Handbook of Social Comparison

Theory and Research

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The Projective Perception of the Social World

A Building Block of Social Comparison Processes

JOACHIM KRUEGER

TO COMPARE AND TO PROJECT

> *Corollary IIIA*: Given a range of possible persons for comparison, someone close to one's own ability or opinion will be chosen for comparison. (Festinger, 1954, p. 121)

Festinger (1954) proposed that people seek accurate knowledge of the self, and that to find it, they compare themselves with similar others. He peppered his paper with references to the idea that people have some notion as to who is similar to them and who is not. His followers agree: "Looking for or identifying a similarity or a difference between the other and the self on some dimension [is a] core feature [of the theory]; the majority of comparison researchers implicitly seem to share this definition" (Wood, 1997, p. 521). But how do perceptions of similarity and dissimilarity arise?

Incomplete Comparisons

It may seem paradoxical that people should be uncertain about who they are, while at the same time they know enough to distinguish between similar and dissimilar others. If they did not know themselves at all, they could not determine the similarity of others. To jump start their social comparison processes, participants in early research received a little information about themselves (e.g., a test score and a rank in a small group) and the opportunity to obtain the score of another person (Wheeler, 1966). In such a situation, people tend to choose the score of somebody with a similar (and slightly better) rank. But they cannot learn much from it. The overall distribution of scores remains unknown, and so the degree of similarity with the other person remains ambiguous.

What complicates judgments of similarity is that focused comparisons between two

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objects or two people reveal little. Sound judgments require a representation of the whole class to which the two objects belong. What is the meaning of saying that Jack and Jill are similar to each other if it is unknown how similar couples are on the average? A comparison between two people requires an implicit comparison between this particular comparison and all others (or their average). In short, knowledge of individuals depends on knowledge of a relevant population. Where does this knowledge originate? In the social world, people often possess only limited sample information, and in the laboratory they tend to learn only a little (if anything) about the characteristics of others. How then do they make comparisons? The possibility that is of greatest interest here is that people simply make up some of the necessary information by "guess, conjecture, or rationalization" (Goethals, Messick, & Allison, 1991, p. 154). This "fabrication" (Goethals, 1986) of social knowledge is the topic of this chapter. My thesis is that people come to know the population in part through processes of social projection. By projecting their own characteristics to the population, people find (or fantasize) many other individuals who are (or seem to be) sufficiently similar to make social comparisons informative.

Projection means that judgments about others are anchored on the self, and this anchoring enhances perceptions of similarity. When judgments about individual or collective others serve as the anchors for judgments about the self, perceptions of similarity are reduced (Catrambone, Beike, & Niedenthal, 1996). This asymmetry has a startling implication: Seeking comparisons and making comparisons are separate processes involving different reference points. These processes occur sequentially and produce assimilation and contrast, respectively. Either way, some initial knowledge of the self is necessary so that social comparisons can shape the self-concept further. Self-knowledge has primacy; it is more often revised than created by knowledge of others (Felson, 1993; see also Chapter 17, this volume).

Early Projectors

Floyd Allport's (1924) insights into the psychology of crowds brought social projection to the attention of psychologists. He suggested that individual crowd members succumb to an "illusion of universality," which is the belief that all other crowd members respond to the situation (e.g., the crowd leader) as they themselves do.[1] But Allport did not think that projection is restricted to the crowd situation. A person may project the "consciousness of himself into those about him" (p. 307) at any time. Allport recalled that "as a boy [he] was harassed by the belief that other people, through some telepathic process, were aware of his inmost thoughts" (p. 307). This private form of projection soon emerged in empirical research (Katz & Allport, 1931). Among the findings concerning students' attitudes was a classification of the students into five groups according to their confessed frequency of academic cheating (not at all, on quizzes, on one exam, on more than one exam, and "extremely"). Each student also estimated the prevalence of cheating on a 7-point scale (0%, 20%, 33%, 50%, 67%, 80%, 100%). The correlation between the admitted frequency of cheating and the median prevalence estimates was .93 (Katz & Allport, 1931, Table LXIV, p. 227).

Over the decades, projection was demonstrated in many contexts and explained in the light of many theories. The theory of cognitive dissonance, for example, suggested that the discovery of negative characteristics within the self would create psychological tension (i.e., a

[1]Allport's "illusion of universality" differs sharply from Festinger's "pressure towards uniformity." Festinger believed that "if uniformity is achieved there is a state of social acquiescence" (p. 125). To Allport, uniformity meant turmoil.

drive state). If people could not deny or eliminate these negative characteristics, they might resort to projecting them to others. Doing this, they presumably felt better (e.g., Bramel, 1962).

More recent work can be classified along three theoretical perspectives. Each perspective stresses the role of information processing rather than motivated consistency seeking, but each evaluates the processes and outcomes of projection differently. As part of the heuristics and biases approach to social cognition, the *false consensus paradigm* claims that any significant perception of consensus reveals a fallacy of thought (Ross, Greene, & House, 1977). By contrast, the *induction paradigm* holds that projection, however biased it may be, is defensible if understood as a generalization from a small sample (Hoch, 1987). Finally, the *egocentrism paradigm* views projection as an irrational yet adaptive form of perception. This paradigm locates error in the failure to generalize the behaviors of other individuals to the group (Krueger & Clement, 1994). I first review the theory and the evidence for each paradigm. Then, I sharpen the distinctions between the induction and the egocentrism paradigms, and I comment on the relevance of projection for other social–cognitive biases, social behavior, and social comparison processes.

FALSE CONSENSUS

In a landmark article, Ross et al. (1977) labeled projection the "false consensus effect" (FCE) and demonstrated its pervasiveness in dozens of tests. Each test consisted of the presentation of a stimulus item (e.g., an opinion, a personality trait, or a behavioral intention), which participants decided to either endorse or reject. They also estimated social consensus as the percentage of people who endorse the item. For each item, the FCE was assessed as the difference between the consensus estimates made by endorsers and the estimates made by nonendorsers. When the difference between the two means was significant—as most were—consensus estimates were said to have been projective and thus false.

Projection as a Stimulus Characteristic

Table 1 displays the results of a replication of the Ross et al. study. The stimulus items are 14 trait-descriptive terms. Thirteen of the 14 comparisons indicate projection and seven are reliable. As one would expect, people tend to expect others to share their own personality traits. The degree to which they do this can be expressed by the raw difference between the two mean consensus estimates (i.e., the FCE), by a standardized measure of effect size (Cohen's d or a point-biserial r), or by a test statistic (t).

The FCE paradigm suggests that half the consensus effects are false and that half are not. These judgments follow from decisions about statistical significance. This method-driven strategy to appraise the rationality of social judgment has two important characteristics. The first characteristic is that judgments concerning rationality depend not only on the averages of the consensus estimates but also their number. The more estimates there are, the more likely it is that bias is detected. Even with a fixed number of estimates, variations in actual consensus rates create differences in statistical power. Estimates are most likely to be judged false if the percentage of actual endorsement is close to 50%. The data displayed in Table 1 illustrates this. Across items, the extremity of actual consensus (i.e., its distance from 50%) is negatively related to the test statistic ($r = -.34$) and to the correlational effect size ($r = -.24$); but it is unrelated to the raw ($r = .12$) and the standardized effect size ($r = .02$). The variability of actual consensus biases judgments about the falsity of perceived consensus only when people's own

Table 1. Average Consensus Estimates and Statistical Effects (N = 164)

Traits[a]	Actual consensus	Estimated consensus: Endorsement Yes	Estimated consensus: Endorsement No	d	r	t
1. Alert	91	75	65	.62	.19	2.21
2. Argumentative	50	64	53	.50	.25	3.19
3. Candid	76	51	51	−.01	−.002	−.03
4. Christian	34	42	41	.07	.03	.39
5. Discontented	36	48	33	.73	.35	4.43
6. Gluttonous	15	34	19	.88	.33	3.73
7. Imaginative	88	70	67	.15	.05	.58
8. Loud	37	46	43	.16	.08	1.66
9. Meticulous	46	52	41	.53	.26	3.39
10. Neat	55	48	44	.26	.13	1.69
11. Sly	28	36	28	.40	.19	2.17
12. Smoker	15	40	37	.21	.07	.95
13. Smug	12	41	33	.38	.14	1.46
14. Suggestible	33	46	35	.49	.23	2.87
Combined[b]	44	49	42	.39	.16	1.93

[a]Twelve traits were selected using normative values of observability and favorability (Rothbart & Park, 1986). Three traits (1, 9, 10) were both easy to observe and favorable, three (2, 6, 8) were easy to observe and unfavorable, three (3, 7, 14) were difficult to observe and favorable, and three (5, 11, 13) were difficult to observe and unfavorable. The trait "Christian" was added because it previously yielded a false uniqueness effect (FUE) (Bosveld et al., 1996). The trait "smoker" yielded an FCE that was attributed to selective exposure (Sherman et al., 1983).
[b]The combined values are means, except the t, which is a median.

item endorsements serve as a status variable. This bias is avoided when item endorsements are manipulated experimentally (e.g., Agostinelli, Sherman, Presson, & Chassin, 1992).

The second characteristic of the standard item-by-item assessment is that it underestimates the strength of projection. Consider the first two items in Table 1. The average FCE (10.5%) can be obtained by averaging the two mean estimates made by endorsers (Ms = 75% and 64%, for "alert" and "argumentative," respectively) and then subtracting the average of the two mean estimates made by nonendorsers (Ms = 65% and 53%). But more people claim to be "alert" (91%) than "argumentative" (50%). When the averages are weighted by the differences in actual consensus, the FCE increases (16% = .91 × 75% + .5 × 64% − .09 × 65% + .5 × 53%). Across all items, the weighted FCE (M = 18.22%) as well as the other three statistical indices are greater than the unweighted FCE (d = .83, t = 19.90, r = .38).

How to be Rational in the FCE Paradigm

What can perceivers do to escape the verdict of irrationality? They must either estimate consensus accurately or ignore their own responses when they are not sure how much consensus there actually is. The first possibility is rarely an option. Having to estimate what everyone knows reveals little about the process of consensus estimation under uncertainty. For this reason, questions such as "Would people agree to carry a sandwich board to propagate the

ominous "Repent!" have become classic (Ross et al., 1977). Strange items minimize the role of relevant social knowledge. There could only be indirect knowledge such as beliefs concerning the likelihood of compliance in general. But regardless of such knowledge, each participant's response is merely a sample of one that he or she should ignore.

Why is the neglect of available sample information regarded as the best way to make a judgment? During the 1970s, many social psychologists felt that "laypeople" operated more or less like they themselves did, basing judgments about reality on systematically collected and analyzed data. This view suggested that people make consensus estimates by testing a null hypothesis (Krueger, 1998b). People were expected to estimate social consensus in a way similar to the way scientists decided whether these estimates were false. When the statistical tool of null hypothesis significance testing (NHST) became a model of mind (Gigerenzer, 1991), the question became whether this tool was used right.

No Exposure. To judge social consensus by NHST, perceivers need a hypothesis and relevant data. But it is unclear what consensus value people entertain as the null hypothesis or to what extent they agree on its location (e.g., 50% or any other). Whatever this hypothesis may be, a single observation (however outlying it might be) is not enough to reject it. If perceivers knew this, researchers could not reject *their* null hypothesis of no projection no matter how many perceivers they sampled.

Random Exposure. Perhaps people have other information besides their own responses. One possibility is that this extra information is unbiased by the perceiver's own response. If so, NHST is possible but again it guarantees the retention of the null hypothesis. Consider perceiver A, who endorses the item and perceiver B who does not. Both know the same two other individuals, but they do not know each other. One of the others endorses the item, and so the sample available to A consists of two thirds endorsers, whereas the sample available to B is one third endorsers. If A and B project their observed proportions, the difference between them (33%) is substantial. Because the sample is small, however, the standard error of the difference is so large (27%) that the null hypothesis survives. An increase in sample size does not change this. If, for example, A and B know 50 people who endorse the item and 50 who reject it, their own responses hardly matter. If they project their observed proportions (including the self) to the group, the FCE is minute (.99%). The standard error, although reduced (4.97%), does not threaten the null hypothesis.

In short, people's own responses do not affect consensus estimation if their thinking is in any way related to NHST. Because their estimates *do* covary with their own responses, however, it seems that perceivers do not apply NHST correctly or not at all, and thus must be considered irrational. This verdict overlooks the fact that NHST itself is a melange of mathematical rules and social conventions. People who do not subscribe to .05 conservatism can easily reject a null hypothesis that is contradicted by a few data points. This rejection would not make them less rational, but only more adventurous.

Selective Exposure. A final possibility is that individual responses are related to available sample observations. If people fail to recognize the selectivity of their exposure to similar others, their consensus estimates are biased. This view does not question people's ability to test hypotheses, but their ability to avoid or correct sample bias. In a typical study, perceivers judge how many of their friends behave a certain way (e.g., smoke; Sherman, Presson, Chassin, Corty, & Olshavsky, 1983). Although these judgments about individual friends predict consensus estimates, this need not mean that people infer group consensus from

biased samples. They might simply infer both individual behaviors and group consensus from their own behaviors (Bosveld, Koomen, & van der Pligt, 1994). This interpretation is plausible because people exaggerate the similarities between themselves and other individuals (Kenny, Bond, Mohr, & Horn, 1996). In other words, selective exposure may itself be a projective perception, and actual exposure within a group need not be selective. The personality profiles of college students, for example, are no more similar among roommates than among randomly paired students (Fuhrman & Funder, 1995). If actual exposure is unbiased, it cannot explain biased estimates, and the self returns as the most likely source of projection. Indeed, the FCE occurs even when there is no exposure to others. It occurs, for example, when the meaning of a behavior is obscure ("Eat at Joe's!") or when people learn they have an attribute they did not know they had (e.g., success or failure at a strange task).

INDUCTIVE REASONING

In the FCE paradigm, social perceivers and investigators both tend to reject the null hypothesis of no difference, and the latter think that the former are irrational for doing so. This conclusion would be justified if perceivers benefited from statistical power as much as investigators do. If exposed to a large random sample, perceivers might make accurate and unbiased estimates. That is, an increase in power would enhance their chances of appearing rational. Having to respond to obscure items, however, robs research participants of this possibility.

Thus, the question remains of whether perceivers should ignore their own responses when they have little or no information about the behaviors or others (i.e., in the case of no exposure). According to the FCE paradigm, the answer is yes because single observations cannot precipitate the rejection of a hypothesis. What if, however, consensus estimation is an attempt to *generate* rather than to test a hypothesis? When perceivers feel uncertain about social consensus—as they often do—they may assume that their own responses are those of the majority. Consider a reversal of the typical estimation task. Rather than asking how common a behavior is in a group given a single observation, the question is what a single behavior will be given its prevalence in the group. Suppose Dr. Data knows that 80% of professors prefer experimental over postmodern psychology. Knowing this, and having temporarily lost her introspective faculties, Data infers *deductively* that she is probably an old-fashioned experimentalist. Having recovered memory, Data also realizes that she prefers lecture-style over seminar-style teaching and that 80% of her peers prefer one method. She can now infer *inductively* that hers is probably the majority position. Both modes of inference are valid. The majority implies the self and the self implies the majority.[2]

If projection is a form of induction, a single observation is informative. Rather than seeking the rejection of a false null hypothesis, this view of induction stresses the value of point estimation. Consider again the person who is aware of two desirable behaviors and one undesirable behavior. Rather than asking whether the null hypothesis of no difference is false, this person may realize that the sampled proportion is the best estimate of the population proportion, and therefore that desirable behavior is more common than undesirable behavior. Instead of testing a hypothesis, this person generates one. The weakness of NHST is its disinterest in alternative hypotheses, but this is what perceivers must explore when estimating

[2]When a group is characterized by multiple behaviors with different base rates, inductive inferences are more regressive (i.e., less variable) than deductive inferences.

consensus. By point estimation, they can infer that the most likely consensus distribution in the group is the one they have preserved in the sample.

Bayesian Induction

If only one observation exists, it would be reckless to assume that all other instances, yet to be observed, will be the same. This would mean that all groups are perfectly homogeneous, a possibility that is contradicted by experience. Dawes (1989) suggested that the social perceiver does not begin with one specific null hypothesis but with a family of hypotheses. In the simplest case, known as the *principle of indifference*, these hypotheses are equally likely at the outset (LaPlace, 1814). In other words, the social perceiver begins in a state of ignorance regarding social consensus. All possible percentages, ranging from 0% to 100%, seem equally applicable. Attempting to make a numerical prediction, the perceiver assumes that the consensus for one option is 50%. This estimate is not, however, a unitary null hypothesis, but the result of an effort to minimize the error that is almost certain to occur when the true percentage is revealed. Errors greater than 50% are not possible.

When observations appear, such as the perceiver's own response, the probabilities of the 101 hypotheses are no longer the same. Hypotheses stating that this response is that of a minority are now less likely, and hypotheses stating that this response is that of a majority are more likely. The hypothesis that this particular response does not exist is eliminated, and the hypothesis that all group members show this response is now the most probable. But clearly, this hypothesis is not the only one. To estimate consensus, the perceiver needs to integrate the probabilities of the remaining 100 hypotheses by weighting each hypothesis with its probability of being true. Accepting the principle of indifference, the aggregate posterior probability of the response is $(k + 1)/(n + 2)$, where k is the number of responses of a certain kind (e.g., preference for A rather than B), and n is the size of the sample (see also Gigerenzer & Murray, 1987; Krueger & Clement, 1996). If there is only one observation, its probability is ⅔. As sample size increases, the prediction approaches the proportion observed in the sample.[3]

The Bayesian rationale allows perceivers to predict the probability of a hypothesis given the observed data, $P(H|D)$, whereas NHST only provides the probability of the data given the null hypothesis, $P(D|H)$. Which conditional probability do social perceivers care about? Their task is not to make a judgment about the null hypothesis but to estimate consensus (i.e., to make a point estimation). Aside from offering a realistic platform for evaluating the rationality of consensus estimation, Bayesian induction provides a mechanism for projection that is both necessary and sufficient: Use of one's own (and any other) response.

Brunswikian Induction

A limitation of the Bayesian approach is that social reality, with its variable distributions of responses, plays no role in the assessment of the perceivers' rationality. Brunswik's (1955) lens model offers an approach to induction that takes actual consensus into account. It suggests that perceivers use more or less valid cues and that they use these cues more or less reliably. Across observations, perceivers can detect which cues covary with a reality criterion. They can detect the covariation between their own behaviors and those of the majorities, and thus recognize their own responses as valid cues for group consensus. Perceivers who understand

[3]Own endorsements predict group consensus regardless of the distribution of the prior probabilities. The assumption of uniform priors (the "principle of indifference") is attractive because it (1) captures the psychological state of ignorance, and (2) simplifies the mathematical prediction of the posterior probabilities.

this project and thereby increase the accuracy of their predictions (Hoch & Loewenstein, 1989).

Consider the simple case of four behaviors, two shown by a majority and two shown by a minority. There are 16 possible patterns in which behaviors of individual group members may coincide with the behaviors of the majority or with the behaviors of the minority. There also are 16 possible patterns of predictions, ranging from assuming that all behaviors are majority behaviors to assuming that none is. The 256 intersections of these profiles yield scores for projection and accuracy. Projection can be expressed by the percentage (0%, 25%, 50%, 75%, or 100%) of behaviors in which the person expects the majority to behave as he or she does, while accuracy is the percentage of behaviors in which the prediction (majority behavior versus minority behavior) matches reality.

The key to the Brunswikian perspective is the realization that some patterns of endorsement are more likely than others. Suppose the actual endorsement probability is ⅔ for each majority item and ⅓ for each minority item. If responses to the items are independent, it is far more likely that all of the individual's responses match the responses of the majority (P = .1975) than that all match the responses of the minority (P = .0123). Figure 1 shows the probability of each validity score. The behaviors of most individual group members are associated with the behaviors of the majority. Their own behaviors are valid cues for majority behavior even if there is no other sample information. The most important consequence of this relationship is that the correlation between projection and accuracy increases with validity.

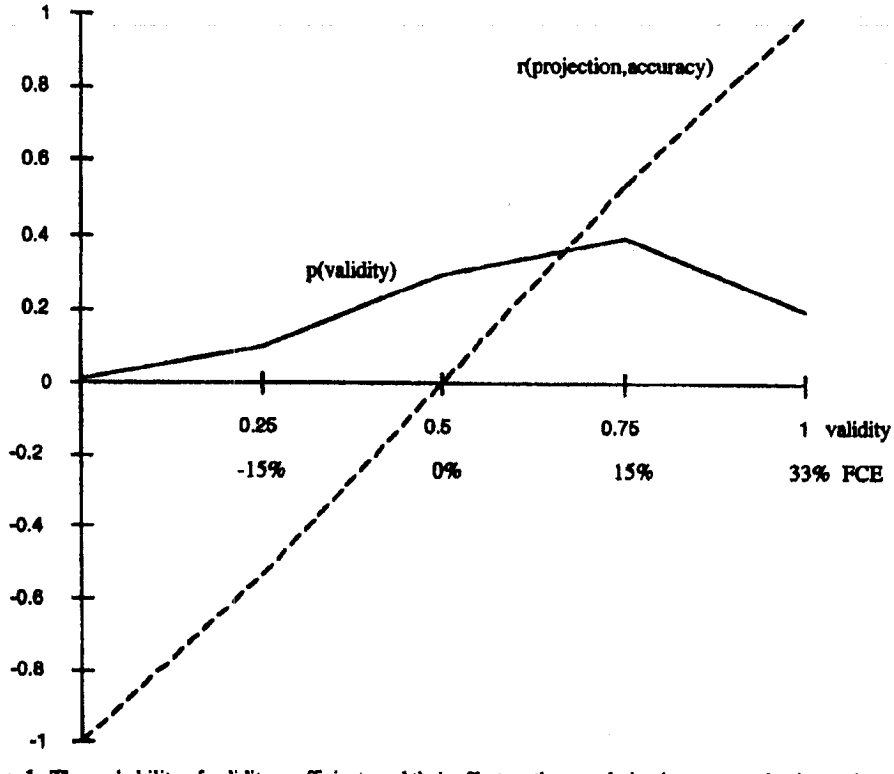

Figure 1. The probability of validity coefficients and their effect on the correlation between projection and accuracy.

When the correlation between projection and accuracy is weighted by the probability with which it occurs (i.e., validity), its mode is .53. On the average, a person can assume that the group agrees with him or her in three out of four cases.

If most individuals project in this reasonable fashion, FCEs appear for most behaviors. If, for example, everyone projects at the level of the most likely validity, the average probability that an endorser expects the majority to also endorse the item is .74. The corresponding value for nonendorsers is .29.[4] The average size of the FCE now depends on the size of the consensus estimates. If people follow the logic of Bayesian prediction (and the principle of indifference), their estimates are 58% for their own behaviors and 43% for the alternatives.[5] The FCE (15%) obtained from these theoretical considerations is remarkably similar to the average (unweighted) FCE obtained in meta-analyses (Mullen & Hu, 1988).

If people projected all their responses to the group, as the Bayesian model would predict, accuracy and the FCE would increase further. This rarely happens, however, and Brunswik's approach describes more realistically what people actually do. Noting that validity tends to be positive but not perfect, they project roughly at the level of the average expected validity (Krueger & Clement, 1997). By doing this, they attain greater predictive accuracy than they would have if they had not projected at all, and as a group they produce FCEs as a statistical byproduct.

Individualized Projection

When the FCE is computed item by item, the average strength of projection within a person and differences between people remain unknown. To overcome this limitation, the Brunswikian approach suggests that item endorsements and estimated and actual consensus be intercorrelated across items and within individual people. The correlation between endorsements and actual consensus expresses the validity of each set of responses for the aggregated group responses. In the illustrative data set (see Table 1), these correlations are high ($M = .57$), because most individuals are indeed similar to the group average. Given this substantial validity correlation, perceivers are right to project; and they do, as expressed by the correlation between endorsements and estimated consensus ($M = .45$). Finally, the correlation between estimated and actual consensus reveals considerable accuracy ($M = .62$). The key claim of the induction paradigm is that projection increases accuracy. Indeed, accuracy is reduced when endorsements are controlled (partial $M = .49$). However, it is also clear that perceivers do not only rely on self-related knowledge. If they did, the partial accuracy would be zero, and the raw accuracy correlation would not be larger than the validity correlation (Dawes & Mulford, 1996; Krueger, 1998a).

Also consistent with the induction paradigm, projection ($r = .47$) and validity ($r = .40$) are positively related to accuracy across people. The effect of projection is reduced but not eliminated when validity is controlled (partial $r = .34$). Again, information unrelated to the self also appears to affect consensus estimates. Similarly, the effect of validity does not disappear when projection is controlled (partial $r = .22$). The most typical group members predict consensus most accurately regardless of their own projection. Finally, typical group members (i.e., those with the most valid responses) project more than atypical members do ($r = .49$). These findings illustrate the need to examine projection not only for individual items, but also

[4]These values were computed by summing the predicted majority endorsements for each item and each level of validity. This sum yields the probability of predicted majority endorsement when divided by the total number of predictions.

[5]For endorsers, $.7363 \times \frac{2}{3} + .2911 \times \frac{1}{3} = .5788 \times 100$; for nonendorsers, $.2911 \times \frac{2}{3} + .7363 \times \frac{1}{3} = .4304 \times 100$.

within and across people. When this is done, the benefits of projection and the limitations of the FCE paradigm become apparent.

EGOCENTRIC PERCEPTION

The first two approaches to the study of projection have emphasized statistical reasoning by viewing consensus estimation as a form of hypothesis testing (FCE) or hypothesis generation (induction). Neither paradigm explains, however, why projection occurs in the first place. The FCE paradigm shows which variables are sufficient to increase projection, but not which are necessary (Krueger, 1998a). The induction paradigm models empirical consensus estimates well, but it is vague about underlying psychological processes.

The third view of projection abandons the notion of statistical reasoning and instead tries to understand projection as a facet of perception. This view assumes that a person's own response to a stimulus—be it approach or avoidance—automatically generates the idea that others respond similarly. Automatic approach–avoidance tendencies are well-documented. When presented, most stimuli elicit primitive responses that tell perceivers how they feel about the stimulus (Niedenthal & Kitayama, 1994). Most simply, they accept their perceptions as being realistic. Trust in sense perception usually works so well (this snarling Doberman is aggressive ... better get out) that it generalizes to social perception. Often, our interactants are what they appear to be and they mean what they say. Clearly, however, social perception and interaction is also fraught with deception and error. Communication and rhetoric beget gullibility. Statements that ring true enjoy instant credence and false ones need to be "unbelieved" by laborious scrutiny (Gilbert, 1991). Nevertheless, approach and avoidance are *about* the stimulus, and thus, every response involves at least some degree of stimulus attribution (Higgins, 1997). Once a quality, be it positive or negative, has been attributed to the stimulus, other people can be expected to be similarly affected by it (Gilovich, Jennings, & Jennings, 1983).

Adaptiveness

> We start with the bare observation that a number of persons will in a given situation perceive objects and happenings within it in a similar way and that their modes of action in the situation will also have a basic similarity. (Asch, 1952, p. 128)

Perceivers not inclined to make rapid stimulus attributions suffer in most environments. Although seeing a charging hound, tasting bitter herbs, or relishing the joys of sex are deeply subjective experiences, they emanate from reality. This reality may not determine perception, but it constrains it. Reality is objective in the sense that others who face the same stimulus feel similarly. Asch (1952) understood that "we discover that the surroundings are accessible to all; they are open to inspection [and that] we discover a basic unity in our perceptions, motives, thoughts, and purposes" (pp. 129–130). Asch knew that trust in this unity is the foundation of human relations. Much of communication, for example, is the mutual confirmation of what we already know others know. The power of faith in "common ground" is unmasked whenever it breaks down unexpectedly. Autism and some psychoses, for example, severely limit the sharing of that which is already agreed upon. A hallucinated voice, for example, is an idiosyncratic event. If the hallucinator wishes to discuss what he or she has heard, frustration is inevitable because others cannot respond with the expected empathy. Some forms of psychotherapy that discourage stimulus attributions regardless of what it is that the client experiences ("It's all in your head!") work against the natural grain of the perceptual apparatus. It is a

difficult task for the human mind to find comfort in the conviction that its sensations, perceptions, and feelings are controlled by mysterious inner forces rather than being healthy responses to what is out there.

Social projection saves mental energy while still producing adaptive results (as shown by its fit with inductive algorithms). These qualities have long been recognized, but have not influenced research on projection itself. Hume, Wundt, James, and Freud were among the many thinkers who used introspection and self-analysis to generate hypotheses about how minds (and not only their own) work. Their contributions were not definitive, however, because they went beyond the projection of individual responses. Instead, some of their predictions involved complex sequences of events that, in conjunction, were not likely to be found in others. Added details increase the perceived representativeness of a scenario, but they also reduce its generalizability (Tversky & Kahneman, 1974). Freud, for example, thought he had discovered a universal conflict between fathers and sons. He may have been right, but the details of his own conflict and its presumed mythical origins were too intricate to be a probable experience among others. In other words, egocentric projection is useful when restricted to individual stimuli. Complex patterns, especially when their components do not covary, become rapidly idiosyncratic.

Projected Minds

> After prolonged research on myself, I brought out the fundamental duplicity of the human being. (Camus, cited in Bok, 1989, p. xv)

Why would the pioneers of psychological science bother with introspection? Laziness or lack of access to empirical sampling methods hardly satisfy as explanations. More likely, they anticipated Asch's axioms or more recent philosophies of mind: "Whatever else a mind is, it is supposed to be something like our minds; otherwise we wouldn't call it a mind" (Dennett, 1996, p. 4). As self-evident as the projection of mind may seem, it is not without challenge. Solipsists believe that only their own minds exist. Because there is more than one solipsist, one might wonder—as Wittgenstein did—why they do not talk to each other. Indeed, they avidly talk to nonsolipsists, thus exposing their belief that there are other minds that need education in solipsism. To say this may be unfair because some solipsists simply doubt that the existence of other minds can be proven. And in that, they are correct. Although it is impossible to prove the existence of other minds (as it is impossible to prove that the sun will set), the assumption that they do has been useful (Nagel, 1967).

Projective faith in the existence of other minds is an adaptive premise that permits the gathering of empirical knowledge. Although nobody needs to worry about proving the premise itself, the inferences that follow from it can readily be modified by experience. Humphrey (1978) suggested that this is the primary function of consciousness:

> The trick which nature came up with was *introspection*: it proved possible for an individual to develop a model of the behaviour of others by reasoning by analogy from his own case, the facts of his own case being revealed to him by "examination of the contents of consciousness." (p. 901)

Many inner experiences find overt expression. If others have minds like ours (premise), we expect them to respond to stimuli as we do (prediction), and can then note their behavior (test). What is being tested is not the premise but the prediction. The founders of psychology knew this, but many of their successors abandoned this form of hypothesis generation at great loss: "Nature's psychologists succeed where academic psychologists have failed because the former make free use of introspection" (Humphrey, 1978, p. 901).

Testing hypotheses about other minds is a costly diversion unless there is something to be gained. Sometimes others feel differently from us, which is important to know, especially when there is a threat of deception. Deceivers seek illicit gains and to realize these gains they have to outmaneuver their own projections. The con man who draws a mark into his game has to feign disappointment about initial but intended losses. He then can up the ante and liberate his victim of financial assets. This is difficult because the con man's projection is that the mark can detect his inner sense of glee. The con man, much like young Allport, is likely to endure the illusion of transparency (Gilovich, Savitsky, & Medvec, 1998). Awareness of one's own lies may bring unbidden arousal, at least if there is a smidgen of compunction. Not surprisingly then, those who deceive best are those who manage to deceive themselves (Mele, 1997). As Costanza said to Seinfeld: "Remember Jerry, it's not a lie if you believe it."

When self-deception does not work, the con artists may fear that their arousal is visible, which increases arousal further. Expecting others to know their private states, they may ultimately choose honesty. To avoid detection, they deceive less than they could have. People cannot detect the inner states of others as well as they think they can (DePaulo & Friedman, 1998). If they exaggerate both their own and others' detective ability, projection limits deception in general.

INDUCTION AND EGOCENTRISM COMPARED

The standard tests of consensus estimation do not distinguish between induction and egocentrism. Both paradigms predict that most people project most of the time. How can we know whether projection is primarily a matter of reasoning or perception? Recent research has created conditions under which the two paradigms make different predictions. One procedural innovation is to vary the target of projection so that the perceiver is either a member of the group or not. The other innovation is to vary the source of the behavioral information so that the available response is either the perceiver's own or that of another individual.

Social Categorization

The surest way to eliminate projection is to ask people to estimate social consensus for a group to which they do not belong. At first blush, this negative finding appears to support the idea that people reason inductively. After all, induction is an inference from a sample to the population from which this sample was drawn. If the characteristics of two populations or groups are known to be unrelated, a sample of observations obtained from one group is diagnostic with respect to that group but not the other. When this situation is created experimentally with urns representing groups and chips of varying color representing sample characteristics, participants draw the proper inferences (Krueger & Clement, 1996).

The lack of projection to social out-groups seems to replicate this experimental situation, but this similarity is deceiving. Humanity is broken up into multiple groups, usually by a small number of distinctive characteristics. Catholics, for example, revere the Virgin Mother, whereas Jews do not. But how else do these groups differ? Social categorization does not mean that other characteristics are independent (or even opposite) of each other. Enjoyment of the outdoors, poetry, or overpriced space-age coffee varies more across people than between groups. Nevertheless, group predictions depend on the self only when the self belongs to the group (Cadinu & Rothbart, 1996). People seem not to realize that both groups are subsumed under a shared population (Sloman, 1997). Failing to project to the out-group, they neglect

population base rates. *The real error is not projection, but the lack thereof.* It is difficult to explain the lack of projection to out-groups as part of inductive reasoning without introducing further assumptions, such as base rate neglect.[6]

The lack of projection to out-groups is also puzzling from the perspective of the egocentrism paradigm. Why do men fail to generalize their own responses to women and vice versa (Brown, 1996; Krueger & Zeiger, 1993)? It is as if people treat members of out-groups as members of different species. People rarely attribute consciousness as they experience it to other animals. Surely, they would not go as far as to deny consciousness to members of the opposite sex or other out-groups, but they seem to believe that theirs are different kinds of mind. In sum, the powerful moderating effect of social categorization on projection presents a challenge to both paradigms. But testable hypotheses do suggest themselves. For example, projection may occur automatically (and egocentrically) with respect to both in-groups and out-groups, but be effortfully inhibited for out-groups.

Self versus Other

The clearest way to discriminate between the two paradigms is by looking at variations in the source of the behavioral information. From the point of view of inductive reasoning, the source of a behavioral sample is irrelevant. *Any* observation is a valid cue for prediction, unless it is clearly discredited as being biased. In contrast, egocentric perception implies that people are more sensitive to those responses that emanate from themselves. They experience their own responses directly, subjectively, and thus believably. What they learn about the behaviors of others is superficial in comparison. When I prefer the House Italian over Newman's salad dressing, I am certain that I do, but I cannot be sure that Newman himself likes the dressing that bears his name. When appraising the behaviors of others, people must make greater allowances for deception and error than when appraising their own (in part, because they are—by definition—unaware of their own self-deceptions).

The significant partial accuracy correlations presented earlier (which controlled own responses) suggest that perceivers possess valid knowledge about the behavior of other individuals. However, this method does not reveal how many pieces of information they use, nor does it reveal the strength of induction from the self (projection) relative to the strength of induction from individual others. Although projection is inductively conservative, it would be egocentrically biased if induction from others' responses is even more conservative.

The use of self-related and individual other-related information is directly compared in "bogus stranger" experiments. After learning whether another person endorses or rejects the stimulus, participants make their own responses and they estimate social consensus. The size of the FCE is then compared depending on whether the two responses (own and other) are the same or different. Inductive reasoning demands that both responses receive the same weight, and the FCE should disappear when the stranger gives a discrepant response. But this does not happen. Consider a case in which participants read the Minnesota Multiphasic Personality Inventory-2 item "Criticism or scolding hurts me terribly," and learn that another student, whose response is ostensibly sampled randomly from a database, either endorses or rejects this statement (Krueger & Clement, 1994). Consensus bias is twice as large when the other agrees rather than disagrees. Still, the latter FCE indicates that endorsement by one and rejection by

[6]The moderation of projection by social categorization is consistent with the finding that people seek comparisons with members from their own social categories (e.g., sex or age). A good deal of similarity is assumed before the assessment itself is made (Wood, 1989).

the other do not cancel each other out as induction theory requires. Even the responses of many unanimous others do not override a single person's response. If extended to a whole list of items, the result is much the same. When consensus estimates for multiple items are regressed on the participant's own and the stranger's responses, the weight for the own responses is more than twice as large than the weight for the stranger's responses (Clement & Krueger, 2000).

It is reassuring, however, that the stranger's responses do not go entirely unheeded. If that were not the case, social learning and social comparisons would be all but impossible. People who happen to be atypical group members are most likely to encounter attitudes, behaviors, and preferences different from their own. If they ignore this important information, they run the risk of perceiving the group inaccurately, of failing to conform when conformity is adaptive, and perhaps of being ostracized.

But why do the responses of other individuals carry comparatively little weight? Besides having possible concerns about the truthfulness of others, people may simply perform conservatively on *any* task that they understand as being inductive. In classic research on the revision of beliefs, participants infer the composition of urns from samples of colored balls. They imagine two urns, one filled with 70% red balls and 30% blue balls, and the other filled with 30% red balls, and 70% blue balls. The prior probability of each urn to be sampled is .5. Next, participants learn that eight red and four blue balls were sampled, and their task is to estimate the probability that the balls came from the predominantly red urn. The typical answer ($P = .75$) is lower than the correct one ($P = .97$) (Peterson & Beach, 1967).[7]

When they face multiple plausible hypotheses, people also hesitate to revise their beliefs. Recall that when people are ignorant about the prevalence of a feature in a category, their best guess is 50%. When a single datum (feature present or feature absent) is sampled, its posterior probability is ⅔. People ignore single data and other small samples, however, not realizing that belief revision does not increase but decrease with each successive observation (Krueger & Clement, 1996). In consensus estimation, people appear to treat the responses of others in the same way as they treat balls drawn from an urn. They apply the same inductive conservatism.

The induction paradigm is an incomplete account of consensus estimation because neither its theoretical tenets nor its empirical findings explain both the strong projection from the self and the limited generalization from the other. The former satisfies mathematical norms, whereas the latter fits the standard finding of conservatism. The egocentrism paradigm attempts to account for the self–other discrepancy. Its focus is again on the self. Why do

[7]For normative belief revision (see Gigerenzer & Murrary, 1987), the probability of the data given the hypothesis (red urn) is

$$P(\mathrm{D}|\mathrm{H}) = \binom{n}{x} p_r^x (1 - p_r)^{n-x}.$$

The probability p_r is the percentage of red balls in the predominantly red urn U_r, and p_r^x is the probability of drawing a sequence of x (i.e., 8) red balls from that urn. Analogously, $(1 - p_r)^{n-x}$ is the probability of drawing $n - x$ (i.e., 4) blue balls from that urn. The product of these probabilities is the probability of drawing a sequence of x red and $n - x$ blue balls from the predominantly red urn. The binomial coefficient $\binom{n}{x}$ gives the number of possible sequences of this kind. The outcome of 8 reds and 4 blues has a probability of .231 if the predominantly red urn is sampled, and a probability of .008 if the predominantly blue urn is sampled. The posterior probability of the predominantly red urn follows from Bayes's rule as

$$p(U_r|D) = p(U_r) \times \frac{p(D|U_r)}{p(U_r) \times p(D|U_r) + p(U_b) \times p(D|U_b)} = .967$$

people not show their usual conservatism when inferring group consensus from their own responses? What makes the self special?

BELIEF FORMATION VERSUS BELIEF REVISION

Immediacy

A great deal of self-related knowledge is highly accessible (Bargh, 1982; Wood & Cowan, 1995). When a stimulus appears, one's own initial response—however tentative it might be—leaps into consciousness. At the same time, it is clear that most others respond similarly to the same stimulus. But how do people project their internal states or traits to others? The likely answer is that trait attributions to the self depend in part on simple and immediate responses to the lexical stimulus: the trait word. At minimum, people extract desirability information from trait words, and thus have a ready cue as to whether the trait is descriptive of themselves and most others (Pratto & John, 1991). One's own responses rush in with the stimulus, and even dispositional stimuli may be automatically associated with group characteristics (Clement & Krueger, 1998).

The high accessibility of one's own responses poses a problem for inductive reasoning. Induction means that observations lead to revisions of beliefs that already exist. In other words, the social perceiver needs to have a belief about the popularity of a stimulus item *before* even considering his or her own response as a piece of relevant data. To make consensus estimates, however, people need to know what the stimulus is, and if they do, their own responses force themselves to mind. Thus, consensus estimates are always posterior beliefs because they already involve a sampling observation. If so, the logic of induction, which suggests a sequence of prior belief, sampling, and posterior belief, lacks its crucial first element. This means that consensus estimates derived from one's own response serve to *form* rather than revise beliefs. *Egocentric perception takes place before raters can ask themselves what the priors would have been had they not encountered this particular stimulus.*[8]

In contrast, responses of other individuals enter the picture *after* beliefs have already been formed egocentrically. Sampling others fits the three-step inductive sequence, and subsequent consensus estimates are revisionary rather than formative. If conservatism is a robust feature of belief revision, it is here that it should be seen. Projection is less conservative, and thus seemingly more normative, because it is free of prior beliefs resisting revision. This perspective suggests that the role of other-related information is equivalent to that of self-related information only when presented independently. Hansen and Donoghue (1977) created such a situation by having some participants (actors) sip an unfamiliar drink, while allowing others (observers) to look on. Not surprisingly, actors inferred population preferences from their own experience with the drink. More importantly, observers also used the actors' appraisals of the drink to infer how most others would feel, but observers who also had an opportunity to taste the drink themselves ignored the apparent preference of the other participant and only used their own response to predict consensus.

Unless the stimulus is entirely unfamiliar, self-related associations can creep in before the identity of the specific stimulus has been revealed. Suppose my friend Jack raves about the latest movie with Eastwood. Can I infer the popularity of this movie from his reaction alone?

[8]Mathematically, of course, it is possible to apply Bayes's rule backward and to estimate the prior probability of consensus given the data (own response) and the posterior probability (consensus estimate).

Even if I have not seen the movie, I know my feelings about actors-turned-politicians, Eastwood himself, his type of movies, movies in general, and a wealth of other related issues. Through lateral induction from these related beliefs, my knowledge of Jack's response is egocentrically contaminated, and thus will not stand alone as I predict the movie's popularity. It is thus unlikely that the observed responses of others create beliefs de novo.

Anchoring

If Bayesian belief revision cannot adequately describe egocentric projection, what can? The use of self-related information as a formative rather than a revisionary datum recalls the judgmental heuristic of anchoring and insufficient adjustment (Tversky & Kahneman, 1974).[9] A typical study involves obscure questions presented along with possible but patently arbitrary answers. For example, the question might be what percentage of African countries are former British colonies. A high arbitrary anchor (e.g., 60%) leads to higher estimates than a low anchor (e.g., 20%). But there is a fundamental difference between the anchoring heuristic and belief revision. An anchor is not a piece of data. Participants do not learn, for example, that a randomly selected country (e.g., Zambia) was a former British colony. If that were the case, one could compare prior and posterior estimates. Instead, the anchoring task provides an arbitrary prior probability, which participants then fail to ignore.

Projection is egocentric in that people anchor their consensus estimates on their own responses and adjust insufficiently when observing someone else's response. Rather than starting out at the 50% mark (which they may never consider) and then revising upward to their own response, they may start at the 100% mark for consensus with the self and then adjust (insufficiently) downward toward the 50% mark. The anchoring heuristic operates rather automatically, as one would expect if projection is a perceptual phenomenon (Wilson, Houston, Etling, & Brekke, 1996). People who attempt to disregard their own responses are unable to reduce projection (Krueger & Clement, 1994).

Good evidence for anchoring and insufficient adjustment comes from a study on interpersonal communication (Keysar, Barr, & Balin, 1998). Much of the time, communicators can plan utterances by relying on the common ground shared with their interlocutors. The common ground in communication resembles the notions of "validity" or "actual similarity" in the induction paradigm. What happens, however, when a communicator knows that the interlocutor does not share a crucial piece of information? The anchoring heuristic suggests that initial, reflexive attempts at forming an utterance will be egocentric. To appreciate the interlocutor's divergent perspective and to correct (adjust) the utterance takes time and may produce errors.

Keysar et al. (1998: experiment 1) devised a question-and-answer game in which one participant (the communicator) learned that "John read the newspaper." The other participant (the interlocutor) asked "Did he read the novel?" The communicator also received privileged information, which was either independent of the question ("Mary read a novel") or interfered with it ("Ralph read a novel"). When the privileged sentence interfered with the correct answer (no!) because of the shared pronoun, communicators' responses were slowed down by 170 msec and they involved 10% more errors. Similar egocentric anchoring occurred in an eye movement study (Keysar et al., 1998: experiment 2). Here communicators had to help "artists" (actually Keysar's confederates) complete a picture of a plane. The artists could see only an incomplete sketch, whereas communicators saw the full picture. Again, however, the

[9]The term "anchoring and insufficient adjustment" is redundant. If adjustment were sufficient, the initial numerical value would not be called an anchor because it had been forgotten or otherwise mentally deactivated.

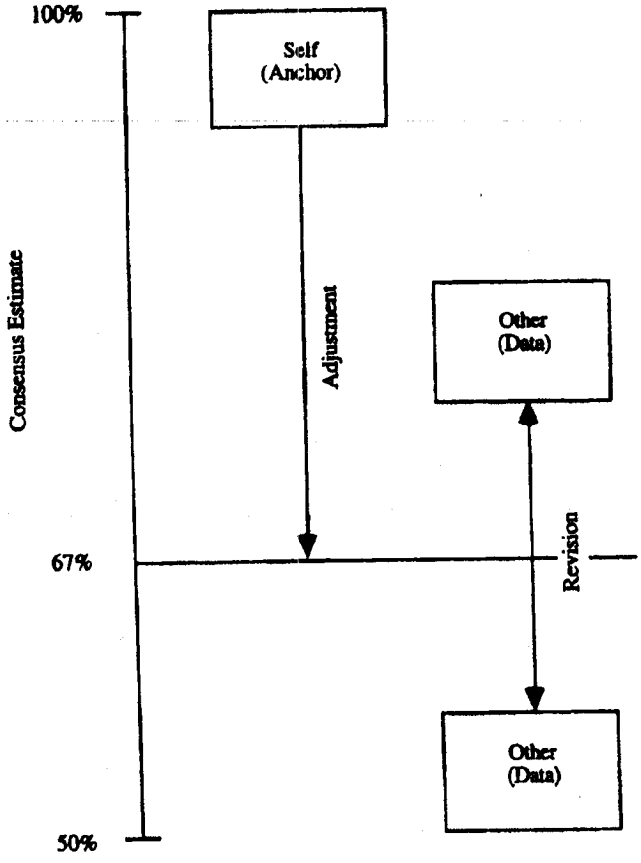

Figure 2. Self-anchoring (projection) and conservative induction from other data as a two-stage process of belief formation and belief revision.

communicators were exposed to some foils, including a bird. Some of the time, and under a pretext, communicators were instructed to "look at the bird" just before the artists asked them what color the wings were. The foil (the bird), which was not part of the common ground, delayed the saccade launch to the plane by an average of 180 msec. These findings are convergent evidence that initial responses are unrestricted by knowledge about other individuals. Only with time and effort can these egocentric anchors be adjusted toward the perspective of others.[10]

Consistent with Keysar's model, consensus estimation now may be understood as the two-stage process displayed in Fig. 2. In the first stage, perceivers automatically generate an extreme hypothesis based on their own response. Realizing that not everyone agrees with them, they adjust this estimate toward a more moderate value, allowing for variability. In the second stage, they use the responses of individual others for a conservative revision of their

[10]Using a similar design, Newton (1990, cited in Ross & Ward, 1996) found that people fail to appreciate that their self-generated embellishments to auditory stimuli are not available to others. Participants who knew which tune was being fingertapped greatly overestimated the degree to which uninformed others could identify the tune.

adjusted egocentric hypothesis. If the first other individual encountered disagrees with the perceiver, belief revision is conservative to the extent that it is smaller than the preceding adjustment.

The Curse of Knowledge

The processes of self-anchoring and inductive use of other-related information can work jointly or in opposition to each other. Their interplay can be seen when people predict what consensus estimates others will make. They realize that another person who endorses a stimulus item will probably make a higher consensus estimate than a person who rejects the same item (Krueger & Zeiger, 1993). But predictions of others' consensus estimates also covary with the anchor of the predictors' own responses. People who themselves would have endorsed the item expect the other person to give a higher estimate than people who would have rejected the item. In principle, this anchoring is rational because own responses are related to actual consensus values (own validity), which are related to others' responses (others' validity), which are related to others' estimates (others' projection).[11] The size of this rational anchoring is small because it is the product of three regression weights. Against this background, empirical anchoring effects are too strong. Perceivers' own endorsements predict the consensus estimates they attribute to others as much as the perceived endorsements of those others do. In other words, perceivers act as if the others knew their own (the perceivers' responses) and used them adequately (Krueger, 1998a).

The failure to suppress irrelevant knowledge creates biases of commission. The overweighting of a self-referent sample response is egocentric because people *are* able to ignore other-referent sample information. The hindsight bias nicely illustrates the curse of egocentric knowledge. People with outcome knowledge not only fail to ignore the outcome when making their own predictions (hindsight), but also project their own biased predictions to other forecasters who lack outcome knowledge (Fischhoff, 1975). Similarly, people who gain facility with a task, thanks to practice, expect unpracticed individuals to be proficient too (Kelley & Jacoby, 1996). In communication, privileged semantic knowledge can be a curse. People who have learned the meaning of obscure linguistic idioms assume that this meaning is transparent to uninformed others (Keysar & Bly, 1995). These expectations concerning the performance of others violate rules of induction. One's own knowledge should not be reflected in the performance of others who lack this knowledge. Even those of us who study these effects are entrapped by them. When writing lectures, it is difficult to predict how much students already know; and when writing chapters, it is equally difficult to predict how much the readers know.[12]

When Induction and Egocentrism Converge

The evidence from the bogus stranger studies casts doubt on the claim that social perceivers treat self- and other-related information equivalently. But the self and the stranger differ in many ways. The self has the advantage of being salient, familiar, and enduring, whereas others are incorporeal data points presented in the sparsest manner. The justification

[11] I am grateful to Robyn Dawes for pointing this out.

[12] To test the idea that it is difficult to know what others know, average student evaluations of 167 courses were analyzed. As expected, ratings of the instructors' awareness of the students' level of understanding were lower than ratings of preparedness, clarity, enthusiasm, and receptiveness to questions. They were equal only to ratings concerning the use of instructional aids, and higher only than ratings of interest.

for the bogus stranger method is that it tests the strong form of the induction hypothesis. It should not matter what else is known about the other aside from the critical endorsement information. Psychologically, it may matter a great deal, however, and the egocentrism hypothesis offers a perspective on these self–other differences. According to the strong form of this hypothesis, there is a categorical difference between the self and the other, which stems from the inescapable subjectivity of the self and its experiences. According to the weak form, another person can become more selflike through processes such as individuation, familiarity, or love. The question is whether under some conditions another person's responses receive as much weight as one's own.

One way to approach this question is to individuate the other person. In one study, the other person was either represented by a mere identification number or by a name and a brief description. Although participants found it easier to form an impression about the named other, they did not give him or her more inductive weight than the anonymous other (Clement & Krueger, 2000). An alternative approach is to allow participants to predict the responses of someone they know well, and to use those predictions as information for the estimation of group consensus. When tested individually, college students relied both on their own responses to trait terms and on the responses they expected of their roommates (Krueger & Stanke, in press). But even these expected responses carried less weight than their own. In a follow-up study, students were tested along with their roommates in their dormitory apartments. This method not only replicated the high familiarity of the other, but also made him or her visually salient. These conditions were sufficient to eliminate the differences between self- and other-related correlations with consensus estimates. The roommates' responses were not provided by the investigators but were estimated, and these estimates were, in part, projective. For example, the assumed similarity of the roommates was greater than their actual similarity. Indeed, roommates were no more similar to one another than were two randomly paired students. Nevertheless, when students felt that their roommates would respond differently than they themselves would, egocentric projection disappeared.

The equivalence of the self and the familiar other raises the question of whether the underlying mechanisms are the same. According to the egocentrism hypothesis, projection from the self depends on processes of perceptual anchoring and downward adjustment, whereas generalization from the other depends on processes of data sampling and upward revision. Do the roommate data imply that students anchor on their familiar other's responses as much as they anchor on their own? A cluster of ancillary results indicates that representations of the self continue to enjoy egocentric primacy over representations of the familiar other even when both are perceived to be equally similar to the group. In particular, ratings about the self were made faster (see also Dunning & Hayes, 1996), were more stable over time (see also Granberg & Brent, 1983), and were experienced as being easier than ratings about either another person or the group (see also Biernat, Manis, & Kobrynowicz, 1997).

IMPLICATIONS FOR OTHER SOCIAL PERCEPTUAL BIASES AND BEHAVIOR

The implications of projection for some other social judgmental biases have been examined (correspondence bias: Hansen & Donoghue, 1977; actor–observer bias: Krueger, Ham, & Linford, 1996; hindsight bias and overconfidence: Stanovich & West, 1998). Of greatest theoretical interest are the relationships between projection and other egocentric biases. The two biases I consider here—false uniqueness and self-enhancement—both imply a contrast rather than projective assimilation between the self and the other.

(False) Uniqueness and Self-Enhancement

> We're all individuals!
> (Crowd in Monty Python's *Life of Brian*)

The perception of the self as being unique, as being differentiated from others, has been considered a basic psychological function and need, at least in the Western world (Markus & Kitayama, 1991). On the face of it, any attempt to see the self as being unique would limit or even overturn the effects of social projection. Indeed, psychologists have offered four different perspectives on uniqueness bias. The following review is guided by the question of whether these biases challenge the idea that projection is the primary perceptual orientation.

Reversals of the FCE. As its name suggests, the false uniqueness effect (FUE) is a negative FCE. Occasionally, consensus estimates are *lower* among those participants who endorse the item than among those who reject it (Agostinelli et al., 1992; Bosveld, Koomen, & van der Pligt, 1996; Klar, 1996; Suls, Wan, Barlow, & Heimberg, 1990). Some of these FUEs are serendipitous and some fail to replicate. Relative to the number of published FCEs, their number is so small that they may just represent sampling variability.

Aside from the possibility that the FUE is a statistical oddity, it is difficult to interpret. For example, the size of the Asian-American ethnic group is estimated to be smaller by Asian Americans themselves than by members of other ethnic groups (Krueger & Clement, 1997). It is tempting to attribute this FUE to the Asian minority. Caucasians, blacks, and Hispanics each show an FCE, believing that their own group is larger than it is believed to be by other groups. The idea that Asians are uniquely prone to uniqueness bias can only be tentative, however, because members of collectivistic cultures and their descendants are the least interested in the individualistic notion of uniqueness (Markus & Kitayama, 1991). From a methodological point of view, one might wonder what would happen if members of other ethnic groups decreased their estimates of the size of the Asian group (perhaps because they projectively increased estimates of the size of their own groups). Increased projection among other groups could eliminate the FUE for Asians despite the fact that no change occurred in the perceptions or motivations of that group.

Estimation Errors. An alternative interpretation of false uniqueness is less ambiguous. Often, people do not realize how common their own behaviors are (Nickerson, Baddeley, & Freeman, 1987). In the case of ethnic population estimates, for example, Caucasians underestimate the size of their own group (50% vs. 74%), while blacks (26% vs. 12%), Hispanics (21% vs. 10%), and Asians (8% vs. 3%) overestimate the size of theirs. Depending on one's interpretation of bias, conflicting biases seem to exist within the Caucasian and the Asian group. Caucasians project in that they think there are more Caucasians than other groups do (FCE), but they underestimate the size of their own group relative to its actual size (uniqueness). Asians, by contrast, exhibit the FUE when their estimates are compared with those made by other groups, but they overestimate the actual size of their own group. This apparent paradox is resolved when over- and underestimation biases are understood as regression effects (Krueger & Clement, 1997; Stone & Kamiya, 1957). The size of a large group (e.g., an ethnic majority) is more easily underestimated than overestimated by members of *any* group, and the reverse is true for the size of a small group. In other words, differences between estimated and actual consensus on a particular item say little about projection or uniqueness.

Biased Perceivers. To avoid the pitfalls of single-item analyses, perceptions of (false) uniqueness can be understood and assessed as a property of individual people. There is little

research on the question of whether certain personality traits predict individual differences in perceptions of consensus and uniqueness. In one rare attempt to locate such predictors, Fenigstein and Abrams (1993) found that public self-consciousness is related to projection. Low public self-consciousness, when measured as a trait or a state, does not create FUEs, however, but only reduces the strength of projection. Following the idiographic approach preferred in the induction paradigm, one can ask if there are any individual perceivers who generate negative correlations between their own item endorsements and their consensus estimates. Such patterns of absolute uniqueness bias are rare. In the sample presented earlier, only 8% of the correlations were negative.[13] It is thus possible that there are a few people who systematically believe their own characteristics (whatever they may be) to be uncommon in the group. It remains to be seen whether these perceptions are stable person characteristics, or whether they are statistical oddities (i.e., type I errors against the true claim that all people project).

Better than Average. The common finding that most people believe they are better than average is occasionally interpreted as evidence for an FUE. Most people enhance the self above the group average (see Armor & Taylor, 1998; Krueger, 1998c, for reviews), which raises the question of whether they can simultaneously feel different (i.e., better) and similar to others. Self-enhancement suggests a favorable contrast between the self and others, whereas projection suggests assimilation. The solution to this paradox is simple. Self-enhancement is a positive difference between the location of the self and the location of the average person on a continuous scale. Like most people, Joe may enhance himself by thinking he is more satisfied with his life than most others are with theirs. At the same time, Joe may project his own level of satisfaction onto others (Klar & Giladi, 1999). His estimate of the proportion of satisfied people may be larger than the estimate given by somebody who is rather dissatisfied.

Ratings of personality traits reveal the coexistence of these two common biases. The illustrative data set also comprises ratings of a randomly chosen student and the social desirability of each trait. In Fig. 3, the average self- and other ratings are plotted against the 14 traits, which are sorted from left to right according to their average (social) desirability ratings. The high correlation between the two sets of ratings ($r = .88$) reflects projection.[14] Traits that people claim for themselves, they also tend to attribute to others. This correlation between self- and other descriptions is largely a product of social desirability (see also Bosveld, Koomen, & Vogelaar, 1997). People are more likely to claim positive than negative traits for the self *and* for another person.[15] The more they project, the less room for self-enhancement they have. Still, positive traits are judged to be more descriptive (by .57 standard units) and negative traits to be less descriptive (by .16 standard units) of the self than of the other person. As illustrated by the hypothetical motorist, people tend to feel similar to others, yet superior.

Some traits are more conducive to projection (FCE) than self-enhancement and vice versa ($r = -.57$). The motivational view of egocentrism suggests that differences in trait desirability mediate this correlation. It seems plausible that people project their negative traits onto others, while at the same time claiming that positive traits are more descriptive of them than of others. If so, the correlation between the two biases should disappear when social desirability is controlled. This, however, does not happen (partial $r = -.50$). Last, when the two biases are assessed idiographically, no relationship emerges, again supporting the view that self-enhancement cannot be construed as a uniqueness bias.

[13]Most raters with absolute false uniqueness scores had positive validity scores (7%).

[14]Self- and other ratings were jointly standardized; desirability ratings were standardized separately.

[15]Still, some projection occurs independent of social desirability (partial $r = .19$).

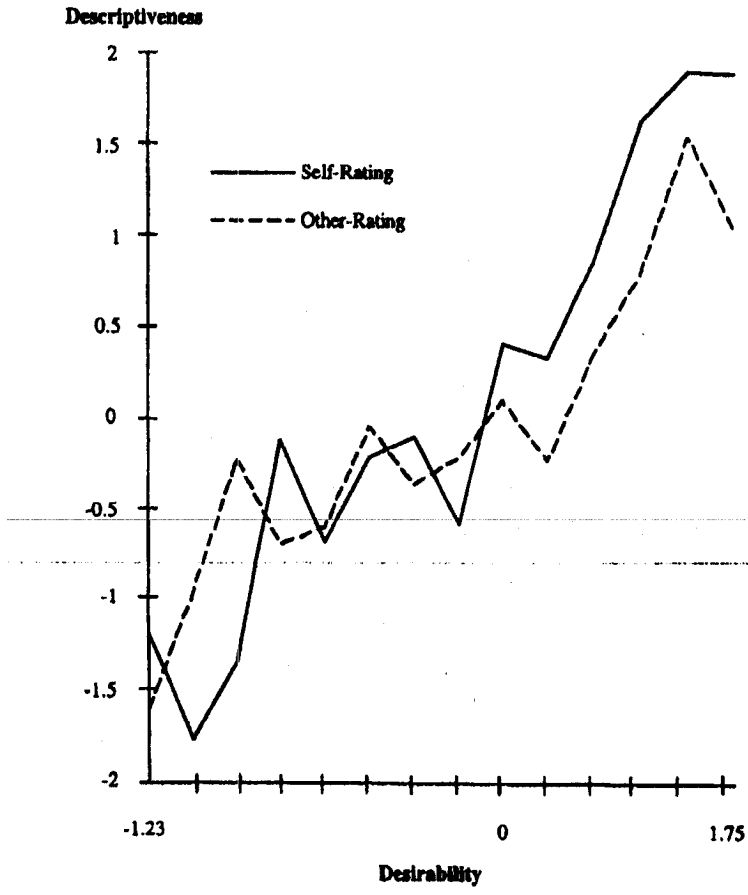

Figure 3. Projection and self-enhancement across 14 personality traits.

Personal Validation. A final perspective on false uniqueness derives from Forer's (1949) classic work on the "Barnum effect." Forer administered a personality inventory, but instead of preparing individualized personality sketches based on actual test scores, he wrote one moderately positive and vague sketch. Most of his participants felt that this sketch captured their personalities well. When they learned that everyone had received the same sketch, most of them were surprised, amused, and embarrassed. It was this emotional reaction that suggested that participants understood their ratings of the sketch's accuracy to mean *unique* accuracy. In other words, it was only implicit that they felt that the sketch captured their personality as it differed from the personalities of others.

But does the recognition of oneself in a vague description mean that the described characteristics are seen as unique in the sense of being rare? In a recent study, participants completed a personality inventory, and they were informed that, among other things, they were "enthusiastic, high-spirited, ingenious, [and] imaginative" (Krueger & Clement, 1996, p. 60). The Barnum effect emerged in that the sketch was rated as more accurate by those whom it was said to describe ($M = 7.26$, an a 9-point scale) than by those whom it was not said to describe ($M = 5.58$). However, estimates about the percentage of people who fit the description did not vary depending on whether the person him- or herself was described by it.

The skeptical tone of this review is not meant to suggest that people have no sense of

niqueness. It merely seems that perceptions of exaggerated or false uniqueness are rare and nstable. Next, I consider some surprising consequences of projection for social behavior. ,fter all, as social animals, humans cannot get by with perception and contemplation alone; ıey also must act.

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> A single universal soul resides in everyone; the wise man sees himself in all and all in him. (*Bhagavad Gita*, cited in Wright, 1994, p. 375)

Collective behavior depends in part on what the constituent individuals expect the ollectivity will do. If individuals have a choice between acting and doing nothing, their ıerceptions of what others will do create a dilemma. If the considered action is costly but lesirable, people are motivated to leave it to others to realize the common good. But then, if hey sit back to enjoy a free ride, projection suggests that others will do likewise. Hence, each ndividual is caught in a loop of preparing and halting action with shifting perceptions that ıthers will do the same.

Competition and Cooperation. Most participants in Prisoner's Dilemma games show ational self-interest when they know what their partners will do. They realize that competition naximizes their own gains regardless of the other's behavior. When they do not know yet, ıowever, what the other will do, one out of three cooperates (Shafir & Tversky, 1992). This ;ooperation is puzzling because it defies rationality. The notion of projection can contribute to he demystification of cooperation. When players do not know the other's behavior, they can ;ompete or cooperate depending on what feels right to them. Either way, they will expect the ɔther to reciprocate their behavior (Kerr, 1989; Mulford, Orbell, Shatto, & Stockard, 1998; but ;ee Gifford & Hine, 1997). Competitors who expect competition are reassured that they are not ;uckers. Cooperators can take pride in maximizing the joint payoff. Note that projection ;annot occur when the other's behavior is known before the players themselves act. Here, their ɔwn behaviors are reactive rather than projective. Regardless of what the other has done, it is clear that competition maximizes their own gain.

Voting. Many political scientists consider voting irrational because it presents more costs than benefits to the individual (Mechl, 1977). A single vote is rarely decisive but casting it requires time and effort. Some have suggested that people derive other benefits from voting, such as the satisfaction that comes from expressing an attitude, doing one's civic duty, or nurturing a reputation of responsibility (Overbye, 1995). Others believe that voters expect that they can induce like-minded others to vote as well (Quattrone & Tversky, 1984). This is a strong claim of magical thinking, but perhaps noncausal processes of projection suffice to make people vote. Initially, potential voters who project their own preferences to the electorate should be reluctant to vote because they expect a favorable outcome. If they decide to refrain from voting, however, they establish a behavioral intention (i.e., to stay at home) that is also projectible. Being more inclined to project to in-groups than out-groups, they may now fear that political allies are more likely to abstain than opponents. This, in turn, should motivate them to vote after all.[16] Thus, the effect of projection on abstention is self-eradicating.

[16]Deciding for and against voting could become a loop that may be broken by the realization that the cost of voting is smaller than the cost of losing an election despite one's belief that public opinion is on one's side. Defeated politicians like to point out that they were unable to mobilize their supporters.

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Consistent with this idea, voters are more confident of victory after they have resolved their conflict in favor of voting (Regan & Kilduff, 1988).

Ethical Conduct. Cooperation and voting are instances of socially desirable behavior, and projection can help explain why these behaviors do not disappear. But the effect of projection on desirable behavior remains tentative.[17] Many people, obeying the rational dictate of selfishness, do not cooperate, do not vote, or deceive others. Perhaps because of this, some teachers of ethics think it necessary to urge their disciples to behave well in spite of potential costs. Still, their appeals to selflessness are rooted in egocentrism. Jesus Christ suggested that you "Do unto others as you want them to do unto you." Rabbi Hillel asked that you "Don't do unto others what you don't want them to do unto you." Not surprisingly, there are no allocentric rules, such as "Do unto yourself as others want to do unto you (or unto themselves)," or "Don't do unto yourself what you don't want others to do unto you (or unto themselves)."

Ethical rules that are projective stimulate reciprocal altruism, but a crucial difference should be noted (see Kaufman, 1961; Nørretranders, 1998, for a philosophical and a neuropsychological discussion, respectively). It matters what it is that people are asked to project. By focusing on likes or gains, Christ's prescriptive rule allows errors. Because likes are less uniform than dislikes (preferences for sweet or dry vintages vary, whereas almost everyone dislikes a wine turned sour), would-be benefactors take the risk of doing unto others what those others do not like. When that happens, the resulting pain is larger than the intended pleasure (Kahneman & Tversky, 1984). Hillel's proscriptive rule minimizes the regret that follows from hurting others unwittingly. The errors that may arise from following this rule are not only fewer but also less serious (i.e., failing to identify and deliver a benefit).

PROJECTION, INTROJECTION, AND SOCIAL COMPARISON

Depending on one's theoretical orientation, social perceivers appear to be either irrational (FCE), statistically sophisticated (induction), or self-absorbed (egocentrism). All theories of social projection share the assumption, however, that a person's own responses not only predict consensus estimates but also *cause* them to be consistent with own responses. This is a strong claim, and objections to it must be considered. It is accepted, for example, that sometimes the direction of the causal path is inverted. Theories of social identity, self-categorization, and conformity seek to identify the conditions under which such "introjection" occurs (e.g., Oakes, Haslam, & Turner, 1994). When there is a correlation between own responses and consensus estimates, it is not clear to what extent it is produced by projection, introjection, or a combination of the two.

Perceptions of life span personality development illustrate this mix (Heckhausen & Krueger, 1993). When predicting (or postdicting) stability and change in their own personalities, people rely in part on normative expectations about life span development. Adults of all ages judge their own development as being similar to the development of "most other people." Introjection can be plausibly expected from young adults. They may find it relatively easy to forecast their own late-life development from the development of aging others whom they observe. Relevant egocentric information is truly missing. For older individuals, how

[17]Sometimes projection is detrimental to interpersonal behavior and communication. Negotiators who project their own preferences onto their opponents often miss benefits because they fail to accommodate the other's divergent needs (Bottom & Paese, 1997).

ever, the assumed similarity with most others may be more projective. The elderly may find it easier to postdict normative developmental trends from their own remembered development.

Separating Projection from Introjection

To determine the relative strength of projection and introjection, Granberg and Brent (1983) studied the link between political preferences and expectations concerning the outcome of Presidential elections over time. Consistent with projection, expectations (i.e., consensus estimates) were more malleable than preferences. Preferences at time 1 predicted expectations at time 2 when preferences at time 2 were controlled (partial $r = .26$). In contrast, there was no evidence for a "bandwagon effect" (i.e., introjection). Expectations at time 1 did not predict preferences at time 2 when expectations at time 2 were controlled (partial $r = -.05$). Similarly, Bauman and Ennett (1996) found that when initial alcohol and tobacco use was controlled, peer behavior had little effect on subsequent substance use (*r*s about .10). Using experimental procedures, Cadinu and Rothbart (1996) provided some members of laboratory groups with self-relevant information (i.e., how they had scored on four types of tasks) and others with information about how the group had scored as a whole. The former relied heavily on self-relevant information to infer group scores (projection), whereas the latter relied only modestly on the group scores to predict their own (introjection).

These findings show that projection is stronger than introjection when both have an opportunity to occur at the same time. In some social situations, however, their interplay is dynamic, and the question is whether a projective bias still occurs after the attitudes of individual members have been changed by group pressures. When people have been recruited into a majority and know that they have, their projections might merely be accurate reflections of reality. Using small interacting groups, Latané and L'Herrou (1996) demonstrated the endurance of projection. Exchanging persuasive e-mail messages with four others, participants expected rewards for adopting the majority attitude. Most came to believe that they had joined the majority including many of those who had not. The inverse error was less frequent.

Projection as a Basis for Comparison

Since Festinger's (1954) original formulation, interpersonal similarity has been recognized as being necessary for comparison processes to unfold. I opened the present chapter with the claim that the *perception* of similarity is critical. The perception of similarities (and differences) permits the selection of some individuals for comparison (and the rejection of others). Armed with information about selected similar others, people can then appraise, evaluate, and adjust their self-concepts. The conundrum is how the similarity of others is judged when the self-concept is still unstable.

The evidence for social projection suggests that people already have some self-knowledge, although some of this knowledge may consist only of tentative feelings, hunches, or hypotheses. This knowledge, when it is projected onto others, constrains and complements social comparison processes (Suls, 1986). Without much thought, people assume most others to be similar to themselves so that they exclude only a minority of others from further comparisons. Depending on the motivational state of the perceiver, the expectation of similarity then leads to one of two conclusions. Either no further comparisons seem necessary, or they seem useful of the fine-tuning of the self-concept. The latter route may reveal the (in)accuracy of the projective perception. Perceivers need to take a closer look at the characteristics of others to determine whether they are as similar to themselves as they think they are

(Orive, 1988). If projection turns out to be false and the others are indeed quite different from the self, the social comparison process may be aborted; if projection turns out to be correct (as it should be in most cases), social comparison can proceed.

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REFERENCES

Agostinelli, G., Sherman, S. J., Presson, C. C., & Chassin, L. (1992). Self-protection and self-enhancement biases in estimates of population prevalence. *Personality and Social Psychological Bulletin, 18*, 631–642.

Allport, F. H. (1924). *Social psychology*. Boston, MA: Houghton Mifflin.

Armor, D., & Taylor, S. E. (1998). Situated optimism: Specific outcome expectancies and self-regulation. *Advances in Experimental Social Psychology, 30*, 309–379.

Asch, S. E. (1952). *Social psychology*. New York: Prentice-Hall.

Bargh, J. A. (1982). Attention and automaticity in the processing of self-relevant information. *Journal of Personality and Social Psychology, 43*, 425–436.

Bauman, K. E., & Ennett, S. T. (1996). On the importance of peer influence for adolescent drug use: commonly neglected considerations. *Addiction, 91*, 185–198.

Biernat, M., Manis, M., & Kobrynowicz, D. (1997). Simultaneous assimilation and contrast effects in judgments of self and others. *Journal of Personality and Social Psychology, 73*, 254–269.

Bok, S. (1989). *Lying: Moral choice in public and private life* (2nd. ed.). New York: Vintage.

Bosveld, W., Koomen, W., & van der Pligt, J. (1994). Selective exposure and the false consensus effect: The availability of similar and dissimilar others. *British Journal of Social Psychology, 33*, 457–466.

Bosveld, W., Koomen, W., & van der Pligt, J. (1996). Estimating group size: Effects of category membership, differential construal and selective exposure. *European Journal of Social Psychology, 26*, 523–535.

Bosveld, W., Koomen, W., & Vogelaar, R. (1997). Construing a social issue: Effects on attitudes and the false consensus effect. *British Journal of Social Psychology, 36*, 263–272.

Bottom, W., & Paese, P. W. (1997). False consensus, stereotypic cues, and the perception of integrative potential in negotiation. *Journal of Applied Social Psychology, 27*, 1919–1940.

Bramel, D. (1962). A dissonance theory approach to defensive projection. *Journal of Abnormal and Social Psychology, 64*, 121–129.

Brown, C. E. (1996). False consensus bias and gender: The case of Judge Clarence Thomas. *Psychological Reports, 78*, 144–146.

Brunswik, E. (1955). Representative design and probabilistic theory. *Psychological Review, 62*, 236–242.

Cadinu, M. R., & Rothbart, M. (1996). Self-anchoring and differentiation process in the minimal group setting. *Journal of Personality and Social Psychology, 70*, 661–677.

Catrambone, R., Beike, D., & Niedenthal, P. (1996). Is the self-concept a habitual referent in judgments of similarity? *Psychological Science, 7*, 158–163.

Clement, R. W., & Krueger, J. (1998). Liking persons versus liking groups: A dual-process hypothesis. *European Journal of Social Psychology, 28*, 457–469.

Clement, R. W., & Krueger, J. (2000). The primacy of self-referent information in perceptions of social consensus. *British Journal of Social Psychology, 39*, 279–299.

Dawes, R. M. (1989). Statistical criteria for a truly false consensus effect. *Journal of Experimental Social Psychology, 25*, 1–17.

Dawes, R. M. (1990). The potential nonfalsity of the false consensus effect. In R. M. Hogarth (Ed.), *Insights in decision making: A tribute to Hillel J. Einhorn* (pp. 179–199). Chicago: University of Chicago Press.

Dawes, R. M., & Mulford, M. (1996). The false consensus effect and overconfidence: Flaws in judgment, or flaws in how we study judgment? *Organizational Behavior and Human Decision Processes, 65*, 201–211.

Dennett, D. C. (1996). *Kinds of minds*. New York: Basic Books.

DePaulo, B. M., & Friedman, H. S. (1998). Nonverbal communication. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (Vol. 2, pp. 3–40). Boston, MA: McGraw-Hill.

Dunning, D., & Hayes, A. F. (1996). Evidence for egocentric comparison in social judgment. *Journal of Personality and Social Psychology, 71*, 213–229.

Felson, R. B. (1993). The (somewhat) social self: How others affect self-appraisals. In J. M. Suls (Ed.), *The self in social perspective* (pp. 1–26). Hillsdale, NJ: Lawrence Erlbaum.

Fenigstein, A., & Abrams, D. (1993). Self-attention and the egocentric assumption of shared perspectives. *Journal of Experimental Social Psychology, 29*, 287–303.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117–140.

Fischhoff, B. (1975). Hindsight ≠ foresight: The effect of outcome knowledge on judgment under uncertainty. *Journal of Experimental Psychology: Human Perception and Performance, 1*, 288–299.

Forer, B. R. (1949). The fallacy of personal validation: A classroom demonstration of gullibility. *Journal of Abnormal and Social Psychology, 44*, 118–123.

Fuhrman, R. W., & Funder, D. C. (1995). Convergence between self and peer in the response-time processing of trait-relevant information. *Journal of Personality and Social Psychology, 69*, 961–974.

Gifford, R., & Hine, D. W. (1997). "I'm cooperative but you're greedy": Some cognitive tendencies in a commons dilemma. *Canadian Journal of Behavioural Science, 29*, 257–265.

Gigerenzer, G. (1991). From tools to theories: A heuristic of discovery in cognitive psychology. *Psychological Review, 98*, 254–267.

Gigerenzer, G., & Murray, D. J. (1987). *Cognition as intuitive statistics*. Hillsdale, NJ: Lawrence Erlbaum.

Gilbert, D. T. (1991). How mental systems believe. *American Psychologist, 46*, 107–119.

Gilovich, T., Jennings, D. L., & Jennings, S. (1983). Causal focus and estimates of consensus. *Journal of Personality and Social Psychology, 45*, 550–559.

Gilovich, T., Savitsky, K., & Madvec, V. H. (1998). The illusion of transparency: Biased assessments of others' ability to read one's emotional states. *Journal of Personality and Social Psychology, 75*, 332–346.

Goethals, G. R. (1986). Fabrication and ignoring social reality: Self-serving estimates of consensus. In J. M. Olson, C. P. Herman, & M. P. Zanna (Eds.), *Relative deprivation and social comparison: The Ontario symposium* (Vol. 4, pp. 135–158). Hillsdale, NJ: Lawrence Erlbaum.

Goethals, G. R., Messick, D. M., & Allison, S. T. (1991). The uniqueness bias: Studies of constructive social comparison. In J. Suls & T. A. Wills (Eds.), *Social comparison: Contemporary theory and research* (pp. 149–176). Hillsdale, NJ: Lawrence Erlbaum.

Granberg, D., & Brent, E. (1983). When prophecy bends: The preference–expectation link in US Presidential elections, 1952–1980. *Journal of Personality and Social Psychology, 45*, 477–491.

Hansen, R. D., & Donoghue, J. M. (1977). The power of consensus: Information derived from one's own and others' behavior. *Journal of Personality and Social Psychology, 35*, 294–302.

Heckhausen J., & Krueger, J. (1993). Developmental expectations for the self and most other people. *Developmental Psychology, 29*, 109–121.

Higgins, E. T. (1997). Biases in social cognition: "Aboutness" as a general principle. In C. McGarty & S. A. Haslam, *The message of social psychology: Perspectives on mind in society* (pp. 182–199). Oxford, England: Blackwell.

Hoch, S. J. (1987). Perceived consensus and predictive accuracy. *Journal of Personality and Social Psychology, 53*, 221–234.

Hoch, S. J., & Loewenstein, G. F. (1989). Outcome feedback: Hindsight and information. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 15*, 605–619.

Humphrey, N. (June 1978). Nature's psychologists. *New Scientist, 29*, 900–904.

Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *American Psychologist, 39*, 331–350.

Katz, D., & Allport, F. (1931). *Students' attitudes*. Syracuse: Craftsman Press.

Kaufman, W. (1961). *The faith of a heretic*. New York, NY: Doubleday.

Kelley, C. M., & Jacoby, L. L. (1996). Adult egocentrism: Subjective experience versus analytic bases for judgment. *Journal of Memory and Language, 35*, 157–175.

Kenny, D. A., Bond, C. F., Jr., Mohr, C. D., & Horn, E. M. (1996). Do we know how much people like one another? *Journal of Personality and Social Psychology, 71*, 928–936.

Kerr, N. L. (1989). Illusions of efficacy: The effects of group size on perceived efficacy on social dilemmas. *Journal of Experimental Social Psychology, 25*, 287–313.

Keysar, B., Barr, D. J., & Balin, J. A. (1998). Definite reference and mutual knowledge: Process models of common ground in comprehension. *Journal of Memory and Language, 39*, 1–20.

Keysar, B., & Bly, B. (1995). Intuitions of the transparency of idioms: Can one keep a secret without spilling the beans? *Journal of Memory and Language, 34*, 89–109.

Klar, Y. (1996). Dysphoria and consensus estimates for behavioral choices: Equally inaccurate but in opposite directions. *Journal of Research in Personality, 30*, 278–289.

Klar, Y., & Giladi, E. E. (1999). Are most people happier than their peers or are they just happy? *Personality and Social Psychology Bulletin, 25*, 585–594.

Krueger, J. (1998a). On the perception of social consensus. *Advances in Experimental Social Psychology, 30*, 163–240.

Krueger, J. (1998b). The bet on bias: A foregone conclusion? *Psycoloquy, 9*(46). http://www.cogsci.soton.ac.uk/cgi/psyc/newpsy?9.46

Krueger, J. (1998c). Enhancement bias in the description of self and others. *Personality and Social Psychology Bulletin, 24*, 505–516.

Krueger, J., & Clement, R. W. (1994). The truly false consensus effect: An ineradicable and egocentric bias in social perception. *Journal of Personality and Social Psychology, 67*, 596–610.

Krueger, J., & Clement, R. W. (1996). Inferring category characteristics from sample characteristics: Inductive reasoning and social projection. *Journal of Experimental Psychology: General, 128*, 52–68.

Krueger, J., & Clement, R. W. (1997). Consensus estimates by majorities and minorities: The case for social projection. *Personality and Social Psychology Review, 1*, 299–319.

Krueger, J., Ham, J. J., & Linford, K. M. (1996). Perceptions of behavioral consistency: Are people aware of the actor-observer effect? *Psychological Science, 7*, 259–264.

Krueger, J., & Stanke, D. (in press). The role of self-referent and other-referent knowledge in perceptions of group characteristics. *Personality and Social Psychology Bulletin*.

Krueger, J., & Zeiger, J. S. (1993). Social categorization and the truly false consensus effect. *Journal of Personality and Social Psychology, 65*, 670–680.

LaPlace, P. S. (1814). *Essai philosophique sur les probabilites*. Paris: Courcier.

Latané, B., & L'Herrou, T. (1996). Spatial clustering in the conformity game: Dynamic social impact in electronic groups. *Journal of Personality and Social Psychology, 70*, 1218–1230.

Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224–253.

Meehl, P. E. (1977). The selfish voter paradox and the thrown-away vote argument. *American Political Science Review, 71*, 11–30.

Mele, A. R. (1997). Real self-deception. *Behavioral and Brain Sciences, 20*, 91–136.

Mulford, M., Orbell, J., Shatto, C., & Stockard, J. (1998). Physical attractiveness, opportunity, and success in everyday exchange. *American Journal of Sociology, 103*, 1565–1592.

Mullen, B., & Hu, L. (1988). Social projection as a function of cognitive mechanisms: Two meta-analytical integrations. *British Journal of Social Psychology, 27*, 333–356.

Nagel, T. (1967). *What does it all mean?* New York: Oxford University Press.

Nickerson, R. S., Baddeley, A., & Freeman, B. (1987). Are people's estimates of what other people know influenced by what they themselves know? *Acta Psychologica, 64*, 245–259.

Niedenthal, P. M., & Kitayama, S. (1994). *The heart's eye: Emotional influences in perception and attention*. San Diego, CA: Academic Press.

Nørretranders, T. (1998). *The user illusion.*. New York: Viking.

Oakes, P. J., Haslam, S. A., & Turner, J. C. (1994). *Stereotyping and social reality*. Oxford, England: Blackwell.

Orive, R. (1988). Social projection and social comparison of opinions. *Journal of Personality and Social Psychology, 54*, 953–964.

Overbye, E. (1995). Making a case for the rational, self-regarding, "ethical" voter ... and solving the "paradox of not voting" in the process. *European Journal of Political Research, 27*, 369–396.

Peterson, C. R., & Beach, L. R. (1967). Man as an intuitive statistician. *Psychological Bulletin, 68*, 29–46.

Pratto, F., & John, O. P. (1991). Automatic vigilance: The attention-grabbing power of negative social information. *Journal of Personality and Social Psychology, 61*, 380–391.

Quattrone, G. A., & Tversky, A. (1984). Causal versus diagnostic contingencies: On self-deception and on the Voter's Illusion. *Journal of Personality and Social Psychology, 46*, 237–248.

Regan, D. T., & Kilduff, M. (1988). Optimism about elections: Dissonance reduction at the ballot box. *Political Psychology, 9*, 101–107.

Ross, L., Greene, D., & House, P. (1977). The "false consensus effect": An egocentric bias in social perception and attribution processes. *Journal of Experimental Social Psychology, 13*, 279–301.

Ross, L., & Ward, A. (1996). Naïve realism in everyday life: Implications for social conflict and misunderstanding. In E. S. Reed, E. Turiel, & T. Brown (Eds.), *Values and norms: The Jean Piaget symposium* (pp. 103–135). Mahwah, NJ: Lawrence Erlbaum.

Rothbart, M., & Park, B. (1986). On the confirmability and disconfirmability of trait concepts. *Journal of Personality and Social Psychology, 50,* 131–142.

Shafir, E., & Tversky, A. (1992). Thinking through uncertainty: Nonconsequential reasoning and choice. *Cognitive Psychology, 24,* 449–474.

Sherman, S. J., Presson, C. C., Chassin, L., Corty, E., & Olshavsky, R. (1983). The false consensus effect in estimates of smoking prevalence: Underlying mechanisms. *Personality and Social Psychological Bulletin, 9,* 197–207.

Sloman, S. A. (1997). Categorical inference is not a tree: The myth of inheritance hierarchies. *Cognitive Psychology, 35,* 1–33.

Stanovich, K. E., & West, R. F. (1998). Individual differences in rational thought. *Journal of Experimental Psychology: General, 127,* 161–188.

Stone, P., & Kamiya, J. (1957). Judgments of consensus during group discussion. *Journal of Abnormal and Social Psychology, 55,* 171–175.

Suls, J. (1986). Notes on the occasion of social comparison theory's thirtieth birthday. *Personality and Social Psychology Bulletin, 12,* 289–296.

Suls, J., Wan, C. K., Barlow, D. H., & Heimberg, R. G. (1990). The fallacy of uniqueness: Social consensus perceptions of anxiety disorder patients and community residents. *Journal of Research in Personality, 24,* 415–432.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185,* 1124–1131.

Wheeler, L. (1966). Motivation as a determinant of upward comparison. *Journal of Experimental Social Psychology* (Suppl. 1), 27–31.

Wilson, T., Houston, C. E., Etling, K. M., & Brekke, N. (1996). A new look at anchoring effects: Basic anchoring and its antecedents. *Journal of Experimental Psychology: General, 125,* 387–402.

Wood, J. V. (1989). Theory and research concerning social comparisons of personal attributes. *Psychological Bulletin, 90,* 245–271.

Wood, J. V. (1997). What is social comparison and how should we study it? *Personality and Social Psychology Bulletin, 22,* 520–537.

Wood, N., & Cowan, N. (1995). The cocktail party phenomenon revisited: How frequent are attention shifts to one's name in an irrelevant auditory channel? *Journal of Experimental Psychology: Learning, Memory, and Cognition, 21,* 255–260.

Wright, R. (1994). *The moral animal.* New York: Pantheon.