Social Categorization and the Perception of Groups and Group Differences

Joachim I. Krueger* and Theresa E. DiDonato
Brown University

Abstract

The classification of human beings into distinct groups is a fundamental feature of social perception. Problematic phenomena, such as prejudice, discrimination, and intergroup conflict, are commonly traced back to categorization. We explore the minimal conditions under which categorization occurs and the basic mechanisms by which it affects cognition and behavior. We show that comparisons between groups are not necessary for categorization, reveal the conditions under which people overestimate or underestimate differences between groups, and sketch a model showing how social categorization gives rise to differences in the evaluation of ingroups and outgroups and to differences in the accuracy of judgments of ingroups and outgroups. We conclude with reflections on intergroup conflict and the role of moral judgment in such conflicts.

[The first man was created alone] for the sake of peace among men, so that no one could say to another, 'My ancestor was greater than yours' ... for when a human being strikes many coins from one mould, they all resemble one another, but the supreme King of kings, the Holy One, blessed be He, fashioned every man in the stamp of the first man, and yet not one of them resembles his fellow.

—Mishnah Sanhedrin 4:5.

The sages of the Talmud were well aware of the psychological tension created by the fact that human beings are simultaneously similar to and different from one another. By and large, perceived similarities increase liking and prosocial behavior, whereas perceived differences reduce it (Chen & Kenrick, 2002). Perceptions of differences are amplified when experienced between social groups rather than individuals, and the consequences can be tragic. Visiting the land of the Lilliputians, Jonathan Swift's hero Gulliver is drawn into the conflict between the Big-Endians and the Little-Endians. Their conflict is over the right way to break eggs. According to the chronicles, 'the primitive way of breaking eggs before we eat them, was upon the larger end: but the present Majesty's grandfather, while he was a boy, going to eat an egg, and breaking it according to the ancient practice, happened to cut one of his fingers. Whereupon the

Emperor his father published an edict, commanding all his subjects, upon great penalties, to break the smaller end of their eggs' (Swift, 1726/1967, p. 35). This decision, trivial as it was, split the Lilliputian world in two. Holding onto the traditional ways (i.e., the 'fundamental doctrine of our great prophet Lustrog', p. 35), the empire of Blefuscu embroiled Lilliput in 'a bloody war for six and thirty moons' (p. 36).

Swift lampooned the intergroup struggles of his day, between Tories and Whigs, and between Protestants and Catholics. He deftly captured the perspective of the outsider, to whom the intergroup differences, which are taken so seriously by the group members, seem frivolous. Swift's lesson is still pertinent today. Once distinctions between groups are enshrined by culture, tradition, or history, people tend to think of these distinctions as natural and inevitable. It seems frivolous, for example, to suggest that the Hutus and the Tutsi are 'really' not that different, or that the Israelis and the Palestinians 'really' are basically alike. To Swift, not to make this suggestion was the mark of a false morality.

In the present time, Dawkins (2006) skewers petty social categorizations from a Darwinian point of view. Focusing on social boundaries drawn by religion, Dawkins grants that 'there really are genuine grievances and injustices, and these seem to have little to do with religion; except that – and this is important and widely overlooked – without religion there would be no labels by which to decide whom to oppress and whom to avenge' (p. 259). The problem, Dawkins points out, is that by establishing separate groups, social categorization glosses over numerous and pervasive similarities. In Northern Ireland, for example, 'the two sets of people have the same skin colour, they speak the same language, they enjoy the same things, but they might as well belong to different species, so deep is the historic divide' (p. 259).

Dawkins observes that religious categories remain psychologically potent even after they have lost their hold on people's beliefs. Swift would not be surprised by 'the old Northern Ireland joke, "Yes, but are you a Protestant atheist or a Catholic atheist"?' (Dawkins, 2006, p. 166). As easy as it is to take an outside view of distant group conflicts, so difficult it is to take the same perspective in one's own backyard. How real are the conflicts among ethnic and racial groups in the United States or the conflict between the 'Muslim world' and the 'Judeo-Christian world?' Social categorization bequeaths social identities, which make it difficult to appreciate the perceptual basis of conflicts between societies or even cultures. The price of social identity is the loss of a neutral perspective. Only with the passage of time do social distinctions begin to appear in a trivial light.

We explore three questions raised by the Swift-Dawkins hypothesis. First, we ask to what extent social categories are properties of the social environment. We review principles of perceptual organization and probe their limits for our understanding of broad-range social categories. From this review, we conclude that intergroup comparisons are not

necessary – although they may be sufficient – to give rise to perceptions of human aggregates as groups. Second, we review research inspired by accentuation theory. We find that perceptual contrasts between groups can neither explain lawful patterns of overestimation and underestimation of group differences, nor can they explain why people regard certain attributes as stereotypical while ignoring others. Third, we review current theories of intergroup differentiation (i.e., perceptions of between-groups differences) and ingroup favoritism (perceptions of ingroups as being better than outgroups). We conclude that these phenomena can be explained without appealing to corresponding psychological needs. Simple patterns of inductive reasoning (i.e., assuming that other group members are similar to the self) can explain much of the empirical evidence. In the final section, we return to the question of what constitutes 'real' intergroup conflicts and their relation to group-based morality.

Perceptual Organization

To categorize a person as a Catholic implies that the person could be a member of a different group. In general, social categorization refers to the partitioning of humanity into discrete groups, and hence, perceptions of group differences, favoritism, and conflict become serious issues. Yet, it is easily overlooked that people can be perceived as members of a particular group even when this group is not seen in the context of other groups. For decades, research on group dynamics has examined the structural properties of groups (e.g., leadership, role differentiation, and patterns of communication) that give rise to the perception that the whole of the group is more than an aggregation of individuals (Levine & Moreland, 2006). Individuals who are members of such groups develop a sense of positive social identity without necessarily comparing their group with other groups to which they do not belong (Gaertner, Iuzzini, Witt, & Oriña, 2006).

The idea that the structural relations among individuals are sufficient to yield the perception of groupness is grounded in the basic principles of perceptual organization as identified by Gestalt psychology (Wertheimer, 1923/1958). Mere collections of individuals can form *Gestalten* (i.e., coherent wholes) when the individuals are similar to one another, when they are spatially close to one another, or when they suffer a common fate imposed from the outside (Campbell, 1958). None of these variables is necessary for the perception of groupness, but as more of them work together, a perception of 'entitativity' arises. Ultimately, a group can be seen as a quasi-organism, with powers of self-organization, coordination, and goal pursuit (Yzerbyt, Judd, & Corneille, 2004).

Some groups even seem to have minds of their own. Although most scientists reject the idea of a 'group mind' (Allport, 1924; Hofstätter, 1957), they grant that the structural properties of groups cannot be reduced

to the properties of the individual members (Kenrick, Li, & Butner, 2003). An anthill, for example, has attributes that cannot be observed in the ant itself (Hofstadter, 1979). The behavior of herds (Banerjee, 1992) and swarms (Parrish & Edelstein-Keshet, 1999) is usually adaptive and sometimes gives the appearance of a single intelligence. Forty thousand fans cheering on Real Madrid may look like a crowd, but when they break into a Mexican wave, they look like a group (Farkas, Helbing, & Vicsek, 2002). This behavior can be modelled by assuming that the behavior of each individual follows a few simple rules.

When individuals are categorized into a perceptual whole, something is added. Rothbart and Taylor (1992) suggested that this 'something' is not only that groups are perceived as if they were individual organisms, but that they are perceived as 'natural kinds' (Rosch & Mervis, 1975). Natural kinds are categories provided by nature, such as animal species. Natural kinds are useful in perception and cognition because they have great inductive potential. Once a category label is known, particular features can be inferred. Hoping to find a Zebra at the zoo, the visitor can expect to see stripes. In turn, individual attributes are often more highly associated with one another within a category than across categories (Wittenbrink, Hilton, & Gist, 1998). In the zebra, the presence of stripes goes together with a notorious refusal to be ridden. The way features hang together is, in part, a matter of reality. Whenever social categorization reflects such regularities, inductive inferences can be quite accurate (Jussim, 2005). If, however, the cues used for inference are invalid, or when valid cues are ignored, stereotypes are likely to be wrong.

Rothbart and Taylor (1992) suggested that the perception of social groups as natural kinds is generally a mistake. Like trains, planes, and automobiles, social groups should be seen as artifacts of the human imagination and historical activity. By falsely treating social categories as natural kinds, people make the error of 'essentialism' (Haslam, Bastion, & Bain, 2006). Essentialism is inductive reasoning unbound. Instead of merely inferring the presence of unobserved attributes, essentialism prompts inferences about *unobservable* attributes (e.g., the Slavic soul of the Poles). Artifacts (e.g., wheel barrows) lack souls or other essences, their inductive potential is low, and they can be tampered with until they change into something else (e.g., wheel barrows turning into flower beds). When there is more than one social category, essentialism can lead to even bigger mistakes. Essences are often thought to be unique, so that placing a person in one group precludes (or at least inhibits) placing him or her into another (Rothbart & Lewis, 1988). Whether a particular person is included as a group member can depend on where the group boundary is drawn. Whereas this arbitrariness betrays the artifactual basis of social categories, it has important consequences for how a person is perceived. Specifically, there is a tendency to see the person as being similar to the most prototypical group member (Rothbart, Davis-Stitt, & Hill, 1997; Schwarz & Bless, 2007).

Fortunately, essentialism and the false perception of social categories as natural kinds can break down, sometimes with bizarre consequences. Consider Hermann Göring, the vain Reichsmarschall of the Nazi state. When Joseph Goebbels, the minister of the propaganda department ('The Ministry for the Enlightenment of the People') demanded that General Milch be removed from his post because of his presumed Jewish ancestry, Göring replied 'Wer Jude ist entscheide ich' ['I decide who is a Jew'; cited in Galante, 1981]. This was ironic. Although the Nazis' racial theory was fully essentialist, Göring treated individual cases as artifacts when it suited his purposes.

Intergroup Contrasts

Although individual people can come to construe themselves as members of social groups without making comparisons with other groups, the idea that social prejudice, stereotyping, and discrimination are intergroup phenomena is firmly entrenched in social psychology (Schneider, 2004). Searching for the perceptual bases of intergroup relations, Tajfel (1969) suggested in a seminal essay that the presence of multiple groups or categories gives structure to an otherwise bewildering world. At the same time, categorization extracts a price. Instances or persons belonging to the same category are seen as more similar to one another than they really are (assimilation), and instances or persons belonging to different categories are seen as less similar to one another than they really are (contrast).

Classic accentuation theory has some shortcomings. For example, the theory does not specify how assimilation and contrast effects are related to each other, or which psychological processes account for them (see Eiser, 1996, 2003; Krueger & Clement, 1994, for theoretical refinements). For the present purposes, we note three other limitations. First, the true difference between groups is critical. When two categories strongly overlap (Lilli, 1970) or when they are highly discrepant (Krueger, 1992), no perceptual distortions occur. If accentuation theory is a 'kernel-of-truth' approach to social stereotyping (cf., Klineberg, 1971), the kernel must be rather large, but it cannot be a rock (Jetten & Spears, 2003).

Accentuation theory assumes that only the overestimation, but not the underestimation, of group differences is a hallmark of stereotyping. In a classic article, McCauley and Stitt (1978) claimed that, at least at the level of binary demographic data, no such overestimation occurs. Using data from the US Census, they found that African Americans differed from the general population by an average of 14% on seven selected characteristics (e.g., 'being unemployed during the last month', 'being a member of a family with four or more children'). Contrary to the kernel-of-truth hypothesis, research participants estimated the difference to be only 10.69%.

Upon reflection, this finding does not refute the kernel-of-truth hypothesis. Instead, both the hypothesis and McCauley and Stitt's (1978)

findings can be recast from a broader statistical perspective. A basic feature of statistical logic, the 'regression to the mean' (Galton, 1886), guarantees that large differences are more likely underestimated than small differences. McCauley and Stitt probably found an overall underestimation effect because they looked for Census items on which African Americans were clearly different from the general population (Clark McCauley, personal communication, November 15, 2005). Had they taken a random sample of items, the differences would have been smaller and overestimation more common. Within their own set of items, the regression effect also emerged. There was a highly negative correlation between actual differences and estimation errors (i.e., perceived differences − actual differences; $r = -0.679$, computed from McCauley, 1995, Table 2, p. 229). In other words, respondents were more likely to underestimate large group differences than small ones.

The difficulty of finding attributes that clearly separate social groups is a general one. Consider gender. Following professional guidelines (American Psychological Association, 2001), social psychologists diligently look for gender differences regardless of the study aim. When they find one ($p < 0.05$), they can hail the discovery and scramble 'to account for it.' With regard to most attributes, however, women and men are very much alike. Using data from Hyde's (2005, Table 1) survey of meta-analyses, and excluding motor behaviors, we found that the average gender difference corresponded roughly to a correlation coefficient of 0.1, which is a very small effect indeed.

The second limitation of accentuation theory is that it focuses on one judgment dimension at a time. Social stereotypes are rarely composed of single attributes, but rather tend to be collections of attributes. Perceptual accentuation can operate on any one of them. Over a range of attributes, actual and perceived intergroup similarity can be expressed by a correlation coefficient. There is an accentuation effect if the correlation over the perceived values is smaller, or more negative, than the correlation over the actual values. This kind of difference between perceived and actual similarity also constitutes an accentuation effect, but it cannot be explained by contrast effects at the level of individual items (Judd & Park, 1993). Statistical regression is again a useful way of understanding the patterning of overestimations and underestimations of similarity. If two groups are not very similar across items, perceptions of similarity are likely exaggerated. In McCauley and Stitt's (1978) data, actual similarity ($r = 0.64$) was lower than perceived similarity ($Mr = 0.86$, averaged over samples of respondents). Had attributes been selected randomly, an accentuation effect would have been more likely. Rothbart and Lewis (2006) studied groups that were rather similar to one another (i.e., musicians using different kinds of instrument) and found that the actual similarity correlations were higher ($Mr = 0.86$) than the correlations computed over perceptions ($Mr = 0.37$). Statistical regression can capture such patterns across studies, but it does not explain which mental processes yield

accentuation effects when such effects occur. We will shortly sketch a process model to fill this gap.

The third limitation of accentuation theory is that it implies that perceived group differences lie at the heart of stereotyping. If this were so, people should regard an attribute as stereotypical inasmuch as a group differs from a comparison group (McCauley & Stitt, 1978). For example, they should see the trait of dominance as typical of men if they think that the percentage of men who are dominant is larger than the percentage of women who are dominant. Indeed, such differences predict the degree to which people judge an attribute as typical of a group. However, the absolute percentage estimate for the target group alone – without subtracting the percentage estimate for the comparison group – is an even better predictor. Statistically, perceived group differences reveal nothing that is not encoded in the perception of the target group itself (Krueger, 1996, 2008; Krueger, Hasman, Acevedo, & Villano, 2003).

## An Ego-Based Theory of Perceived Group Differences

Of the theories that emphasize the role of intergroup comparisons in stereotyping, social identity (Tajfel & Turner, 1979) and self-categorization theories (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) are particularly noteworthy. These theories comprise two interrelated claims. First, people enhance the differences between ingroups and outgroups to satisfy their need to view themselves (along with their ingroup) as unique. Second, they differentiate ingroups *positively* from outgroups because they prize a positive social identity.

Although intergroup comparisons and the personal needs they serve can contribute to various phenomena of social perception, neither is necessary when strong social stereotypes are not yet in existence. Research in the minimal group paradigm, the fruit fly of social perception research, reveals the operation of cognitive-perceptual mechanisms when much of the complexity of the 'real' social world is stripped away. In such nascent groups, a simple pattern of inductive reasoning can account for a suite of standard perceptions and misperceptions. Consider four basic kinds of social judgment. Self-perception is an individual's judgment as to how well a given attribute describes him or her. Social desirability is a person's judgment of how positive or negative a given attribute is. Ingroup and outgroup perception are a person's judgments as to how well a given attribute describes these respective groups.

The premise of the social–induction model is that people predict lesser known attributes from better known ones. When groups are novel and stereotypes are not yet deeply ingrained, people make self-judgments and social desirability judgments faster, more confidently, and more reliably than they make group judgments (Epley, Keysar, & van Boven, 2004; Krueger, 2003). A large body of research further suggests that most people's self-images are

highly positive (Alicke, Dunning, & Krueger, 2005). The critical hypothesis with regard to inductive reasoning is that people project their own attributes to a group if they feel included in it. Using laboratory groups about which participants had little descriptive knowledge, Cadinu and Rothbart (1996) found that inferences from the self to the ingroup were stronger than inferences from available group knowledge to the self (see also Krueger, Acevedo, & Robbins, 2006; Otten & Epstude, 2006). Both types of inference were weak when participants were not included in the group. Social projection means that people draw on self–referent knowledge when making judgments about others who are close to them. Brain imaging studies support this view by showing that cortical areas typic-ally associated with self–reflective thought, such as the medial prefrontal cortex, are also active when relatives or friends are judged (Mitchell, Banaji, & Macrae, 2005; Ochsner et al., 2005; Ruby & Decety, 2004).

The top of Figure 1 is a schematic of the induction model. The boxes represent the critical variables and the solid lines represent the primary inferential paths. The first path, from desirability judgments to self-judgments, refers to the positivity of the self-image (path a). To the extent that the correlation between desirability judgments and self-judgments, computed
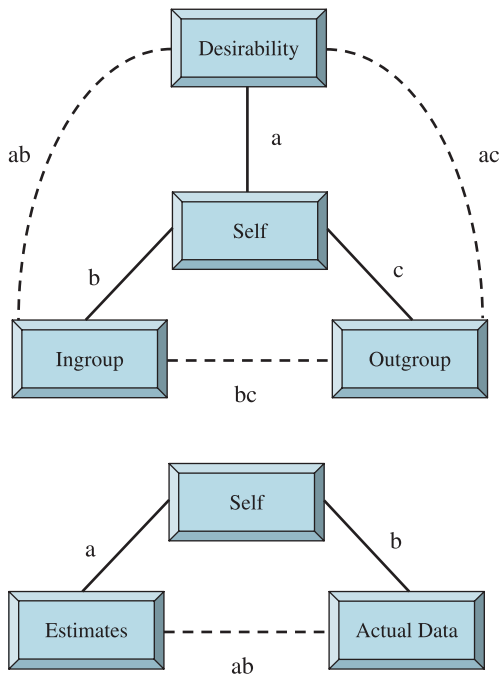
Figure 1   Schematics for intergroup perception (*top*) and the accuracy of group perception (*bottom*) according to the ego-based model.

over a set of attributes and within an individual person, is positive and large, the person has a positive self-image. The path from self-judgments to ingroup judgments refers to projection to the ingroup (path b). A positive correlation means that the person ascribes attributes to the ingroup inasmuch as he or she ascribes them to the self. Analogously, the path from self-judgments to outgroup judgments refers to projection to the outgroup (path c).

The dashed lines represent secondary, or derived, inferential paths. The correlation between ingroup and outgroup judgments indicates the degree of intergroup differentiation. A high correlation means that the two groups are perceived as similar on most attributes; a low correlation indicates strong differentiation. Recall that this correlation is the same measure discussed earlier in the context of accentuation theory. The ego-based model of inductive reasoning suggests that the degree of differentiation can be estimated from the relative strength of projection to the ingroup and to the outgroup. Specifically, the model estimates intergroup differentiation as the product of the two projection correlations (path bc). If projection to the ingroup and to the outgroup is, respectively, $r = 0.5$ and 0.1 (Robbins & Krueger, 2005), the two groups are seen as virtually independent (i.e., $0.5 \times 0.1 = 0.05$). If people fail to project to the outgroup, they will most likely see the two groups as being dissimilar, although not as opposites. By comparison, if both correlations were 0.5, or if projection were stronger overall (e.g., 0.8 and 0.3), the multiplication rule would return a positive correlation between ingroup and outgroup judgments and thus less intergroup differentiation. As noted above, most human groups are similar with respect to most attribute profiles. Therefore, a low similarity correlation resulting from low projection to the outgroup makes errors of overdifferentiation likely. For this to happen, processes of perceptual accentuation or motivated contrast are not necessary.

Now consider ingroup favoritism, or the degree to which a person perceives the ingroup more favorably than the outgroup. A straightforward measure is the difference between the correlation expressing perceived ingroup positivity and the correlation expressing outgroup positivity. The multiplication rule predicts both these correlations and thus the difference between the two. Estimating ingroup-positivity as the product of self-positivity and projection to the ingroup, and estimating outgroup-positivity as the product of self-positivity and projection to the outgroup, ingroup favoritism is the difference between paths ab and ac, or $a(b-c)$. Research supports the implication of this analysis, namely that ingroup favoritism disappears, or is greatly reduced, when the association between self-judgments and ingroup judgments is statistically controlled (Krueger et al., 2006; Otten & Wentura, 2001). It also follows that, if projection is stronger to the ingroup than to the outgroup regardless of the positivity of the self-image, individuals with the most positive self-image show the strongest ingroup

favoritism (DiDonato & Krueger, 2006). This implication is consistent with the finding that ingroup favoritism is positively associated with self-esteem (Aberson, Healy, & Romero, 2000; Gramzow & Gaertner, 2005).

The presence of ingroup favoritism is often taken to mean that outgroup stereotypes are less accurate than ingroup stereotypes. Empirically, a difference in stereotype accuracy often exists (Rothbart & Lewis, 2006; Ryan & Bogart, 2001), but the ego-based model suggests that this difference is not an automatic outcome of ingroup favoritism. Unlike ingroup favoritism, differential stereotype accuracy need not involve differences in perceived group favorability or the positivity of the perceiver's self-image. Consider the bottom panel of Figure 1. Perceivers make judgments about themselves and about a group. These two sets of judgments can be correlated with each other to yield a measure of projection (path a). Next, self-judgments can be correlated with the actual data that describe the group to reveal how typical the person is of the group (path b). Lastly, the group judgments can be correlated with actual group data to reveal judgment accuracy. With the multiplication rule, the degree of accuracy is estimated as the product of projection and typicality (path ab).

Ingroup judgments are more accurate than outgroup judgments when the difference between projection to the ingroup and to the outgroup is larger than the difference between a person's typicality of the ingroup than of the outgroup. These conditions are often satisfied. Projection to the ingroup is usually much stronger than projection to the outgroup, and, because most groups are similar rather than different, individuals are nearly as typical of outgroups as they are of ingroups.

To appreciate the idea that outgroup projection is too weak, picture a person's outgroups as overlapping circles arranged within a larger circle representing all of humanity. In Figure 2, the person (S for 'self') is at the center of his or her perceptual world. The local ingroup, which is bounded
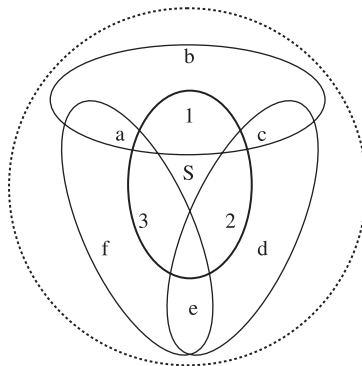
Figure 2   Overlapping ingroups and outgroups.

by the thick solid line, comprises S and persons 1, 2, and 3. The three outgroups are bounded by thin solid lines. One outgroup comprises persons 1, a, b, and c; another outgroup comprises persons 2, c, d, and e; a third outgroup comprises persons 3, e, f, and a. The partial overlap of the ingroup with each outgroup reflects the fact that virtually any person can be categorized as an ingroup member or as an outgroup member depending on the chosen scheme of categorization. Hillary Clinton, for example, is an outgroup member to her husband if regarded through the lens of gender. Politically, of course, she is a fellow Democrat.

With overlapping social categories, a complete lack of projection to all outgroups would entail a lack of projection to overall humanity, which is depicted by the dashed circle. Yet, people treat inclusive populations as ingroups, and they project almost as strongly to them as they project to local ingroups (Krueger & Clement, 1996; Krueger & Zeiger, 1993). Indeed, a complete lack of projection to the outgroup would also entail a lack of projection to the ingroup because all members of the ingroup are also members of some outgroups. In other words, because people project to both local ingroups and to the inclusive population (Dawes, 1989), they should also project to local outgroups that are nested within that population.

If projection *to* the outgroup is too weak, so is projection *from* the outgroup. Research conducted on the ingroup projection model has shown that people expect attributes of an ingroup (e.g., Germans) rather than attributes of an outgroup (e.g., Italians) to be common in an inclusive population (e.g., Europeans; Mummendey & Wenzel, 1999; Ullrich, Christ, & Schlüter, 2006; Waldzus, Mummendey, & Wenzel, 2004). When both groups show the same bias, the judgments of at least one are inaccurate and incoherent. These problems can be reduced by altering social categor-ization so that outgroups are explicitly included in the inclusive category (Dovidio et al., 2006; Krueger & Clement, 1996) or by making salient that people who are outgroup members by one scheme of categorization are ingroup members by another (Crisp & Hewstone, 2007). Whereas the postulates and findings of the ingroup projection model are consistent with the ego-based model presented here, the latter suggests that apparent projection from the local ingroup to the inclusive population may, at least in part, be the result of individuals projecting their personal attributes to both these groups.

To summarize, the ego-based model of intergroup perception accounts for a number of phenomena that are typically considered the domain of functional, or motive-based, theories. In the minimal group situation, estimates derived from the induction model predict empirical data for intergroup differentiation, ingroup favoritism, and differences in the accuracy of ingroup and outgroup judgments quite well (DiDonato & Krueger, 2006). As knowledge of other group members accumulates, or when people learn culturally transmitted beliefs about these groups, the role of self-knowledge as a predictive cue becomes smaller (Ames, 2004). At the

limit (e.g., gender stereotypes of communion or agency), group judgments can be even more robust than self-judgments. Then, the direction of the inductive inferences can be reversed such that self-judgments are assimilated to group judgments in a process of self-stereotyping (Guimond, Chatard, Martinot, Crisp, & Redersdorff, 2006).

Perception, Conflict, and Morality

By identifying the lack of projection to the outgroup as the key to several properties of intergroup perception, the ego–based model strikes a familiar social–psychological nerve. A common view is that social categories are not only arbitrary, but also useless or even dangerous. If one could only get rid of social categories, biases of ingroup favoritism and outgroup derogation would melt away. However, G. Allport (1954) and Tajfel (1969) argued that thinking without categories is impossible. Only if humans were a truly randomized mix of six billion individuals, no categories could be found that would enhance the average similarity of their members and diminish the similarity between categories. Then, thinking without categories would be optimal.

In the minimal group paradigm, categorization is indeed random and low projection to the outgroup means that judgments about that group are insufficiently favorable and accurate. For real groups, the idea of a perfectly undifferentiated melting pot is less plausible. An evolutionary perspective assumes that humans, like many other animals, are highly endogamous (Kalmijn, 1998; Whitmeyer, 1997). Forming clusters along kinship lines helps them attain various goals such as resource sharing, self-protection, and negotiation of status (Kenrick et al., 2003). Such clusters of similarity offer a biological foundation on which social forms of categorization can be grafted. Inasmuch as human groups are indeed different, strong projection to outgroups results would be an egocentric or ethnocentric underappreciation of the uniqueness of other groups.

Yet, the threat of overprojection to outgroups may be exaggerated. Consider a person who endorses four attributes as self-descriptive and rejects another four. If the person's judgments for one group are the same for seven of the eight attributes, the correlation between self- and group judgments is 0.77. Now suppose that the person's judgments of a second group are also matched with the person's self-judgments for seven of the eight attributes. Again, the correlation is 0.77, and the correlation between the two sets of group judgments is either 0.6 or 1. The latter occurs only if the person perceives both groups to be different from the self on the same attribute. The null hypothesis is that this will happen only in one out of eight cases. In other words, even if a person projects equally strongly to two groups, these two groups need not be seen as highly similar. If both groups are ingroups, there is ample room for a person to carve out a differentiated, or 'dual', identity (Dovidio et al., 2006).

The ego–based model of social perception avoids the extremes of uniform projection to all groups on the one hand and zero projection to the outgroup on the other. For any pair of real social groups, an optimum ratio of projection to the ingroup relative to the outgroup exists. What that ratio is depends on the actual (dis)similarity of the two groups and on how much other (non–self–related) information the perceiver possesses (Hoch, 1987).

Once the possibility of real group differences is recognized, the possibility of real conflicts must be considered. Again, we think that people conclude too readily that conflicts are real. Groups do come into conflict, much like individual people do, and many of these conflicts have the structure of social games. When people think of groups in conflict, they tend to imagine zero–sum games (i.e., situations in which the gain of one side is the loss of the other). War is the prototype of this kind of conflict. Once war has begun, the conflict is real *by definition*. It is a different matter, however, whether a real conflict of interest is the cause of the hostilities. Before the outbreak of war, there is often an arms race, which can be modelled as a prisoner's dilemma or a 'game of chicken' (Russell, 1959). Both of these games are nonzero–sum. The best collective outcome is obtained when both groups cooperate to make peace. Unfortunately, unilateral attempts at de–escalation are risky because the other side is tempted not to reciprocate.

Yet, both parties can benefit. Contracts and mutual assurances can work in the intergroup domain just as promises and commitments work in the interpersonal domain (Caporael, Dawes, & Orbell, 1989). For assurances to be effective, the level of agency needs to shift from the individual to the group. Without such a shift, 'moral' individuals will want to cooperate only with the ingroup. In war, this behavioral form of ingroup favoritism leads to the mobilization of forces within both groups, and thus most likely to mutual destruction (Krueger, 2007). The problem with individual morality is that it is parochial (Hartung, 1995).

Recall Dawkins's (2006) focus on religion as a cultural framework that instills the use of meaningless social categories and that teaches parochial morality (see also Lilla, 2007). People's readiness to think in terms of social categories, and the success of religion in exploiting this readiness, must itself be explained in terms of biological adaptations. If thinking in terms of categories is a biological adaptation, so is the general human tendency to rely on social projection to make predictions about others. Another noted British biologist argued that social projection is a central feature of social intelligence that makes living in groups possible (Humphrey, 1976). Being able to predict what others will do from what they themselves plan to do, people can coordinate social action, although it does not make it easier for them to deceive one another (Dunbar, 1998).

There is a natural conflict between the two adaptations of social projection and categorical thinking because the latter constrains the former.

This conflict was not lost on some of the greatest thinkers. The history of religious thought and moral philosophy can be understood as a struggle to convert parochial thinking into universal thinking. Schopenhauer (1840/2005), like Kant (1785/1998) before him (but unlike Nietzsche, 1887/1998 after him), grounded morality in the fundamental connectedness of all humans, thus enabling projection beyond group boundaries. This struggle is a hard one because there is an undeniable gradient of social and genetic distance falling away from the self to the most remote others (Hamilton, 1964; Jones & Rachlin, 2006). For better or for worse, social categorization breaks this gradient down into discrete classes.

Conclusion

The ego-based model of social perception recognizes the conflict between the goal of making perception accurate (and favorable) by using social projection and the goal of keeping perception simple by using social categories. There is a family of theories that draws, in one way or anther, on principles of inductive reasoning. Whereas some theories emphasize the heuristic character of social inference (Cadinu & Rothbart, 1996; Epley, in press; Gramzow, Gaertner, & Sedikides, 2001), others incorporate motivational (Mummendey & Wenzel, 1999) or emotional underpinnings (Demoulin, Torres, & Perez, 2004) of the inference process.

The unique advantage of the ego-based model is its simplicity and realism. Unlike any of the other models, the ego-based model generates specific, testable hypotheses with mathematical precision. Yet, the model is not in outright competition with other theories. Instead, by using a parsimonious set of assumptions and empirical facts, the model yields baseline expectations regarding the presence and strength of intergroup differentiation, ingroup favoritism, and differences in the accuracy of judgments about ingroups and outgroups. Research can then proceed to examine how the properties of a particular social situation moderate the basic pattern described here.

Acknowledgements

Short Biographies

Joachim I. Krueger is Professor of Psychology and Human Development at Brown University. His research interests include self-perception, social stereotyping, and strategic reasoning in interpersonal and intergroup contexts. He has recently edited volumes on 'The self in social judgment' (with M. Alicke & D. Dunning, Psychology Press, 2005) and 'Rationality and

social responsibility' (Psychology Press, in press). (http://research.brown.edu/research/profile.php?id=10378)

Theresa E. Didonato's research interests include social cognition, interpersonal relationships, and the self. Her dissertation examines how the quality of close, personal relationships influences self-awareness and access to self-knowledge. Theresa holds a B.A. from Wellesley College and a master's degree in experimental psychology from Brown University. She has taught as a Visiting Instructor at Wheaton College in Norton, MA, and expects to graduate from Brown University with her doctorate degree in May 2008.

Endnote

★ Correspondence address: Department of Psychology, Brown University, Box 1853, 89 Waterman St., Providence, RI 02912, USA. Email: joachim_krueger@Brown.edu; http://www.brown.edu/Departments/Psychology/faculty/krueger.html

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