Strategies for Social Inference: A Similarity Contingency Model of Projection and Stereotyping in Attribute Prevalence Estimates

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Most models of how perceivers infer the widespread attitudes and qualities of social groups revolve around either the self (social projection, false consensus) or stereotypes (stereotyping). The author suggests people rely on both of these inferential strategies, with perceived general similarity moderating their use, leading to increased levels of projection and decreased levels of stereotyping. Three studies featuring existing individual differences in perceived similarity as well as manipulated perceptions supported the predictions, with similarity yielding increased projection to, and decreased stereotyping of, various in-groups and out-groups. Evidence that projection and stereotyping may serve as inferential alternatives also emerged. The model and accompanying results have implications for research on social comparison and projection, stereotyping and prejudice, and social inference.

Do the majority of rural Americans oppose gay marriage? What portion of your neighbors regularly volunteers for community service? Do most adolescent girls prefer movies with heart-wrenching redemption to ones with action and violence? The ability of perceivers to gauge the prevalence of such qualities plays an important role in everyday social life. Our choices of public policy, for instance, rely on judgments of the frequency of behavior and attitudes. Our sense of what is normative, or even fashionable, hangs on intuitions about widespread values and preferences. The jokes we tell and the arguments we make are loaded with assumptions about the knowledge and beliefs of those around us. In short, communicating and coordinating with others requires that perceivers make inferences (whether right or wrong) about the prevalent attitudes and attributes of the people and groups around them.

Over the last century, social psychologists have offered various models of these important judgments. One class of models has focused on the *self* as a pervasive, though perhaps distorting, source of prevalence estimates (e.g., Krueger, 2000; Ross, Greene, & House, 1977). A separate and rich tradition of work has revolved around the widespread use and abuse of *stereotypes* in social judgment (e.g., Fiske & Neuberg, 1990; Hamilton & Sherman, 1994). In this article, I develop and test a model of prevalence estimates that assumes that perceivers rely on both of these infer-

ential strategies and that they resort to them in systematic ways. Departing from prior approaches, I outline a central moderating role for perceptions of general similarity and test this model's predictions across several studies. The account and accompanying results have implications for research on social comparison and projection, stereotyping and prejudice, and social inference in general.

Prior Work on Attribute Prevalence Estimates

Social Projection and False Consensus

Work on social projection has a long history in social psychology, tracing back at least to Katz and Allport's (1931) finding that students who cheated on exams tended to overestimate the share of their peers who also cheated. In the intervening years, a considerable amount of research has examined projection and, in particular, the notion of false consensus, when perceivers overestimate the prevalence of their own attributes in a population (Ross et al., 1977; for reviews, see Krueger, 2000; Marks & Miller, 1987; Mullen et al., 1985; Van Boven & Loewenstein, in press).

Various accounts of projection and false consensus have emerged. *Inductive* approaches (e.g., Dawes, 1989; Dawes & Mulford, 1996) have argued that false consensus may not be entirely "false," noting that social projection may be a normative strategy of induction, with perceivers reasoning validly from a sample of one—themselves—to social distributions (see also Alicke & Large, 1995; Hoch, 1987; Nisbett & Kunda, 1985). Other accounts have stressed *motivational* mechanisms, linking false consensus to motives such as wanting to belong (e.g., Pyszczynski et al., 1996), wanting to be normal and likeable (e.g., Sherman, Chassin, Presson, & Agostinelli, 1984; Sherman, Presson, & Chassin, 1984), and wanting to validate one's opinions and shortcomings (e.g., Campbell, 1986; Marks, 1984).

Recently, Krueger (1998) has developed an *egocentric perception* account, arguing that "projection is a perceptual rather than a cognitive-motivational phenomenon. The perception of consensus is assumed to be part of the initial encoding of the stimulus rather

than the outcome of subsequent higher level processes" (p. 202; see also Krueger, 2000). According to this view, false consensus is not a deliberate, well-intended-but-wrong inferential strategy or a motivational effect but an automatic process that follows from distorted perceptions. False consensus, in this view, is a widespread and stubborn bias—somewhat like naive realism (Ross & Ward, 1996)—that occurs outside of intentionality and awareness.

One moderator of false consensus that has received repeated attention is social categorization. Several scholars have argued that perceivers show greater projection to in-groups than out-groups (e.g., Clement & Krueger, 2002; Holtz & Miller, 1985; Krueger & Zeiger, 1993; Wilder, 1984). In one recent review, Krueger (2000) concluded: "The surest way to eliminate projection is to ask people to estimate social consensus for a group to which they do not belong. . . . It is as if people treat members of out-groups as members of different species" (pp. 334–335).

In sum, work on projection and false consensus in prevalence estimates points toward a central, almost monopolistic, role for the self. Although social categories have been singled out as a moderator, this work has generally neither accounted for individual differences in levels of projection nor described a role for stereotyping in prevalence estimates.

Stereotyping

Stereotyping has occupied social psychologists' attention for decades, and there remains little doubt that stereotypes have a rapid, pervasive, and important impact on social judgment (see Fiske, 1998, for one review). However, the effect of stereotypes on prevalence estimates has gone mostly unexplored by stereotyping scholars. Much stereotyping research (see, e.g., Beike & Sherman, 1994; Brewer, 1996; Fiske & Neuberg, 1990) has focused on how stereotypic assumptions about group traits shape inferences about an individual group member's traits (e.g., "How intelligent is Ted, the college football player?"). Although stereotyping research on out-group homogeneity (e.g., Ostrom & Sedikides, 1992) uses estimates of attribute dispersion, this work focuses more on relative perceived variance in in-group and out-group member attributes than on central tendency inferences.

A handful of studies that have examined the connection between stereotypes and prevalence estimates (Brodt & Ross, 1998; Fussell & Krauss, 1992; Park & Judd, 1990) have found evidence for stereotyping effects: Perceivers tend to assume stereotype-consistent attributes are more widespread in target populations than stereotype-inconsistent attributes. Nonetheless, few studies have drawn the connection between stereotyping and prevalence estimates, and it appears that no published studies of prevalence estimates in the stereotyping literature have dealt with both stereotyping and projection effects simultaneously.

Conclusion

On the basis of scholarship as well as ordinary experience, there is every reason to expect that people variously and frequently engage in projection and stereotyping. Yet no widely discussed accounts appear to span both of these inferential strategies or identify when one or the other will be used less or more in prevalence estimates. There is room, then, for an integrated model

of prevalence judgments that outlines roles for both projection and stereotyping and that identifies moderating conditions that govern when these inferential processes will be relied on. Such a model would not only have an integrating function but would also expand our understanding of these important inferential processes and their related distortions (e.g., naive realism, prejudice). In the next section, I offer such an account.
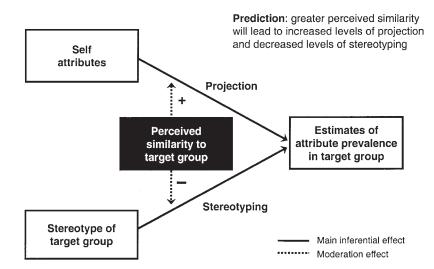
A Similarity Contingency Model of Social Inference

I suggest that perceptions of similarity—an idiosyncratic and subjective sense that one is similar to a target group—moderate both projection and stereotyping in prevalence estimates of novel attributes. This yields what could be called a *similarity contingency model* of social inference (see Figure 1): When perceivers assume higher levels of general similarity to a target group, they engage in higher levels of projection on specific attributes, introspecting about their own attitudes and qualities and ascribing them to the target (e.g., "I find a new slapstick movie to be hilarious and, feeling that most adult males are like me, I assume they'd find it similarly amusing"). When perceivers assume lower levels of general similarity to a target, they engage in higher levels of stereotyping, turning to implicit beliefs about what a particular group is like (e.g., "I sense librarians and I are quite different kinds of people, so I employ my stereotype of them as reflective and demure to intuit that they'd prefer a newly-released period film to a showing of my ribald favorite"). Note that this model's predictions are primarily meant to apply to inferences about the prevalence of previously unknown attributes in the target population where direct evidence is unavailable.

In short, the similarity contingency model holds that people are sensitive to perceived similarity in their use of projection and stereotyping as inferential tools. However, is projection just the same thing as perceived similarity? By what mechanism would perceived similarity have these effects? Is perceived similarity simply a reflection of actual similarity? These questions deserve brief answers before turning to empirical tests of the model.

Projection and Perceived Similarity

The notion that perceivers project to those who appear similar may at first blush seem circular or redundant, but I suggest that perceived similarity and projection are quite distinct. Consider the four upper components in Figure 1: perceived similarity to target group, self-attributes, estimates of attribute prevalence in target group, and projection. Perceived similarity to target group may be best thought of as a general, semistable belief about one's global similarity to a target group. Self-attributes are beliefs about one's own specific attitudes and behaviors, including newly formed reactions to novel objects or stimuli. Estimates of attribute prevalence in target group are inferences about previously unknown attitudes and behaviors in the target group. Projection, then, is the *inferential act* of ascribing one's own specific attributes to resolve something previously unknown about the target group. This model is chiefly concerned with people's reactions to and inferences of specific and novel attributes and whether one projects his or her newly formed appraisal of a novel object or stimulus to a target

Figure 1. A similarity contingency model of social inference: Similarity beliefs moderate the use of projection and stereotyping.

group.[1] Thus, perceived similarity is prior to the act of projection and more general than the specific novel attributes that are inferred. For instance, I may assume that I am generally similar to most psychologists and, as a result of that, project that most of them will share my love for a particular recent best-selling biography.

Mechanisms

The moderating effect of perceived similarity might be best highlighted when social judgment is seen as a matter of competing activation or parallel constraint satisfaction (e.g., Kunda & Thagard, 1996; Read & Miller, 1998). Whether I am guessing if my date would prefer a burger to Asian fusion cuisine or whether I am imagining which presidential candidate other Americans would find most appealing, multiple representations (self, stereotypes, immediate evidence, etc.) are invoked and may pull in different directions. If we assume evidence is ambiguous and that self- and stereotype representations are often in at least partial tension, some mechanism would be needed to resolve potential conflicts and allow the judgments to cohere. I believe perceived similarity plays such a role, tipping target inferences toward coherence with the self; perceived dissimilarity tips target inferences toward coherence with a relevant and accessible stereotype. This is consistent with Kunda and colleagues' (e.g., Kunda & Spencer, 2003) recent work showing that disagreements—a signal of dissimilarity—can activate stereotypes, making stereotype representations more accessible and, presumably, more central in coherence for subsequent judgments.

The competing activation perspective suggests that perceived similarity does not necessarily function as a complete and dichotomous on–off switch for projection and stereotyping. Both effects may emerge simultaneously, and perhaps often do. Projection and stereotyping would be hydraulic to the extent that self- and stereotype representations differ, in which case both could not fully "win" the competition. The present studies can shed light on the

extent to which stereotyping and projection are negatively related, displacing one another as sources of judgment. On the basis of other work (Ames, 2004), I expect this may often be the case.

Perceived Versus Actual Similarity

It is worth stressing that perceived general similarity is not expected to track closely, or even at all, with measures of actual similarity. Several reasons for this emerge. One is that people likely draw conclusions about general similarity from a small sample of features (e.g., "She and I both like country music so we're the same kind of person") and may then be misguided by that general assumption in inferences about another specific domain (e.g., "and because we're the same, I assume she shares my conservative fiscal policy preferences"). Another reason is that perceived similarity may have motivational components. For instance, those high in a need for uniqueness (Snyder & Fromkin, 1977) may be more inclined to assume they are generally dissimilar to other people and groups (Ames & Iyengar, in press).

In the present studies, I rely on existing perceptions of similarity as well as manipulated perceptions of similarity. This allows me to test several notions: first, that perceived general and actual specific similarity are only weakly related at best; second, that perceived similarity has a moderating effect beyond any effect of actual similarity; and third, that perceived similarity is labile, at least for some groups, some of the time.

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[1] The three representations of self-attributes, estimates of attribute prevalence, and perceived similarity may also involve different inferential acts. When self-attributes and target group attributes are known, the act becomes one of *comparison,* yielding an inference about similarity. When group attributes are known and perceived similarity is high, one may *introject* to infer one's own attributes. I focus in this article on cases in which one's own attributes and perceived similarity are known or seemingly knowable and in which attribute prevalence in the target group is the unknown matter to be inferred.

Predictions and Alternatives

In sum, the present model yields two central predictions. First, as perceived similarity increases, projection will increase. Second, as perceived similarity increases, stereotyping will decrease. These predictions seem to stand in contrast with assumptions that projection and stereotyping are not the sorts of inferential processes that would be moderated by perceived similarity. For instance, Krueger's egocentric perception model (Krueger, 1998, 2000; Krueger & Clement, 1994) supposes that projection is a matter of biased perception rather than higher level inference. This would appear to leave little room for the kind of subjective rationality and inferential work involved if perceivers are attempting to project more to those who seem similar and less to those who seem different. Likewise, models that portray stereotype activation and use as automatic and irrepressible would not lead one to expect stereotyping might be curbed by subjective assumptions of general similarity (see Devine & Monteith, 1999, for a discussion of automaticity and stereotyping).

Plan of Study

The proposed model was tested in three studies. In Study 1, participants indicated perceptions of similarity to both an in-group and an out-group and then recorded judgments about themselves and the groups. The correlational results allowed a test of the projection and stereotyping predictions across existing individual differences in perceived similarity. In Study 2, perceptions of similarity to a target group were manipulated. Participants recorded judgments about themselves and the target group and the results shed light on the causal role of similarity perceptions in projection and stereotyping. In Study 3, participants indicated their idiosyncratic stereotypes of target groups. Similarity was again manipulated and the results tested the role of perceived similarity in projection and stereotyping.

Study 1

Participants in Study 1 made prevalence estimates for both an in-group and an out-group on a range of behavior and attitude items, allowing examination of whether individual differences in perceived similarity predicted projection and stereotyping. Columbia University student participants made judgments about Columbia students as well as University of California, Berkeley (UC Berkeley) students, a group that is sometimes (in the extreme) characterized as made up of hedonistic, free-spirited activists with progressive social values. The attribute estimate items were constructed to be consistent or inconsistent with this shared stereotype. I predicted that judgments of similarity to both Columbia and UC Berkeley target groups would be positively correlated with social projection. I also predicted that judgments of similarity would be negatively correlated to stereotyping for the UC Berkeley target.

Method

Participants. Forty-five Columbia University students volunteered for the study as part of an undergraduate psychology class (27 women, 18 men).

Materials. Participants gave self-responses and prevalence estimates for items in a computer-based survey. The survey began with initial similarity measures for both Columbia (in-group) and UC Berkeley (out-group) student targets (two items for each target: "I think I'm very similar to most Berkeley [Columbia] students," "The people I identify with are a lot different from most Berkeley [Columbia] students" [reversed]; participants indicated their agreement with these items on a 6-point scale ranging from 1 [*very strongly disagree*] to 6 [*very strongly agree*]).

Participants then gave three responses for 16 items: self-response (yes–no), Columbia estimate (percentage of Columbia students that would say "yes"), and UC Berkeley estimate (percentage of UC Berkeley students that would say "yes"). Eight of the items were consistent with a widely held stereotype of UC Berkeley students (e.g., "Do you engage in political protests at least once a year?" and "Do you have at least one body piercing somewhere other than your ears?"). An additional 8 items were inconsistent with or antithetical to the stereotype (e.g., "Do you think capital punishment is ever an acceptable policy?" and "Do you regularly eat meat?"). Pilot testing confirmed that the 8 "consistent" items were more consistent with the UC Berkeley stereotype than the Columbia one and that the 8 "inconsistent" items were more inconsistent with the UC Berkeley stereotype than the Columbia one.[2] Five participants did not complete the entire estimation task and their partial responses were omitted.

Procedure. Participants volunteered as part of an exercise for an introductory psychology course. Participants completed the materials via the Internet outside of class. After reading an informed consent statement, participants completed the materials described above. Participants were subsequently debriefed through an in-class discussion of the exercise results.

Results

Perceived similarity. Perceived similarity for each of the targets was computed by averaging the two similarity items ("very similar" and "people I identify with"). There was no main effect of group (in-group/out-group) on similarity. Aggregate UC Berkeley similarity (the average of the similarity item and the reversed dissimilarity item) was 3.52 ($SD = 1.03$), whereas aggregate Columbia similarity was 3.50 ($SD = 1.00$) $t(43) = 0.17$, $p = .87$.

Projection and stereotyping constructs. Within-participant multiple regression models were completed to produce measures of projection and stereotyping. For each participant, his or her prevalence estimates for the UC Berkeley target for the 16 items (i.e., estimated percentage of UC Berkeley students saying "yes") were predicted by his or her own response (coded as $0 = $ no, $1 = $ yes) and the stereotype consistency of the item (coded as $0 = $ inconsistent, $1 = $ consistent). Standardized beta weights from each participant's multiple regression model were used as measures: The beta for self was taken as a measure of projection (i.e., the extent to which self-responses predicted target estimates), whereas the beta for stereotype consistency was taken as a measure of

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[2] Twenty-nine people from the Study 1 participant population who did not complete the materials for Study 1 were presented with the 16 consistent/inconsistent items. Rather than judging prevalence, they indicated how consistent each item was with the common stereotype of both Berkeley and Columbia students on a scale ranging from "Very inconsistent" (1) to "Very consistent" (12), regardless of whether or not they believed the stereotype themselves. On average, the eight consistent items were rated higher for Berkeley than Columbia (9.23 versus 7.56, $t = 4.36$, $p < .001$) while the eight inconsistent items were rated higher for Columbia than Berkeley (6.26 versus 4.07, $t = 6.06$, $p < .001$).

stereotyping (i.e., the extent to which stereotype consistency predicted target estimates).
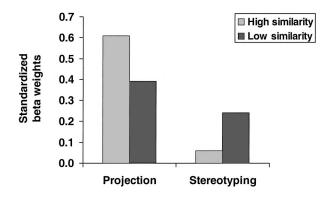
Items were constructed a priori for consistency or inconsistency with the shared out-group (UC Berkeley) stereotype. Accordingly, projection was computed for the Columbia target in Study 1 but stereotyping was not.

Effects of similarity on projection and stereotyping: Out-group target. The central prediction was that higher levels of perceived similarity would be associated with greater projection and less stereotyping. This was confirmed: Perceived UC Berkeley similarity was positively correlated with projection ($r = .41$, $p = .01$; all p values reported in the present article are two-tailed) and negatively correlated with stereotyping ($r = -.30$, $p = .06$).

Tertiary splits highlighted the expected pattern (see Figure 2). Those in the lowest third of perceived similarity (3.0 or lower, $n = 14$) showed lower projection than those in the highest third, 4.0 or higher, $n = 14$; .39 versus .61, $t(26) = 2.47$, $p = .02$. Meanwhile, those in the lowest third of perceived similarity showed higher stereotyping than those in the highest third, .24 versus .06, $t(26) = 1.74$, $p = .09$. Stereotyping and projection were correlated at $r = -.14$, $p = .40$.

Effects of perceived and actual similarity on projection: In-group target. In the case of the Columbia target, an index of "actual" similarity was computed by correlating each participant's own responses with the average Columbia participant self-response across the 16 items; this correlation was then Fisherized. Thus, the more a participant's responses covaried with average Columbia responses, the higher this measure of actual similarity would be.

As expected, the projection measure for the Columbia target was predicted by perceived Columbia similarity ($r = .38$, $p = .01$). Projection was also predicted by the actual similarity measure ($r = .42$, $p = .01$). Perceived Columbia similarity was not significantly related to the index of actual Columbia similarity ($r = .15$, $p = .32$). As predicted, in a multiple regression predicting projection with both perceived and actual similarity, perceived similarity remained significant, $\beta = .31$, $t(36) = 2.09$, $p < .05$, and $\beta = .34$, $t(36) = 2.32$, $p < .05$, respectively.

Figure 2. Standardized betas are within-participants multiple regressions predicting target estimates. Effects of individual differences in perceived similarity (tertiary split, high and low) on projection and stereotyping for an out-group in Study 1.

Discussion

In Study 1, participants' projection for a range of novel attribute prevalence estimates was predicted by perceived similarity. For both in-group and out-group targets, individual differences in perceived similarity were positively correlated with projection. Further, for the out-group target, stereotyping was negatively related to perceived similarity. The more participants felt dissimilar to the target, the more their estimates covaried with widespread stereotypes of the target group.

Study 1 also found that perceived similarity was not significantly related to a measure of actual similarity to the in-group. The link between perceived similarity and projection remained when controlling for the effect of actual similarity.

Study 2

Study 1 lent support to the model's predictions by capitalizing on existing individual differences in perceived similarity. In Study 2, I sought to clarify the causal role of perceived similarity by manipulating it. Pilot testing identified a target about which participants had reasonably well-shared stereotypes and moderate levels of perceived similarity: master's of business administration, or MBA, students. Most participants (undergraduate students) had a stereotype of MBA students as assertive and materialistic and were willing to express this stereotype. Pilot participants described MBAs as "directed, goal-oriented people," "concerned with climbing the corporate ladder," and "people who want to make money and be leaders." Moreover, participants showed modest levels of perceived similarity to MBA students, leaving open the possibility that perceived similarity could be heightened or lowered.

The similarity manipulation in Study 2 essentially reversed Mussweiler's (2003a) model of social comparison. Mussweiler argued that "holistic assessments" of similarity give rise to assimilation hypothesis testing (e.g., "How am I similar to MBAs?"), whereas assessments of dissimilarity give rise to contrast hypothesis testing (e.g., "How am I different from MBAs?"). I inverted this order, reasoning that leading participants to engage in assimilation thinking (i.e., "Write about the ways in which you're similar to MBAs") would cultivate assessments of similarity by highlighting consistencies, whereas leading participants to engage in contrast thinking (i.e., "Write about the ways in which you're different from MBAs") would cultivate assessments of dissimilarity by highlighting differences. The central prediction for Study 2 was that the similarity condition (compared with the dissimilarity condition) would feature higher levels of projection and lower levels of stereotyping in prevalence estimates.

Method

Participants. Ninety-four UC Berkeley undergraduate participants completed Study 2 as part of a research credit program.

Materials. Participants began with a premanipulation measure of similarity ("How typical do you think you are of most MBA students in the United States?") with responses ranging from 1 (*very untypical*) to 6 (*very*

typical).[3] Participants then completed one of two randomly assigned manipulation tasks. Participants in the dissimilarity condition read the following instructions:

> While you might have a few things in common with MBA students, you are likely very different from most MBA students in many important ways. We'd like you to think for a moment about the ways in which you're different from these students. Think about some *fundamental* things that set you apart from most of them—important, meaningful differences, not smaller differences like your name or birthday.

Participants were then asked to write a short paragraph outlining their dissimilarities, including at least three important dissimilarities. Participants in the similarity condition received parallel instructions, being asked to write a short paragraph outlining their similarities. Participants in both conditions went on to rate their agreement with postmanipulation similarity items on a 6-point scale ranging from 1 (*very strongly disagree*) to 6 (*very strongly agree*). Items included "I think I'm very similar to most MBA students" and "I am motivated by very different things from most MBA students."

In the final part of the survey, participants indicated their own yes–no response and their estimate for the percentage of MBA students that would say "yes" to 14 items. Seven of these items were consistent with the stereotype of MBAs (e.g., "Would you very much like to have an expensive luxury car," "Would you rip the wings off a live butterfly in exchange for a weeklong all-expense paid vacation anywhere you choose"). The remaining 7 were inconsistent with the stereotype (e.g., "Do you regularly volunteer for public service in some way," "Would you prefer to die poor, unknown and happy rather than rich, famous, and depressed").

Procedure. Participants were recruited to take part in research sessions on social judgment as part of a psychology department research participant program. After arriving and completing informed consent materials, participants were randomly assigned to an experimental condition and seated at a private workspace where they completed the pencil-and-paper materials described above. After completing the materials, participants were debriefed.

Results

Similarity accounts. Ten similarity–dissimilarity accounts were blank, incomplete, or incoherent. An additional 4 surveys did not feature complete self- or target responses. This left 80 cases (39 dissimilarity condition, 41 similarity condition).

Similarity measures. The premanipulation similarity ratings did not significantly differ between the two groups ($M = 3.00$, $SD = 1.30$, for the similarity condition; $M = 3.23$, $SD = 1.22$, for the dissimilarity condition) $t(77) = -0.81$, $p = .42$.

The postmanipulation similarity items were averaged (after the "different" item was reversed) and confirmed the expected effects of the manipulation, with higher perceived similarity in the similarity condition ($M = 3.24$, $SD = 1.13$) than in the dissimilarity condition ($M = 2.75$, $SD = 1.06$) $t(77) = 1.92$, $p = .06$.

Projection and stereotyping constructs. As in Study 1, projection and stereotyping measures were computed from within-participant multiple regressions predicting estimates of prevalence among MBAs for the 14 items with self-responses (0 = no, 1 = yes) and stereotype consistency of the items (0 = inconsistent, 1 = consistent). The resulting standardized betas of the self-responses were taken as a measure of projection (i.e., the more target estimates covaried with self-responses, the higher this value), whereas the standardized betas of stereotype consistency were taken as a

measure of stereotyping (i.e., the more target estimates covaried with shared stereotypes of the target group, the higher this value).

Effects of similarity manipulation on projection and stereotyping. A repeated-measures analysis of variance (ANOVA) predicting stereotyping and projection with the similarity manipulation showed the expected significant interaction, $F(1, 78) = 7.15$, $p < .01$. The specific effects supported the present predictions (see Figure 3). Participants in the similarity condition showed higher levels of projection than those in the dissimilarity condition, .44 versus .29, $t(78) = 2.10$, $p = .04$, and also showed lower levels of stereotyping than those in the dissimilarity condition, .46 versus .56, $t(78) = -1.78$, $p = .08$. The projection and stereotyping measures were not significantly correlated ($r = -.10$, $p = .38$).

Discussion

Study 2 manipulated participants' perceptions of similarity to MBA students: Those who wrote about similarities to MBAs believed they were more similar to MBAs compared with those who wrote about dissimilarities. This manipulation had the expected effects on projection and stereotyping. Participants in the similarity condition appeared to engage in more projection and less stereotyping than those in the dissimilarity condition.
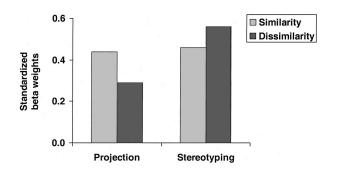
Study 3

Study 2 replicated the results of Study 1 and provided causal evidence for the proposed model. However, both Studies 1 and 2 relied on widespread stereotypes rather than capturing participants' idiosyncratic stereotypes of the targets. Further, the stereotype involved in Study 2 was generally negative, raising the possibility that the heightened stereotyping results in the dissimilarity condition were not necessarily due to stereotype use but to some kind of "different is bad" heuristic. Thus, Study 3 sought to incorporate idiosyncratic stereotypes with less evaluative content.

Pilot testing confirmed an assumption based on everyday experience: People have divergent stereotypes of the kinds of movies men and women tend to like. Women were generally seen as liking movies with dialogue, character growth, and romance, whereas men were generally seen as liking movies with action, comedy, and nudity. Importantly, idiosyncratic differences in these assumptions emerged as well. Thus, Study 3 used ratings of fictitious movie plots—some consistent with general male stereotypes, some with general female stereotypes—for stimulus materials and used a male group (suburban adolescent boys) and a female group (suburban adolescent girls) as targets of judgments. As in Study 2, similarity to these groups was manipulated by asking participants to write about their similarities to or differences from the target.

The design of Study 3 also featured different response measures. Studies 1 and 2 followed conventional methods for false consensus

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[3] *Typicality,* of course, is not the same thing as similarity in a formal sense, but the use of the word here was expected to evoke everyday judgments that closely resembled similarity without using the potentially confounding term *similarity* (since that term is used in the postmanipulation measure). These pre- and postmanipulation measures of similarity were significantly related, suggesting a clear overlap in ordinary usage of the concepts.

Figure 3. Effects of similarity manipulation on projection and stereotyping in Study 2.

research by having participants respond "yes" or "no" for themselves for each item and then estimate the percentage of a target group that would say "yes" for each item. This approach facilitates traditional false consensus analyses that compare "yes" respondents with "no" respondents, but by forcing a dichotomous choice, it fails to capture much variance in participants' own attitudes. Thus, in Study 3, continuous rating scales for liking were used for self as well as the target groups. This had the advantage of not only being more sensitive but also facilitating discrepancy analyses (difference measures) of projection and stereotyping.

In sum, Study 3 manipulated similarity and used sensitive and idiosyncratic measures of projection and stereotyping. It was predicted that participants in the similarity condition would show more projection and less stereotyping than those in the dissimilarity condition.

Method

Participants. Fifty Columbia University students (29 men, 21 women) participated in Study 3 as part of paid research sessions. Mean age was 22.2 years. Twenty-two participants identified themselves as Caucasian/White, 12 as Asian American/Asian, 7 as African American/Black, and 2 as Latino/a or Hispanic. Six identified their ethnicity as "other" and 1 declined to provide ethnicity.

Materials. Participants completed a computer-based survey consisting of several sections: preliminary measures, a similarity manipulation, and self- and target ratings of movie plots. For questions concerning judgments about targets, male participants answered questions about adolescent boys, whereas female participants answered questions about adolescent girls. The motivation for presenting a same-sex target (i.e., boys for male participants, girls for female participants) came from pilot work showing that similarity and dissimilarity manipulations produced a considerably wider range of similarity perceptions within-sex than between-sexes. In other words, pilot work revealed it was easier to get men to believe they were either similar to or different from suburban adolescent boys (an out-group that was formerly an in-group for many participants) than it was to get men to believe they were similar to suburban adolescent girls. A similar effect emerged for female pilot participants.

In the initial section of the materials, participants indicated premanipulation perceived similarity, rating the item, "I have a lot in common with the typical suburban adolescent boy [girl] in the U.S. (age 12–16)," on a 7-point scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). Participants then rated how much they believed suburban adolescent boys [girls] would like various generic plot elements in movies. Participants rated the plot elements for the targets on a 7-point scale ranging from 1 (*strongly dislike*) to 7 (*strongly like*). The eight items included: violence

and fighting, slapstick and gross-out comedy, sad or heart-wrenching scenes, nudity, action and chases, romance (nonphysical), self-discovery and character growth, and conversations and heart-to-heart dialogue. These generic ratings of plot elements were reflected in the subsequent movie plot descriptions (see below) and used to calculate the idiosyncratic stereotype-consistency of plots.

The second section of the materials featured the similarity manipulation. Participants in the similarity condition read instructions asking them to think about and discuss similarities to the target (boys for male participants, girls for female participants):

> Public policy experts and social scientists have taken an interest in the attitudes and behaviors of suburban adolescent boys [girls] in the U.S. These are boys [girls] aged 12–16 who live in the suburbs, not in densely populated cities or in rural areas. We're interested in your views about this group. Even though you may have a few differences, you likely have a lot in common with them. We'd like you to focus on the important ways in which contemporary suburban adolescent boys [girls] are similar to you. In the space below, write about some truly important ways in which today's suburban adolescent boys [girls] are similar to you. Discuss whatever you think is important—beliefs, interests, anxieties, dreams, values, and so on.

Participants in the dissimilarity condition received instructions asking them to discuss dissimilarities:

> Public policy experts and social scientists have taken an interest in the attitudes and behaviors of suburban adolescent boys in the U.S. These are boys aged 12–16 who live in the suburbs, not in densely populated cities or in rural areas. We're interested in your views about this group. In many ways, as someone who is older, and a Columbia student living in New York, you're likely very different from this group. We'd like you to focus on the important ways in which you are unlike contemporary suburban adolescent boys. In the space below, write about some truly important ways in which today's suburban adolescent boys are different from you. Discuss whatever you think is important—beliefs, interests, anxieties, dreams, values, and so on.

Participants took as much time as desired to enter their responses. After they had completed their response, the computer survey presented a post-manipulation similarity measure: "In general, I am similar to most suburban adolescent boys [girls]," which participants responded to on a 7-point scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*).

In the third section of materials, participants were told they would be asked to review hypothetical movie plots and rate their own and others' liking for the plots:

> We're trying to understand which stories people find interesting and appealing. To do this, we'd like you to tell us your reactions to some short, hypothetical movie plots. In the screens that follow, we'll show brief descriptions of plots. These aren't actual movies—if they sound like a movie you've actually seen, don't worry about the real movie, just focus on our description.
>
> For each movie, we show how much the movie would feature things like violence, nudity, or romance. The more stars for a dimension, the more a movie would have that element. The minimum number of stars is zero and the maximum is five. For example, if a movie has five stars for action, that would mean the movie would feature a large amount of action. If a movie has no stars for comedy, that would mean the movie has few or no funny moments.
>
> Imagine that these were actual movies. How interested would you be in seeing the movie? We realize it's hard to know for sure since you have only limited information, but give us your best judgment. We want you to tell us how much you think you'd like it, as well as how much you think suburban adolescent boys [girls] might like it.

Participants then encountered 12 fictional movie plots. Six of these were designed to reflect widely held stereotypes about movie elements that appeal to men (violence, action, nudity, and comedy) and 6 were designed to reflect widely held stereotypes about movie elements that appeal to women (romance, self-discovery, sad scenes, and dialogue). Plot descriptions were accompanied by the "star" ratings for each of the eight plot elements (violence, romance, and so on). Stars were assigned on the basis of face validity matching with the text of the plot, which was refined through pilot testing. Figure 4 illustrates the presentation of the plots and stars. On average, the male stereotype-consistent plots (Plots 2, 3, 5, 8, 9, and 11) had 3.2 stars for the male stereotype elements (violence, comedy, nudity, and action) and 1.5 stars for the female stereotype elements (sadness, romance, growth, and dialogue). On average, the female stereotype-consistent plots (Plots 1, 4, 6, 7, 10, and 12) had 4.2 stars for the female stereotype elements and 1.1 stars for the male stereotype elements.

After reading each plot, participants recorded liking ratings on a 7-point scale ranging from 1 (*strongly dislike*) to 7 (*strongly like*). Items included "How much do you think you'd like this film?" and "How much do you think suburban adolescent boys [girls] would like this film?"

Procedure. Participants were recruited to take part in paid research sessions on social judgment. After arriving and completing informed consent materials, participants were randomly assigned to an experimental condition and seated at a private computer terminal where they completed the materials described above. After completing the materials, participants were debriefed and paid.

Results

Manipulation checks. The manipulation had the expected effect on perceived similarity. Although premanipulation ratings of similarity were not significantly different between the similarity and dissimilarity conditions, 2.27 versus 2.38, $t(48) = 0.29$, $p = .78$, postmanipulation ratings differed in the expected fashion, 3.54 versus 2.08, $t(48) = 3.71$, $p < .001$.

Movie 4. A teenage girl, Sara, and her cranky widowed father, Ted, argue constantly until Ted's sister dares them to try therapy. Each is unwilling, but doesn't want to be blamed by the other, so they start sessions together. The frustrations give way as Sara and Ted uncover their years of unspoken feelings and how painfully alone they both feel. They open up to each other and to life, with Ted beginning to date and Sara finding a role model underneath Ted's imperfections.

Violence		Comedy	★★
Romance	★★★★	Nudity	
Action		Sad scenes	★★★★★
Self discovery	★★★★★	Dialogue	★★★★

Movie 9. Arnold, a rich but directionless young man, seeks to make a name for himself by being the one to recover a lost treasure on a forgotten island. He teams up with Jenna, a wise-cracking and gorgeous kung-fu expert, and together they set out to find the treasure. Through their bumbled adventures they crash land a hang-glider into a nudist colony, set fire to a village elder's sacred grass skirt, and end up inadvertently skinny dipping in a vat of coconut milk. Their flirtation with each other grows as they get closer to the treasure and to uncovering what's behind the mysterious deaths of the treasure hunters before them.

Violence	★★★	Comedy	★★★★★
Romance	★★★	Nudity	★★★★
Action	★★★★★	Sad scenes	
Self discovery	★★	Dialogue	★

Figure 4. Examples of female (Plot 4) and male (Plot 9) stereotype-consistent plots and accompanying "star" ratings from Study 3.

Participant and target sex did not affect similarity ratings. In a 2×2 ANOVA predicting similarity with participant sex (matched with target sex) and similarity condition, similarity showed a main effect, $F(1, 49) = 12.21$, $p < .001$, whereas participant sex did not show a main effect, $F(1, 49) = 0.03$, $p = .85$, or an interaction effect with sex, $F(1, 49) = 0.13$, $p = .72$. For female participants, postmanipulation perceived similarity was higher in the similarity condition, 3.50 versus 2.22, $t(19) = 1.81$, $p = .09$; likewise, for male participants, perceived similarity was higher in the similarity condition, 3.57 versus 2.00, $t(27) = 3.33$, $p < .01$.

Ratings of generic plot elements. Expectations about stereotype content were confirmed. In general, male participants thought their targets (adolescent boys) would prefer the generic movie elements consistent with male stereotypes (violence, comedy, nudity, and action) to those generic elements consistent with female stereotypes (sadness, romance, growth, and dialogue). Averaging each of these groups of four elements showed a significant difference, 6.02 versus 2.72, $t(28) = 10.08$, $p < .001$. Likewise, female participants generally thought their targets (adolescent girls) would prefer the generic movie elements consistent with female stereotypes (sadness, romance, growth, and dialogue) to those generic elements consistent with male stereotypes (violence, comedy, nudity, and action). Averaging each of these groups of four elements showed a significant difference, 5.88 versus 3.86, $t(20) = 5.04$, $p < .001$.

Ratings of fictional plots. The pattern noted above extended to assumptions of preferences for specific movie plots. In general, female participants thought their targets (adolescent girls) would prefer the female stereotype-consistent plots (Plots 1, 4, 6, 7, 10, and 12) over the male stereotype-consistent plots (Plots 2, 3, 5, 8, 9, and 11). Averaging each of these groups of six plots showed a significant difference, 5.08 versus 4.00, $t(20) = 3.58$, $p < .01$. Meanwhile, male participants thought their targets (adolescent boys) would prefer male stereotype-consistent plots to the female stereotype-consistent ones. Averaging each of these groups of six plots showed a significant difference, 5.30 versus 2.41, $t(28) = 13.02$, $p < .001$.

Constructs: Stereotyping and projection. As in Studies 1 and 2, measures of stereotyping and projection were created for each participant using within-participant multiple regression analyses. Across the 12 movie plots, each participant's ratings of target (adolescent boy or girl) liking for the plot were predicted by both their own ratings of liking and a measure of the plot's stereotype consistency. The standardized beta for self-ratings was taken as a measure of projection, whereas the standardized beta for stereotype consistency was taken as a measure of stereotyping (see Figure 5).
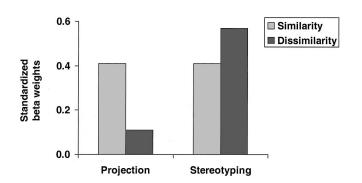
The idiosyncratic stereotype consistency values were created for each plot for each participant by multiplying the number of stars for the eight plot elements (e.g., violence, dialogue) by the participant's initial rating of how much adolescent boys [girls] would like that generic element. These initial ratings can be thought of as weightings (e.g., a male participant might expect boys to like violence but dislike dialogue and thus give a high generic rating to violence and a low rating to dialogue). These weightings were then applied to each individual plot to gauge how consistent that plot was with the participant's own stereotype for the target group. In

	Plot element	Stars for given plot	Generic plot element rating	Stereotype consistency	Assumed target liking	Self liking
Plot 1	Violence		6			
	Romance	★★★★★	3			
	Action	★★	6			
	Growth	★★★★	3			
	Comedy	★★	6			
	Nudity	★	7			
	Sadness	★★★★	4			
	Dialogue	★★★★	3			

Step 1: stereotype consistency was computed for each plot for each participant by multiplying each plot's "stars" by the participant's ratings of generic element preferences for adolescent boys/girls; plots with many stars for elements rated as highly preferred by targets received higher scores

Sum of products

				86	3	3
Plot 2				97	7	5
Plot 12				81	2	5

β = stereotyping

β = projection

Step 2: stereotyping and projection were computed by running within participant multiple regressions across all 12 plots, predicting target ratings for plots with plot stereotype consistency (stereotyping) and self liking for plot (projection)

Figure 5. Standardized betas are within-participants multiple regressions predicting target estimates. Computation of projection and idiosyncratic stereotyping measures in Study 3.

the just mentioned example, a plot that featured many stars for violence and few stars for dialogue would have a high stereotype-consistency score, whereas a plot with few stars for violence and many stars for dialogue would have a low stereotype-consistency score (see Figure 5).

Effects of similarity manipulation on stereotyping and projection. A repeated-measures ANOVA predicting stereotyping and projection with the similarity manipulation showed the expected significant interaction, $F(1, 45) = 8.33$, $p < .01$. The specific effects supported the present predictions (see Figure 6). Participants in the similarity condition showed higher levels of projection than those in the dissimilarity condition, .41 versus .11, $t(45) =$

Figure 6. Effects of similarity manipulation on projection and stereotyping in Study 3.

2.78, $p < .01$, and lower levels of stereotyping than those in the dissimilarity condition, .41 versus .57, $t(45) = 1.82$, $p = .08$.

ANOVA models predicting projection and stereotyping with similarity condition and participant–target sex revealed that this effect was not conditioned on participant or target sex. Main effects of similarity condition emerged for projection, $F(1, 46) = 6.11$, $p = .02$, and for stereotyping, $F(1, 46) = 2.83$, $p = .10$, but no main effects of sex emerged ($Fs < .14$, $ps > .71$), nor did interactions of sex and similarity condition emerge ($Fs < 1.10$, $ps > .30$). The pattern of means was similar for both male and female participants. Men in the similarity condition showed higher levels of projection than those in the dissimilarity condition (.44 vs. .05) and lower levels of stereotyping than those in the dissimilarity condition (.38 vs. .58). Likewise, women in the similarity condition showed higher levels of projection than those in the dissimilarity condition (.37 vs. .21) and lower levels of stereotyping than those in the dissimilarity condition (.41 vs. .57).

As expected, correlations with the postmanipulation measure of perceived similarity revealed a positive correlation with projection ($r = .44$, $p < .01$) and a negative correlation with stereotyping ($r = -.39$, $p < .01$). Further, there was evidence of a hydraulic relationship between stereotyping and projection: The measures were negatively correlated with one another, $r = -.30$, $p < .05$.

The results reported above relied on within-participant multiple regression measures of projection and stereotyping. The predicted pattern also emerged using discrepancy analysis measures of stereotyping and projection based on differences in the liking rat-

ings.[4] Participants in the similarity condition (vs. the dissimilarity condition) tended to show smaller gaps between their own liking ratings and their ratings of target liking for the movie plots. Additionally, participants in the dissimilarity condition (vs. the similarity condition) tended to show smaller gaps between the stereotypic male–female rating and their ratings of target liking for the movie plots. The discrepancy measures were strongly correlated with the multiple regression measures.

In addition to the experimental results reported above with the adolescent boy [girl] targets, participants recorded assumed liking for fellow Columbia students. These correlational results replicated the findings from Study 1: Perceived similarity was distinct from actual similarity and uniquely predicted projection.[5]

Discussion

The similarity manipulation in Study 3 had the expected effects on perceptions of similarity. As in Study 2, the results validated the model's central predictions: Those in the similarity condition engaged in more projection and less stereotyping than those in the dissimilarity condition. The same pattern of results emerged for within-participant multiple regression measures as well as discrepancy measures based on differences in the liking ratings.

Study 3 also showed a significant negative correlation between the projection and stereotyping measures. This relationship was weak in Studies 1 and 2. It may be that the more sensitive and idiosyncratic stereotyping measures relied on in Study 3 gave a more accurate picture of the trade-offs between projection and stereotyping.

Further, Study 3 replicated results from Study 1, showing that individual differences in projection to the in-group were predicted by perceived similarity. Perceived similarity, in turn, was unrelated to a measure of actual similarity.

General Discussion

How do people intuit the unknown attributes of the groups around them? Separate and long-standing traditions in social psychology have given different answers to this important question. Scholars of social projection suggest that perceivers consult their own attitudes, behaviors, and characteristics and assume others share them. Scholars of stereotyping suggest that perceivers consult their prior beliefs about a group's general traits and deduce accordingly. The similarity contingency model described here assumes each of these answers is correct yet incomplete. This model suggests that people are guided by perceived similarity in social judgment, relying more heavily on social projection for targets who seem generally similar to them and relying more heavily on stereotyping for targets who seem different.

The proposed model was supported in three studies relying on existing individual differences in perceived general similarity as well as on manipulated perceptions of similarity. In all three cases, projection was positively linked with perceived similarity, whereas stereotyping was negatively linked with perceived similarity.[6] There was also evidence (in Study 3) that projection and stereotyping were negatively related, suggesting that they may serve as alternative inferential strategies that displace one another. Further, in the domains studied here, perceived general similarity was

either weakly or not significantly related to measures of actual similarity.

The results draw attention to several questions: What is the nature of perceived similarity?, What is the relationship between projection and stereotyping?, and What is the link between social categorization and false consensus? I consider these and other issues in the sections that follow.

Nature of Perceived Similarity

The present results support several conclusions about the nature of perceived similarity. First, perceived general similarity was not closely related to measures of actual similarity in various domains, a disconnect I have found in other work (e.g., Ames & Iyengar, in press). Nonetheless, perceivers seem to act as if general similarity

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[4] A discrepancy measure of projection was created by computing the absolute difference between a participant's own liking rating for a plot and his or her rating of the target liking for the plot. These were then summed across all plots. A discrepancy measure of stereotyping was created by computing the absolute difference between a participant's rating of the target liking for the plot and the stereotype-consistent extreme for the plot (i.e., for girl targets, female stereotype-consistent plots—Plots 1, 4, 6, 7, 10, and 12—were scored as "7," whereas male stereotype-consistent plots—Plots 2, 3, 5, 8, 9, and 11—were scored as "1"; for male targets, the female stereotype-consistent plots were scored as "1," whereas the male stereotype-consistent plots were scored as "7"). These measures were strongly correlated with the within-participant multiple regression measures in the expected direction ($r = -.65, p < .001$, for projection and $r = -.54, p < .001$, for stereotyping). A repeated-measures ANOVA predicting the discrepancy measures of projection and stereotyping found a significant interaction with similarity condition, $F(1, 48) = 6.19, p = .02$. This interaction was not significantly conditioned on participant–target sex. Participants in the similarity condition (vs. the dissimilarity condition) showed a smaller mean absolute gap (i.e., greater projection) between their own ratings and the target ratings (16.9 vs. 25.0), whereas participants in the dissimilarity condition (vs. the similarity condition) showed a smaller mean absolute gap (i.e., greater stereotyping) between the target ratings and the stereotype-consistent extreme (21.5 vs. 24.7).

[5] At the beginning of the session participants rated perceived similarity to Columbia students ("I have a lot in common with the typical Columbia student"). Participants also rated assumed Columbia student liking for the movie plots after rating self- and assumed boy [girl] target liking. This allowed tests replicating results from Study 1 concerning perceived similarity, actual similarity, and projection. Projection for the Columbia target was computed as the within-participant Fisherized correlation between self-liking and assumed Columbia liking. As expected, perceived similarity positively predicted this measure of projection ($r = .29, p < .05$). A measure of actual similarity was computed as the within-participant Fisherized correlation between self-liking and average participant liking. This measure of actual similarity was only very modestly correlated with perceived similarity ($r = .21, p = .15$) and was unrelated to projection ($r = -.03, p = .86$).

[6] The stereotyping results were significant in the expected direction in all three studies (two-tailed ps between .05 and .10). When meta-analytically combined, these results were strongly significant. An unweighted meta-analysis revealed an average Cohen's d of .51, which was significantly different from zero, $t(2) = 8.21, p = .02$. The set of effects was homogeneous, $\chi^2(2, N = 3) = .30, p = .86$. Variations on this analysis (including weighting by sample size and study variance, as well as employing Hedges correction) showed similar results, with ps $\leq .02$.

or dissimilarity, once resolved, extends unfailingly across domains. Second, perceived similarity is partly malleable. The manipulations in Studies 2 and 3 did not impose similarities or differences but rather asked perceivers to identify such overlaps and gaps themselves. Participants apparently talked themselves into altered perceptions by focusing their attention on assimilation or contrast (cf. Mussweiler, 2003a).

If perceived similarity has the important moderating roles claimed for it here, and if it is often divorced from actual similarity as well as labile in the face of accessible and/or active information, scholars would be behooved to understand its nature and effects better. The present results call for new integrative work drawing on prior scholarship in social comparison, projection, and stereotyping.

Projection and Stereotyping

Although Studies 1 and 2 found meager relationships between projection and stereotyping, Study 3 found a significant negative correlation. This may be because Study 3 relied on more nuanced and subjective stereotyping measures. This negative link is consistent with work I have done elsewhere on projection and stereotyping in "mind-reading"—inferences about what other individuals are thinking, wanting, and feeling (Ames, 2004). There, I manipulated perceptions of general similarity to target individuals by highlighting specific shared or unshared cues between the perceiver and target (e.g., shared [unshared] liking for a particular comedian or shared [unshared] aesthetic preference between two paintings). In subsequent judgments about the target's mental states in an unrelated situation, participants in the similarity condition showed greater projection than those in the dissimilarity condition. Similarity condition participants also showed less stereotyping than those in the dissimilarity condition. In several studies, projection and stereotyping measures were strongly negatively correlated (Ames, 2004). This line of evidence on judgments of individuals converges with the present results concerning judgments of groups. These findings are also consistent with recent work showing that perspective taking, which has been found to evoke perceived similarity (Davis, Conklin, Smith, & Luce, 1996), may limit stereotyping (e.g., Galinsky & Moskowitz, 2000) and that the discovery of differences may activate stereotypes (e.g., Kunda & Spencer, 2003).

Scholars of stereotyping and projection have devoted enormous attention to understanding these phenomena in isolation from one another. The present research suggests studying them simultaneously could yield important new insights, especially about how these top-down strategies may supplant one another.

Social Categorization, Perceived Similarity, and False Consensus

The results reported here are partly consistent with prior work showing that social categorization moderates false consensus and projection (e.g., Clement & Krueger, 2002; I thank Joachim Krueger for highlighting this). The standardized betas for projection were higher in Study 1 (averaging around .5), in which undergraduate student participants made estimates for other undergraduate student groups, than they were in Studies 2 and 3

(averaging around .3), in which undergraduate student participants made estimates for MBA students and suburban adolescent boys and girls. Likewise, the stereotyping betas were lower for Study 1 (averaging around .15) than for Studies 2 and 3 (averaging around .5). Thus, more distant social categories appeared to invoke less projection and more stereotyping.

However, social categorization models do not account for the substantial individual differences in projection and stereotyping that emerged. Perceived similarity did account for a significant share of these differences for both in-groups (e.g., projection to fellow Columbia students) and out-groups (e.g., projection and stereotyping for MBA students). Although the present results cannot resolve the matter, it may be that perceived similarity accounts for some or many of the social categorization effects found elsewhere. That is, main effects of social categorization on projection may often be mediated by subjective perceptions of similarity. In general, we may view out-groups as different and curb projection accordingly. Although categorization-only models would capture these effects, they would not readily handle cases in which perceivers feel quite similar to groups to which they do not belong (e.g., New Yorkers who fancy themselves to be more like Western Europeans than Americans) or cases in which perceivers feel quite different from groups of which they are members (e.g., disgruntled employees and their fellow organization members).

Egocentric, Protocentric, and Contingency Models

A recent and provocative debate has revolved around whether self-representations are the foundation for most or all social judgment (e.g., Mussweiler, 2003b; Krueger, 2003) or whether representations of prototypes serve such a function (Karniol, 2003). The present model and results seem relevant to this debate. Karniol's (2003) protocentric model stems from a critique of the sovereignty of self-representations in social judgment: "To the extent that self is viewed as distinctive, it should not serve as the default value for making predictions about others because dissimilarity should logically preclude self's functionality as an analog for others" (p. 566). The similarity contingency model outlined in the present article entirely agrees that (a) people do not always assume similarity to others; (b) when people do not assume similarity, they recognize that the self may not be a good anchor for social judgment; and (c) people have other kinds of non-self-representations that can serve as anchors. From here, though, Karniol's protocentric account concludes that perceivers invariably rely on a single set of generic representations about what the typical person is like, even when judging self-attributes.

In contrast to this protocentric model, the contingency model supposes that perceivers have many social category stereotype representations and that they rely on both self-representations and these stereotypes. Further, by invoking stereotype representations, the similarity contingency model avoids a set of criticisms directed at the protocentric model regarding the origin of the representational system: "The [protocentric model] does not specify the genesis of prototypic social knowledge. How is such knowledge derived, and in reference to what baseline is it processed?" (Sedikides, 2003, p. 591). The similarity contingency model refers to stereotype representations, whose origin and development have

been the topic of considerable prior work (see, e.g., Hamilton & Sherman, 1994).

Thus, the similarity contingency model shares with the protocentric approach a suspicion that self-based judgments are not the only game in town. Yet the proposed model differs from a protocentric approach in assuming that self-representations are still one of the games in town, along with multiple stereotype representations.

Distortions and Debiasing

One reason so many scholars care about social judgment and prevalence estimates is because these inferences sometimes, or perhaps often, entail distortions that foster unwanted outcomes, such as conflict and prejudice. The present work offers new ideas about distortions as well as debiasing, suggesting that misguided perceptions of similarity or dissimilarity may be harmful. Such may be the case with the "myth of the fixed pie" (e.g., Bazerman, Magliozzi, & Neale, 1985). This projective effect arises when parties to a negotiation or conflict wrongly assume that their priorities are shared in a zero-sum fashion with their partner. For instance, in a labor dispute, management's most important issue may be salary increases and they may mistakenly project that this issue is also of primary importance for the union. As a result, management may launch into aggressive haggling over salary, limiting their ability to uncover the union's actual top priority of job security. In such a case, an ideal outcome would be to "swap" issues (with the union forgoing some salary increases in return for concessions of job security from management), but this kind of integration may be hindered by management's projection of their own priorities. Some research (Bottom & Paese, 1997) has shown that use of accurate stereotypes can break the myth of the fixed pie and leave both parties better off. In such cases, misperceived similarity could exacerbate conflict and become an impediment to the effective use of stereotypes.

As for debiasing, Krueger and Clement (1994) found that perceivers were suboptimally sensitive to various forms of evidence, such as statistically relevant case information. The present findings, however, show that perceivers may alter social projection as well as stereotyping when led to consider similarities or dissimilarities. In cases where perceivers overestimate similarity and overproject (as in the fixed-pie example), drawing attention to differences via contrast thinking may yield better inferences. In cases where perceivers underestimate similarity and thus underproject (and overstereotype), perspective taking may be a promising intervention (see Galinsky & Moskowitz, 2000).

Conclusions

Is the social perceiver a self-absorbed projector or a pervasive stereotyper? The answer must be "both." The similarity contingency model described here resolves the question by identifying perceived similarity as the condition that matters, portraying perceivers as projectors and stereotypers by turns. Other "contingency" models are certainly possible, though few appear to have been offered. Whether the proposed account best describes social judgment or not, models that explicitly describe *when* the perceiver is a projector and when she is a stereotyper seem preferable to

implicit assumptions that she is simply and singularly one or the other.

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