Figure 6.2, however, we can see how the difference-score correlation and the residual-score correlation will turn out for individuals who differ in the accuracy of their estimates. Now it is the accuracy term that resides in the denominator of both discrepancy correlations and in the numerator of the residual-score correlation.

The results are dramatic. Because actual percentages are now the regressive variable to reflect de la Haye's (2001) concern, difference-score correlations are positive even when projection is equal to validity

(panel B), and they rise as accuracy increases. In contrast, residual-score correlations decrease. In other words, when accuracy is low, the difference-score correlation is the more conservative measure of bias, but when accuracy is high, the residual-score correlation is more conservative. When projection exceeds validity (panels C and D), the difference-score correlation also increases with accuracy, whereas the function for the residual-score correlation is slightly U-shaped. As in the case of self-enhancement correlations, investigators remain hard pressed to decide which measure of bias is the truest. Again, a careful decomposition of each index appears to say more about the structure of people's judgments than do derivative measures like discrepancy correlations.

In the 1990s a cottage industry (Griffin & Varey, 1996) sprang up to isolate true projective bias from inductively warranted projection. Most of the proposed measures were positively correlated with one another, but none of them emerged as the undisputed gold standard. More direct evidence for the egocentric nature of projection comes from studies showing that people underuse information available about other individuals (Krueger, 2003). Perhaps trying to avoid the psychometric difficulties that beset corrected measures of social projection, investigators returned to simple correlational measures of projection to ask what will affect the mean level of projection and what will predict individual differences.

SOCIAL CATEGORIZATION AND STEREOTYPING

Of all the experimental power that can be brought to bear on a participant, none affects the strength of social projection more than the way the person is categorized. People project strongly to social ingroups and very little to social outgroups. The only moderator variable that emerged in a meta-analysis was the kind of group involved. The projection differential is larger for minimal laboratory groups than for groups found in the social world (Robbins & Krueger, 2005). This makes Bayesian sense. If people have some information regarding common traits and behaviors in real social groups, their egocentric weighting of the self should ease up (Ames, 2004). In minimal groups, where other-related or stereotypic information is unavailable, projection can emerge in its pure form.

The puzzle is why people do not project more to outgroups. Arguably, projection to outgroups should be stronger than it is because the characteristics of real groups tend to be positively correlated inasmuch as these groups can be lumped together within a common inclusive ingroup. This is especially true for minimal outgroups, which differ

from ingroups only by label. The inductive fallacy is not that people generalize too much within groups, but that they do not generalize enough across groups. It seems that people are too impressed with category boundaries (Krueger & Clement, 1996).

Sluggish outgroup projection has significant implications for stereotyping. In the absence of intergroup contrast effects or content-rich and diversified stereotypes, differential projection can lead people to see outgroups as being different from ingroups. Assuming common empirical values for ingroup ($r = .5$) and outgroup ($r = .1$) projection, the correlation between perceived ingroup characteristics and outgroup characteristics is near zero ($r = .05$). If people were to project to the outgroup nearly as strongly as they project to the ingroup (e.g., $r = .4$), they would come to see the two groups as somewhat similar (i.e., $r = .25$).⁵

Although the meta-analytic correlation between self and outgroup and between ingroup and outgroup is not negative, some theoretical arguments call for such contrasts. Cadinu and Rothbart (1996) proposed that an "oppositeness heuristic" contributes to balance among social perceptions, and Mullen, Dovidio, Johnson, and Copper (1992) argued that contrasting away the outgroup creates a reassuring sense of uniqueness. Negative projection to outgroups can occur, but specific conditions must be met. Riketta (2005) reported that when people are antagonized by an intergroup conflict, those who identify strongly with their own group see members of the other groups as opposites to themselves.⁶

Perceived group differences, be they the result of differential projection or additional mental contrasts, are thus a reality of intergroup perception (Tajfel, 1969). Now the question is what role these differences are to play in the definition and measurement of social stereotypes. Early theorists realized that although a stereotype could just be a collection of those traits seen as common in the group, it could also be a collection of those traits that are seen as distinctive of the group. Zawadzki (1948) raised both possibilities but remained undecided as to which one was better, and so did Allport (1954). Most stereotype measurement at the time was conducted with the adjective-checklist procedure, which could not address this critical issue. By 1970, simple associationism gained favor, and investigators asked their respondents to estimate the percentage of group members for whom a given trait was characteristic (Brigham, 1971).

McCauley and Stitt (1978) reversed this development by casting stereotypes as perceived intergroup differences. After finding positive correlations between "diagnostic ratios" and typicality judgments, McCauley and Stitt collected more estimates of the prevalence of certain traits in a target group (Germans), estimates of the prevalence of

these traits in the world population, and judgments of how typical these traits were of the target group. The ratio of the two prevalence estimates was again positively correlated with typicality judgments. However, the simple prevalence estimates for the target group remained the best predictors of typicality. Nevertheless, McCauley and Stitt argued that the diagnostic ratio is the proper measure of stereotyping. If a trait is not uniquely ascribed to a target (group or person), it carries little information. Retaining nondistinctive traits in a mental representation of the target only creates clutter; hence, it is best to ignore them. These arguments have enjoyed wide, though not unanimous, acceptance in the stereotype-measurement literature (Judd & Park, 1993; Kunda & Thagard, 1996; Schneider, 2004).

The distinctiveness approach is appealing because it is valid with respect to categorization. When multiplied by the probability of the group, $p(G)$, the diagnostic ratio (i.e., the probability of a trait T given membership in group G , $p(T|G)$, divided by the base rate probability of the trait, $p(T)$) gives the probability of group membership given the trait, $p(G|T)$. To define stereotypes in terms of diagnostic ratios is to say that people see traits as typical if they allow inferences about a person's group membership. This rationale turns the standard stereotypic inference on its head. In measuring stereotypes, the target group is known and the traits are to be judged. In other words, stereotype measurement requires the attribution of traits, not the categorization of people.

The ratio measure emphasizes rare traits. Suicide proneness should be highly stereotypic of the Japanese because the low suicide rate in that country is not as low as it is elsewhere (Allport, 1954). If stereotypes are defined by trait distinctiveness, other measures may also be considered. To minimize the geometric explosion for rare traits, ratios can be rescaled to vary from -1 to $+1$. Log odds ratios (LOR) emphasize discrepancies at both ends of the scale equally. As McCauley recommended, difference scores can also be used if discrepancies in the middle of the scale are to be emphasized (McCauley & Thangavelu, 1991).⁷

Use of the difference-score measure highlights the similarities between stereotype measurement and the measurement of self-enhancement and measurement of the TFCE. The formula for $r_{p(T|G)}$ - $p(T)$, TYP can be written as

$$\frac{s_{p(T|G)} \cdot r_{p(T|G), p(TYP)} - s_{p(T)} \cdot r_{p(T), TYP}}{\sqrt{s_{p(T|G)}^2 + s_{p(T)}^2 - 2 \cdot s_{p(T|G)} \cdot s_{p(T)} \cdot r_{p(T|G), p(T)}}}$$

As predictors of typicality judgments, difference scores could outperform simple trait prevalence estimates only if the correlation between perceived trait base rates and typicality judgments were negative (i.e., $r_{p(T|G),p(T|TYP)} > r_{p(T|G),TYP}$ only if $r_{p(T|T),TYP} < 0$). Logically, this cannot occur for a majority of groups because there is only one profile of base rates. If traits with low base rates were seen as most typical for most groups, the distinctions among these groups would be nullified. Simple prevalence estimates do not have this problem because they can be tailored individually for each group. The second observation is that trait base rates should be regressive when compared with group-specific prevalence estimates. Inasmuch as $s_{p(T)} < s_{p(T|G)}$, difference-score correlations become more positive. The third observation is that prevalence estimates for groups should be correlated with perceived base rates (i.e., $r_{p(T|G),p(T)} > 0$, as any other part-whole correlation). The larger this correlation is, the larger will be the difference-score correlation. Ironically, it is mostly their ingroups that people see as similar to the overall population (Waldzus, Mummendey, & Wenzel, 2005). When people fail to grant outgroups general human properties (Paladino et al., 2002), they stereotype them in a way that precludes difference-score correlations from detecting it.

The residual-score method has not been used in stereotype measurement, but it further illustrates the hurdles faced by the distinctiveness approach. This approach leads to the expectation that typicality judgments are correlated with prevalence judgments when base rates are controlled. This will be the case unless

$$r_{p(T|G),TYP} = r_{p(T|G),p(T)} \cdot r_{TYP,p(T)}$$

The critical test of the distinctiveness hypothesis is provided by the inverse correlation. Will typicality judgments be correlated with base rates when simple prevalence judgments are statistically controlled?

Several replications of the McCauley and Stitt (1978) work suggest that they are not. Simple prevalence estimates, $p(T|G)$, consistently outperform discrepancy scores as predictors of typicality judgments. When these estimates are controlled, discrepancy scores drop out (Krueger, 1996; Krueger et al., 2003). The zero-order correlations between diagnostic ratios and typicality judgments are spurious because ratios are naturally confounded with their own numerator. Likewise, as students of change scores have noted, differences are confounded with the variable from which another variable has been subtracted (Harris, 1963; Thorndike, 1924). As people ascribe a trait to a larger percentage of group members, the discrepancy between this percentage and

the base rate of the trait (or its perceived prevalence in some reference group) goes up.

Perhaps the poor performance of the diagnostic ratio can be attributed to the fact that respondents rate the typicality of each trait with respect to the target group. When led to focus on that group, their attention may be diverted from the normative comparison with the referent. To examine this possibility, we asked respondents to rate how typical each trait was of a target group (e.g., women) relative to a salient referent group (i.e., men). Even when typicality judgments were couched in comparative terms, discrepancy scores performed poorly; when the two gender groups (American women and men) were judged by members of a national outgroup (Italians), their unique predictive contribution once again disappeared (Krueger, Hall, Villano, & Jones, in preparation).

One experimental study aimed to show that people spontaneously pick out distinctive traits when forming impressions of novel groups. Ford and Stangor (1992) presented several behaviors suggesting varying degrees of intelligence or friendliness in a "red" and a "blue" group. If two groups differ on two traits to the same average degree, the trait with the smaller within-group variance provides better differentiation. The more homogeneous trait should be stereotypic for one group and counterstereotypic for another, whereas the more heterogeneous trait should be largely ignored. This prediction represents the "meta-contrast" principle, which is a cornerstone of self-categorization theory (Turner et al., 1987).

Although the findings were consistent with this prediction, a closer look at the stimulus materials reveals that the results could also imply within-group comparisons. The means (and the standard deviations) of the heterogeneous trait were 6.05 ($SD = 2.50$) and 3.70 ($SD = 2.25$), which meant that only 66% of the high distribution lay above the midpoint of the scale (5), and only 64% of the low distribution lay below the midpoint of the scale. By contrast, the distributions for the homogeneous traits did not overlap ($M = 6.05$, $SD = .38$; $M = 3.80$, $SD = .43$). The implication is that a homogeneous trait with a high mean scale value could be considered stereotypic not only because it differentiated the target group from the referent group, but also because it could be attributed to each group member. In other words, $p(T|G)$ was higher for the homogeneous trait than for the heterogeneous trait *within the target group*. As a metaphor for significant effects in analysis of variance, the meta-contrast principle applies to both contrasts between groups and contrasts between traits. The principle itself demands that the largest contrast be taken most seriously.

The challenges to distinctiveness-based stereotyping do not mean that people never overestimate group differences. They often do (Dawes, Singer, & Lemons, 1972; Krueger, 1992). Even differential projection yields this result. What is in doubt is the claim that people encode perceived group differences into stereotyped mental representations. Instead, people may simply encode associations between group labels and personality attributes. Most work on the automatic activation of stereotypes is built on this assumption (Devine, 1989). Stereotypic (i.e., common) attributes come to mind more easily when group label is presented first (Kawakami, Dovidio, & Dijksterhuis, 2003).

In research on intergroup relations, prejudice is the wayward cousin of stereotyping. Whereas stereotypes are conceptualized as social beliefs, prejudice is considered an attitude. When approached from an associationist perspective, one can ask whether an attitude toward a certain group is positive or negative relative to a neutral point. However, the relativistic approach has also gained popularity in attitude research. Since the publication of a seminal study by Greenwald, McGhee, and Schwartz (1998), the Implicit Association Test (IAT) has been widely used to assess relative preference for the young over the old, Whites over Blacks, or Democrats over Republicans (cf., Arkes & Tetlock, 2004). A person's score on the IAT is the difference obtained by subtracting reaction times in a mismatched condition from reaction times in a matched condition. A presumed White racist in a matched condition needs to press one key when a White face or a positive word is presented, and a different key when a Black face or a negative word is presented. When the IAT predicts other measures, such as explicit attitudes, it obscures the extent to which variations in the implicit attitude toward the ingroup or variations in the implicit attitude toward the outgroup contribute to the result (Blanton & Jaccard, 2006; Fiedler, Messner, & Bluemke, 2006).⁸

Like the distinctiveness-based approach to stereotype measurement, the IAT approach to attitude measurement makes the strong assumption that people directly encode group differences. The psychometric threats to the reliability of difference scores should caution investigators against any rash reification (Cohen & Cohen, 1983). Empirically, the reliability of the IAT is modest, hovering around .50 (Greenwald et al., 2002). Perhaps more importantly, any emphasis on discrepancies constitutes a departure from scientific realism. In stereotype measurement, the distinctiveness-based approach must face the question of *which* discrepancies are encoded. Is the perceived athleticism of White American males a function of the perceived athleticism of African American males or the perceived athleticism of White American

females? Depending on the reference group, White American males could be perceived as unathletic or as athletic. The simple association between the trait and the target group should not be encoded, for it would have no meaning. To believe that all possible comparisons are encoded and available for judgment stretches credulity. In the psychometric literature, the shadow of relativism is typically overlooked by investigators who select attributes for which simple associations and differences are perfectly confounded (Judd & Park, 1993). For example, White American males are only compared with African American males, and the trait of athleticism is considered counterstereotypic for the former and stereotypic of the latter.⁹

One alternative to creeping relativism is explicit relativism. This is the position of self-categorization theory, which assumes that stereotypes derive their meaning entirely from intergroup comparisons and that stereotypes shift whenever the referents of the comparison change (Turner et al., 1987). Such relativism is not without problems. How can one predict, for example, that members of group B are seen as shorter when judged in the presence of group A than in the presence of group C, without acknowledging that members of group A are seen as taller than members of group C? The perceived difference between A and C, be it true or false, can only arise from a comparison of absolute judgments.¹⁰

INGROUP FAVORITISM

Compared with their reactions to outgroup members, people like ingroup members more, seek their company more, and have higher expectations of them. The dominant theoretical account for this phenomenon is both relativistic and motivational. Social identity theory (Tajfel & Turner, 1979), self-categorization theory (Turner et al., 1987), and their various offshoots (see Otten, 2005, for a review) emphasize specific need states that impel people to not only differentiate the ingroup from the outgroup but to also ensure that the comparison is a favorable one. To make such a comparison is not only to construct a positive social identity but also to reap the individualist benefit of heightened self-esteem (but see Aberson, Healy, & Romero, 2000, and Rubin & Hewstone, 1998, for the mixed record of the self-esteem hypothesis).

Before accepting this discrepancy-based argument, one should ask whether simple associations can explain ingroup favoritism. The foregoing discussion suggests that two empirically based assumptions suffice for such an explanation. First, self-images tend to be positive. For most individuals, self-judgments are positively correlated with desirability judgments (Krueger, 1998b). Second, most people project more

strongly to ingroups than to outgroups (Robbins & Krueger, 2005). It follows that when self- and group judgments are plotted against trait desirability, ingroup judgments are more regressive than self-judgments and outgroup judgments are even more regressive (Krueger et al., 2005). Differential regressiveness implies that differences between self-judgments and ingroup judgments (i.e., self-enhancement) increase with trait desirability (Moore & Small, chapter 7). More importantly, differences between ingroup judgments and outgroup judgments (i.e., ingroup favoritism) also increase with trait desirability. The differential-regressiveness account does not require that any discrepancies be reified as stand-alone constructs. Instead, this account predicts that ingroup favoritism can emerge simply as a by-product of positive self-images and differential projection. Consistent with this model, ingroup favoritism disappears in the minimal-group paradigm when self-judgments (and thereby differential projection) are statistically controlled (Krueger et al., 2005; Otten & Wentura, 2001; see also Cadinu & Rothbart, 1996; Gaertner & Sedikides, 2005).¹¹

The associationist model can also account for the finding that ingroup favoritism is more closely tied to ingroup love than to outgroup derogation (Brewer, 1999). Because projection to outgroups is only slightly positive, judgments of such groups gravitate toward being unrelated, as opposed to negatively related, to judgments of attribute desirability. The irrelevance of outgroup judgments for ingroup favoritism is reinforced by the finding that people perceive ingroups favorably even when there is no outgroup available for comparisons (Gaertner, Iuzzini, & Witt, 2006).

Finally, the model sheds new light on the role of self-esteem. Gramzow and Gaertner (2005) reported that personal self-esteem predicts ingroup favoritism (note that this is the inverse of the effect predicted by social-identity theory). Inasmuch as self-esteem is closely related to the feature-based positivity of the self-image (as measured by idiographic correlations between self-judgments and desirability judgments), this is as expected (Sinha & Krueger, 1998). The model predicts that the correlation between self-esteem and ingroup favoritism will be attenuated when the positivity of the self-image is controlled.

Now consider the IAT. Even members of minimal groups show implicit preferences for the ingroup (Ashburn, Voils, & Monteith, 2001; Otten & Moskowitz, 2000). Implicit and explicit attitudes tend to be positively, though weakly, related (Schneider, 2004). If both implicit and explicit measures of ingroup favoritism were assessed in the same study, it might turn out that the associationist account of explicit ingroup-favoritism can explain, in part, implicit bias. That is, IAT effects might be attenuated

when differences in social projection are statistically controlled. This may be all the more so because projection itself is partly automatic.

Projection might also account for other categorization effects seen with the IAT. When social categorization into ingroups and outgroups becomes less salient because respondents attend to a common superordinate ingroup, the projection differential, and thus ingroup favoritism, is attenuated (Krueger & Clement, 1996). Work with the IAT shows a parallel result. Greenwald et al. (1998) found that implicit ingroup preferences exhibited by Korean and Japanese Americans were weakest among those with the shallowest immersion in their culture of origin. In other words, participants who were more acculturated to their new and common ingroup showed the least ingroup favoritism.

EMERGENT PROPERTIES?

A great deal of theory and research on self-enhancement and social categorization has accepted the idea that discrepancies between certain types of judgment reveal psychological constructs that exist aside from simple associations between any pair of judgments. According to this view, self-perception, self-enhancement, projection bias, stereotyping, and ingroup favoritism are emergent properties of multiple judgment processes. There is an apparent analogy to claims regarding the unique power of clinical judgment to detect complex patterns that cannot be uncovered by the linear combination of valid cues. Dawes (1979) was skeptical about the emergent property argument then, and I remain skeptical about the argument now.

The emergent-property argument has been explicitly made with regard to self-enhancement.¹² Zuckerman and Knee (1996) pointed out that difference-score measures of self-enhancement cannot reveal anything that is not already given by the variables that constitute these differences. In response, Colvin, Block, and Funder (1996, p. 1255) attempted an ontological justification, suggesting that these correlations are "emergent properties [with] a meaning different from and extending beyond [their] constituent parts." They cited Searle (1995), who defined "an emergent property of a system [as] a property that is explained by the behavior of the elements of the system; but it is not a property of any individual elements and it cannot be explained simply as a summation of the properties of those elements" (p. 62, emphasis added). Searle was concerned with qualitative shifts that arise when, for example, hydrogen and oxygen combine to yield the property of wetness, or when the patterned firing of neurons yields the property of consciousness. No such qualitative shifts occur

in self- or group perception. Here, the arguments regarding emergent properties are quantitative. Self-images are too positive or too negative when compared with judgments of others, and group stereotypes are too extreme or too regressive when compared with perceptions of referent groups.

Epistemological justifications of emergent properties are less restrictive. A property is epistemologically emergent if the processes that generate it are not well understood (Bedau, 1997). With regard to self-enhancement, however, an appeal to the limitations of current understanding is unconvincing. The mathematics of how discrepancy correlations arise from the zero-order correlations and the variances of the individual judgment variables are well known. If discrepancy correlations were emergent, correlations between difference scores and self-judgments would also have to be emergent. These correlations are, however, widely recognized as regression effects. The same logic applies to discrepancy correlations representing projection bias, stereotyping, and ingroup favoritism.

My concern in this essay has been that of parsimony. Research on social perception is replete with higher-order, derivative constructs, most of which are assessed and cataloged in isolation (Krueger & Funder, 2004). The relationships among lower-level constructs are rarely examined, and their ability to at least partially account for the more complex ones is widely ignored. A generalized striving for simplicity is a healthy corrective and an epistemic value so brilliantly exemplified by Robyn Dawes's scientific work.

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NOTES

1. Could it be said that instead of comparative judgments being absolute self-judgments in disguise, absolute self-judgments are comparative judgments in disguise? If so, absolute other-judgments would also have to be disguised comparative judgments, and the correlation between self- and other-judgments should be highly negative. Empirically, these correlations tend to be moderately positive, however.
2. In the Taylor and Brown paradigm, s_{other} is 0 if all respondents judge accurately.
3. Regressive other-judgments could increase the residual-score correlation indirectly by reducing the correlation between self- and other-judgments and the correlation between criterion and other judgments. I thank Johannes Ullrich for this suggestion.
4. The correlation between self-other differences and self-judgments is

$$\frac{s_{\text{self}} \cdot r_{\text{self, other}} - s_{\text{other}}}{\sqrt{s_{\text{self}}^2 \cdot s_{\text{other}}^2 - 2r_{\text{self, other}} \cdot s_{\text{self}}^2 \cdot s_{\text{other}}^2}}$$

The correlation between self-judgments and residualized self-judgments (i.e., controlling for other-judgments) is

$$\sqrt{1 - r_{\text{self, other}}^2}$$

5. This analysis does not assume that people project the same characteristics to the two groups—only that they project at the same rate. Note also the implications of differential projection for self-enhancement. Sluggish outgroup projection means that self-enhancement would increase if people were to compare themselves to the average outgroup member. Difference-score correlations between self-enhancement and criterion variables (e.g., self-esteem) would be reduced, however. That is, hypotheses regarding the adaptiveness of self-enhancement would be harder to test if the self were evaluated within an outgroup context.
6. Negative projection cannot be inductively justified (Dawes, 1989). Rationally, people may see outgroups as opposites of themselves only if they possess sampling information to that effect. If so, projection would not be at issue.
7. When $p(T|G) < p(T)$, the modified ratio is

$$1 - \frac{p(T|G)}{p(T)}, \text{ otherwise } \frac{p(T)}{p(T|G)} - 1$$

(Krueger, Hasman, Acevedo, & Villano, 2003). LORs are given by

$$\ln \frac{p(T|G) / (1 - p(T|G))}{p(T) / (1 - p(T))}$$

Difference scores can be derived from ratios as

$$p(T|G) - p(T) = p(T|G) \cdot \left(1 - \frac{p(T)}{p(T|G)}\right)$$

Naturally, the correlations among these indices are high.

8. Notice that it is difficult for a White respondent to obtain a “comfortable” IAT score. If the difference score indicates implicit prejudice, the respondent may feel pressured to conduct a self-examination and to come clean. If the score indicates a preference for the outgroup, the respondent also needs to do extra work in order to explain it (while a preference for Black would simply signal a positive social identity to a Black respondent). For a White respondent, the only safe score is zero, or something very close to it. The reduction of a “good” score to a point, while bad or strange scores may appear across a wide range, is familiar from research on errors and biases in the judgment literature. Here, rational responding typically has the status of an unconfirmable null hypothesis (Krueger & Funder, 2004).
9. The confound resulting from such trait selection is that the simple measure of $p(T|G)$ is perfectly correlated with any discrepancy measure across such attributes.

10. The argument that perceptions of A and C are also context dependent begs the question of where perceivers begin to make comparisons. Without some anchor in a presumed reality, points for relativism cannot be scored.
11. The model implies that ingroup favoritism should also diminish when self-enhancement is controlled.
12. Colvin et al. (1996) advocated a variation of the Taylor and Brown (1988) method. Instead of subtracting participants' own judgments of the average person from their self-judgments, they proposed that the average peer judgments of these participants be subtracted.