# Influence of Impression-Management Goals on the Emerging Contents of Group Stereotypes: Support for a Social-Evolutionary Process

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*Why do consensually shared group stereotypes have the contents that they do? A social-evolutionary perspective suggests that the emergent contents of stereotypes are influenced by the contents of interpersonal communications, which themselves may be influenced by individuals' motives and goals. Three experiments tested hypotheses drawn from this perspective. In all experiments, participants in dyads read information describing members of groups about which they held no previous beliefs, and they communicated with each other about that information. In Experiment 1, a manipulation of the contents of interpersonal communication influenced the content of stereotypes formed. In Experiments 2 and 3, a manipulation of participants' impression-management goals influenced the contents of communication and also influenced the eventual content of stereotypes. Additional results from Experiments 2 and 3 provided evidence specifically implicating the role of actual communication in determining stereotype content. These results have implications for the formation of group stereotypes and the origins of cultural beliefs in general.*

> If we assumed a social-evolutionary process, we might, as social scientists, examine each weird custom and incredible social belief with a little more of the respect shown by a biologist examining a strange form of life, the function of which he does not understand.
>
> D. T. Campbell (1965, p. 32)

Every culture is defined by idiosyncratic customs and beliefs, yet we often take for granted the contents of those cultural traits and the reasons why they are so. Even social scientists—accustomed to exposing the curious processes that lie at the root of familiar things—rarely ask, Why do these particular beliefs, rather than some other set of beliefs, pervade a culture?

Consider, for example, scientific inquiry into a particular category of cultural beliefs: group stereotypes. The psychological roots of stereotypes and stereotyping have received intense study for decades. We know a great deal about the processes that lead to the development of stereotypes and the application of stereotypes to the judgments of individuals. But we know surprisingly little about why the contents of stereotypes are what they are.

In the present article, we suggest that the question of content can be profitably addressed within a framework that attends not only to individual-level cognitive processes, but also to interpersonal communication processes. Before articulating the theoretical framework from which our hypotheses are drawn, it is worthwhile to review briefly other perspectives on stereotype content.

INDIVIDUAL-LEVEL PROCESSES
UNDERLYING STEREOTYPE CONTENT

Much research on stereotype formation reveals that stereotypes serve individuals' twin epistemic goals of organizing the social world in an understandable manner, and doing so efficiently (Fox, 1992; Macrae, Milne, & Bodenhausen, 1994). Relevant to the first of these goals, research has demonstrated that many stereotypes are

quite accurate (Lee, Jussim, & McCauley, 1995). For instance, it has been demonstrated that the traits most likely to become integral to stereotype content are those that, in general, maximally distinguish between different groups (Ford & Stangor, 1992). Thus, members of a particular group may be exceptionally intelligent, but intelligence would only become central to the stereotype of that group if intelligence—more so than other traits—distinguished that group from some salient comparison group. The tendency to render the world predictable does not always lead to accurate perceptions, however; individuals' desire to simplify their cognitive representations of the complex social world can lead to predictable errors in the content of stereotypes. For instance, the tendency to lump individuals into simplifying categories leads to exaggeration of between-group differences and within-group similarities (Allport, 1954; Tajfel & Wilkes, 1963; Taylor, Fiske, Etcoff, & Ruderman, 1978). The motivation to attach meaning to these categories can lead to erroneous perceptions of differences that do not actually exist (McGarty, Haslam, Turner, & Oakes, 1993), and to inaccurate inferences concerning those differences that do exist (Hoffman & Hurst, 1990; Schaller, Boyd, Yohannes, & O'Brien, 1995). From these epistemic perspectives, the contents of stereotypes are presumed to be influenced—although not always accurately—by actual characteristics of groups and by the characteristics of the contexts within which groups are perceived.

Other research reveals that individuals form stereotypes in such a way as to maintain positive self-regard. Stereotypes may provide a means of justifying one's own prejudicial behavior toward certain groups, and therefore act to protect one's self-esteem against the negative implications of engaging in such behavior (Allport, 1954). Stereotypes may also arise through a process of strategically viewing one's own group(s) more positively than groups to which one does not belong, so as to create a positive social identity that contributes positively to one's self-esteem (Tajfel & Turner, 1979). In addition, stereotypes may result from motivated tendencies to derogate others who hold worldviews different from one's own—a process hypothesized to provide a buffer against existential anxiety (Greenberg, Solomon, & Pyszczynski, 1997). These esteem-based perspectives predict that group stereotypes will be predominantly negative in character, and especially negative on traits that are of particular importance to one's self-concept or worldview.

These lines of inquiry have revealed much fine detail about the processes through which stereotypes form, but answers to the question of content are sketched in only the broadest brushstrokes. Clearly, not all traits that accurately differentiate groups come to be represented in stereotypes, nor do stereotypes tend to coalesce around a random set of negative characteristics. The existing psychological literature on stereotype formation indicates certain broad constraints on the eventual content of stereotypes but still leaves a lot to be explained as to why stereotypes emerge with certain specific characteristics and not others. Indeed, as Schneider (1996) pointed out, "Content issues are not easily addressed with the social cognition perspective" (p. 424) that has largely directed psychological inquiry into stereotypes over the past quarter century.

What additional processes might help complete the picture? According to the conceptual approach underlying the present investigation, the origins of stereotype content might be more fully explained by considering jointly individual-level and interpersonal-level processes.

### THE ROLE OF INTERPERSONAL COMMUNICATION

Although a psychological understanding of stereotypes demands that stereotypes be defined as individual-level knowledge structures represented in individual minds, the stereotypes that really matter are more than that: They are shared knowledge structures that are represented similarly in multiple minds and across broad populations of people. Conceptual approaches that focus purely on individual-level inference processes generally fail to account fully for consensually shared beliefs (Boster, 1991; Haslam, 1997; Stangor & Schaller, 1996; Tajfel & Forgas, 1981). To understand more completely the origins of stereotypes, it is necessary to consider not merely individual-level psychological processes, but also the interpersonal processes through which socially shared beliefs are communicated between people (Gardner, 1994; Hardin & Higgins, 1996; Latané, 1996; Moscovici, 1988/1993; Resnick, Levine, & Teasley, 1991).

Communication is implicated in various ways in stereotyping phenomena. For instance, consensually shared stereotypes may provide individuals with a functional means of communicating about groups (Gardner, 1994), and the ways in which people communicate about groups may perpetuate existing stereotypes (Giles, 1977; Harasty, 1997; Maass & Arcuri, 1996; van Dijk, 1987). The present investigation is concerned primarily with the origins of new stereotypes and the contents of those stereotypes. Consequently, of particular relevance to the present research is evidence that communication is fundamental to the initial emergence of coherent clusters of attitudes, ideologies, and other cultural norms (Latané, 1996). Just as communication dynamics influence patterns of emerging consensus in public opinion, so too they are likely to guide the emergence of consensually

shared stereotypes (Haslam, 1997; Schaller & Latané, 1996).

If communication influences the emergence of consensually shared stereotypic beliefs, the nature of those beliefs is likely to be influenced by individual-level goals, motives, and biases that are relevant to communication. Recent research provides some evidence that this is so. In a study examining the application of stereotypes to individual person perception (Ruscher, Hammer, & Hammer, 1996), it was found that people are, under certain conditions, especially motivated to form consensual opinions, and that they do so. Although that research did not address the origins of stereotype content, other research on individual goals and stereotype consensus does have implications for content. Haslam and his colleagues (Haslam, 1997; Haslam et al., 1996) found that social identity motives affected responses to information communicated by in-group and out-group members, and influenced changes in the content of preexisting consensually shared stereotypes.

Thus, motives that are directly relevant to consensus do influence consensus, and motives that are relevant to both consensus and content (e.g., social identity motives associated with group categorization) are likely to influence both consensus and content. But in order for individual-level motives to influence the content of consensually shared stereotypes, must those motives be directly relevant to the content of consensually shared stereotypes? The experiments we present here indicate that the answer is no: Individual-level motives that are neither logically nor phenomenologically related to the content of group stereotypes may nonetheless, through their influence on interpersonal communication, ultimately influence the contents of consensually shared stereotypes. Not only might these motives lead to changes in the contents of preexisting stereotypes, but they may also determine whether brand-new stereotypes coalesce around certain traits rather than other traits. We arrived at this hypothesis by considering the implications of a social-evolutionary perspective on socially shared beliefs.

## A SOCIAL-EVOLUTIONARY PERSPECTIVE

By social-evolutionary perspective, we refer to a broad meta-theoretical framework according to which beliefs and other socially shared cognitive structures emerge and change as a result of processes somewhat analogous to those that govern the evolution of biological structures (cf. Boyd & Richerson, 1985; Campbell, 1965; Cavalli-Sforza & Feldman, 1981; Hull, 1988; Plotkin, 1987; Rescher, 1977; Romanelli, 1991; Sperber, 1990). According to this perspective, the contents of socially shared beliefs are the result of pressures through which certain variants of beliefs are selected for or against.

Among the many variables that may impose selection pressures on beliefs are factors related to communication: The more likely a particular belief is to be successfully communicated to other individuals, the more likely that it (rather than some less frequently communicated belief) is to become shared across a population of people. This general social-evolutionary hypothesis begs the following more pointed question: What factors influence the likelihood that a belief will be communicated to others?

The likelihood that a belief is to be communicated is an interactive function of the features of the belief and the psychology of communicating individuals. An important element of that psychology is the role of social goals: An individually held belief is likely to be communicated—and consequently likely to become consensually shared—to the extent that communication about the belief aids in the attainment of individuals' social goals. Some of these social goals (such as those related to social identity, as discussed above) may be directly relevant to the beliefs one wishes to form. The content of those beliefs are thus a direct product of the desire to forge such beliefs. But the social-evolutionary perspective predicts more: Any individual-level goal that influences communication may in turn influence the contents of consensually shared beliefs. One such motive is the desire to make a good impression on others.

Human beings are motivated to affiliate with and be accepted by others (Baumeister & Leary, 1995). Consequently, people tend to present themselves to others in whatever ways they believe will lead others to respect, value, and like them. Impression-management motives appear to bear little obvious relevance to the formation of group stereotypes, and have not previously been linked to processes of stereotype formation. Nonetheless, the social-evolutionary perspective suggests that impression-management goals may ultimately shape the contents of emerging stereotypes. If individuals strategically alter the contents of their communications in response to impression-management goals, and if the contents of their communications influence the emerging contents of group stereotypes, then impression-management motives may exert an unintended indirect influence on stereotype formation.

## OVERVIEW OF THE PRESENT RESEARCH

Three experiments are reported that test different elements of the hypothesized social-evolutionary process. Experiment 1 was something of a pilot study that tested the preliminary hypothesis that the contents of emerging group stereotypes are indeed influenced by the contents of interpersonal communication. Experiment 2 tested the more interesting hypothesis that individual-level impression-management goals that are

phenomenologically irrelevant to stereotypes can—through their influence on interpersonal communication—ultimately influence the contents of emerging group stereotypes. Experiment 3 replicated and extended these findings through a design that explicitly implicated the role of actual interpersonal communication in accounting for these results.

EXPERIMENT 1

As a preliminary study, Experiment 1 simply tested the hypothesized causal relation between the contents of interpersonal communication and the emerging contents of stereotypes. In groups of two, participants were presented with information describing individual members of two groups about which they had no previous knowledge. The information was structured in such a way that the groups did actually differ on two personality characteristics—in general, people in one of the groups were more aggressive and also more intelligent. In the course of examining the information, participants communicated periodically with each other concerning their emerging impressions. Finally, each participant completed measures assessing impressions of the groups. To test the hypothesis, we manipulated participants' goals concerning the contents of their communication. Thus, prior to examining and discussing information about the groups, participants were given specific communication instructions. In one condition, both dyad members were told to try to communicate primarily about positive information; in another condition, both dyad members were told to try to communicate primarily about negative information. It was predicted that, even though all individuals had identical information indicating that the two traits are equally stereotypic, the contents of the emerging stereotypes would differ in the two conditions. In the Positive Communication condition, we expected intelligence to emerge as a more central component of stereotypes; in the Negative Communication condition, we expected aggressiveness to emerge as more central to the stereotypes.

*Method*

There were 30 undergraduate students participating in groups of 2. Each dyad was randomly assigned to one of the two experimental conditions. Eight dyads (16 participants) participated in the Negative Communication condition, and 7 dyads (14 participants) participated in the Positive Communication condition.

Participants were informed that they would be receiving information about individuals who belonged to one of two groups (the Red Group and the Blue Group) and that they would be asked to communicate with each other—by writing eight separate notes—concerning their impressions of the groups.

At this point, the experimenter provided additional written instructions to each participant. These instructions contained the experimental manipulation. In the Positive Communication condition, the instructions stated, "When you write your notes to the other participant, please make a point to communicate primarily about the positive characteristics of the Blue Group and the Red Group." In the Negative Communication condition, participants were instructed to "communicate primarily about the negative characteristics" of the groups. Both participants within each dyad received the same communication instructions, although each was led to believe that he or she was the only one to receive those specific communication instructions. Participants were instructed not to let on to the other participant or to the experimenter the exact nature of these instructions. (Through this procedure, the experimenter remained unaware of the participants' experimental condition.)

Participants were then presented with 18 index cards on which were printed brief descriptions of (male) members of the Red Group and the Blue Group. Nine cards described members of the Red Group, and 9 described members of the Blue Group. These descriptions were crafted in such a way that members of the Red Group were portrayed as both more aggressive and more intelligent than members of the Blue Group.

These 18 index cards were presented over the course of eight phases. At each of the eight phases, participants read the information printed on each card, and then communicated their impressions to the other participant by composing a note on a note template. After participants had read each other's notes, the experimenter began the next phase of the stimulus presentation.

At the completion of the eight phases, stereotypes of the two target groups were measured. We employed two different free-response formats to assess the extent to which, in the participants' minds, particular focal characteristics were associatively linked with group labels. On one measure, participants were asked to list up to five adjectives that they believed described the Red Group and five that described the Blue Group. On another measure, participants were asked to compose four sentences to describe the Red Group and four sentences to describe the Blue Group.[1]

Coders who were unaware of experimental condition and who used a master list of synonyms of antonyms judged each adjective and sentence according to whether it expressed aggressiveness-related or intelligence-related content. (For the sake of these codings, words were judged to be relevant to the characterological dimension whether they reflected the presence of the trait or the absence of the trait.) On the basis of these codings, we computed scores indicating the following: (a) the total number of aggressive-related adjectives, (b)

**TABLE 1:    Experiment 1—Effect of Communication Instructions on Contents of Emergent Group Stereotypes**

| | Communication Instructions | | | | |
| Stereotype Content Measure | Positive | Negative | d | t(13) | p |
| --- | --- | --- | --- | --- | --- |
| Aggressiveness relevant | | | | | |
|   Total adjectives | 1.00 | 1.56 | 1.36 | 2.63 | .011 |
|   Total sentences | 0.64 | 1.96 | 1.43 | 2.77 | .008 |
| Intelligence relevant | | | | | |
|   Total adjectives | 0.71 | 0.63 | 0.14 | 0.28 | .391 |
|   Total sentences | 1.21 | 0.81 | 0.85 | 1.64 | .062 |

NOTE: The $d$ indicates the size of the observed difference between means, expressed in standard deviation units; $t$ indicates the value of the $t$-test statistic (positive values indicate mean differences that are consistent with those predicted); and $p$ indicates the likelihood that sampling error alone could have produced a difference between means in the predicted direction that is equal to (or greater than) the difference observed in these data.

the total number of aggressive-related sentences, (c) the total number of intelligence-related adjectives, and (d) the total number of intelligence-related sentences.

To check on the effectiveness of the manipulation, the contents of the notes were coded in the same manner, yielding scores indicating the extent to which these notes contained aggressive-relevant content and the extent to which they contained intelligence-relevant content. An additional rating (on a scale ranging from 1 to 9) indicated the general negative-positive valence of the contents of the notes.[2]

### Results and Discussion

Because participants within dyads communicated with each other, participants' responses within dyads cannot be treated as independent. Consequently, individuals' responses on the dependent measures were averaged within the 15 dyads, and dyad was treated as the unit of analysis.

Content coding on the notes revealed that the communication instructions manipulation had the intended effect. Compared to notes written in the Positive Communication condition, those in the Negative Communication condition were generally less positive ($M$s = 7.26 and 2.90 in the Positive and Negative Communication conditions, respectively; $d$ = 5.24), had less intelligence-relevant content ($M$s = 2.71 and 0.94, $d$ = 1.41), and had more aggressiveness-relevant content ($M$s = 1.21 and 3.69, $d$ = 2.31). On each variable, the likelihood is less than 1% that sampling error alone could have produced the difference in the predicted direction ($t$s > 2.72, $p$s < .01).

Given the effect of the manipulation on communication content, we expected that there would be effects also on the contents of the stereotypes eventually formed in each dyad. Table 1 presents the descriptive and infer-

ential statistics relevant to this hypothesis. As these results reveal, aggressiveness-relevant stereotype content was more likely to emerge under conditions in which dyad members communicated about negative information; such differences are unlikely to have resulted simply from sampling error. It is less clear whether intelligence-relevant content was more likely to emerge under conditions in which dyad members communicated about positive information. Mean differences on both measures were in the predicted direction, but on only one of these measures can sampling error be ruled out with any reasonable confidence as an alternative explanation for the predicted effect.

The results generally support the fundamental social-evolutionary expectation that the contents of communication influence the emergent contents of group stereotypes—at least on aggressiveness-relevant content. The demonstration of this effect is important conceptually, as it reveals a necessary link in the broader process through which ecologically interesting social goals may influence stereotype development. In Experiments 2 and 3, we tested the full hypothesis that, through their effects on interpersonal communication, impression-management goals indirectly influence the contents of emerging group stereotypes.

### EXPERIMENT 2

Although most impression-management goals have no obvious direct effects on stereotype formation, these goals may influence interpersonal communication. The social-evolutionary perspective yields the prediction that impression-management goals may therefore have unintended indirect influences on the contents of newly emerging stereotypes. In Experiment 2, we tested this hypothesis by manipulating participants' beliefs about the relationship between communication content and desirable personal outcomes. In some sessions, participants were told that people who talk about positive traits of others are more likely to be successful later in life; in other sessions, participants were told that people who talk about negative traits are more likely to be successful. They then participated in a procedure similar to that of Experiment 1. We expected the manipulation of belief would influence participants' communications with each other, as a result of the following conjunction of considerations: Each participant would want to make a positive impression on the other, each participant would expect that potentially successful people are viewed positively by others, and each participant would be aware that the other participant shared the belief concerning the success implications of talking about positive (or negative) traits. Consequently, each participant would be aware that he or she could make a more positive impression by communicating strategically about posi-

tive (or negative) traits. Thus, participants in different experimental conditions were expected to strategically alter the contents of their communications with each other to serve the impression-management motive. This strategic self-presentation in interpersonal communication was consequently expected to influence the contents of emerging stereotypes.

### Method

#### PARTICIPANTS

There were 56 undergraduate students participating in groups of 2. Each dyad was randomly assigned to one of the two experimental conditions. Fouteen dyads (28 participants) participated in each of the two conditions.

#### PROCEDURES

Upon arriving, participants were told that they would be participating in two studies concerning communication.

*Manipulation of communication beliefs.* The first of these studies merely involved completing a 20-item personality questionnaire (which was actually unrelated to the experiment). After completing the questionnaire, participants were given an ersatz debriefing as to the purposes of the questionnaire. They were told that it was called the "Communication Positivity Scale" and had been shown in previous research to be a subtle indicator of the sorts of things that people tend to talk about when they talk about people. In particular, they were informed that the questionnaire is used to determine whether one is the sort of person who talks about negative or positive characteristics of other people. This is important, the experimenter explained, because there was a relation between this tendency and life outcomes. At this point, participants in the Positive Belief condition were told, "people who have a tendency to talk about positive attributes of other people are more likely to be successful and happy later in life"; and participants in the Negative Belief condition were told, "people who have a tendency to talk about negative attributes of other people are more likely to be successful and happy later in life." In an effort to make this feedback both salient and believable, the experimenter asked participants to speculate as to why this relationship might exist. Participants in both conditions were generally adept at generating plausible reasons, and the experimenter followed up with some prepared reasons for the relationship.

Following this ostensible debriefing, participants were informed that they would now participate in a second study. For the second study, participants were told that they would be receiving information about individuals who belonged to one of two groups (Group A and Group B), and that they would be asked to communicate

with each other by writing notes concerning their impressions of the groups.

*Stimulus materials.* The stimulus materials were similar to those used in Experiment 1, except that the focal groups were labeled Group A and Group B and the focal traits were aggressiveness and creativity.

Participants were presented with 18 index cards (arranged randomly, so that each participant received the same information in a different order) on which were printed brief descriptions of (male) members of Group A and Group B. Nine cards described members of Group A, and 9 described members of Group B. These descriptions were carefully crafted in such a way that, in general, members of Group A were portrayed as both more aggressive and more creative than members of the Blue Group: Of the nine Group A members, six were portrayed as highly aggressive, whereas only three of the nine Group B members were portrayed as highly aggressive; six of the nine Group A members were portrayed as highly creative, whereas only three of the nine Group B members were portrayed as highly creative. (Individuals not described as especially aggressive or creative were described in a manner that was neutral in regard to those focal traits.) Thus, the correlation between group membership and each of these focal dimensions was .33.

These 18 index cards were presented over the course of nine phases. During the nine phases, participants were given 2 cards.

*Stimulus presentation and communication phases.* At each of the nine phases, participants were asked to read the information printed on each card, and then to communicate their impressions to the other participant. According to instructions, all communications were written in the form, "Based upon whatever I have read and heard thus far, I think that people in Group [blank] are [blank]." This format gave participants the chance, each time they wrote a note, to choose which of the two groups they wished to communicate about and what particular information they wished to communicate. After participants had written, exchanged, and read each other's notes, the experimenter began the next phase of the stimulus presentation. These phases concluded after participants had read all 18 cards and had exchanged 9 notes.

*Measures of stereotype formation.* Our primary indicators of participants' stereotypes were derived from two free-responses measures that participants completed following the nine phases. These methods offered opportunities to assess associative strength, the extent to which particular characteristics are cognitively linked to group labels (Ford & Stangor, 1992).

On one of these measures, participants were asked to write up to five adjectives describing Group A and up to

five adjectives describing Group B. A coder (unaware of experimental condition) used master lists of synonyms and antonyms to count the number of adjectives that described each group as aggressive, creative, distinctly unaggressive, and distinctly uncreative. Given the nature of the stimulus materials, we expected that any emerging stereotypes would cast Group A as especially aggressive or creative, and so we used these codings to generate two measures, each of aggressiveness-relevant and creativeness-relevant content. One measure of the aggressiveness-relevant content was simply the total number of aggressive synonyms describing Group A. A second measure was computed by summing the number of aggressive synonyms describing Group A with the number of aggressive antonyms describing Group B, and subtracting from that sum the number of aggressive synonyms describing Group B and the number of aggressive antonyms describing Group A. This diagnosticity score reflects the extent to which Group A was seen as relatively more aggressive than Group B. Two parallel indices were generated as indicators of creativeness-relevant stereotype content.

On another measure, participants were asked to compose four sentences to describe Group A and four sentences to describe Group B. Using the same method described above, a coder judged each sentence according to whether it conveyed aggressive, creative, unaggressive, and uncreative content. We used these codings to compute the total number of statements describing Group A as aggressive, and the total number of statements describing Group A as creative. Also, just as with the adjective list measures, we computed diagnosticity scores indicating the degree to which Group A was seen as relatively more aggressive than Group B, and relatively more creative than Group B.

In addition, drawing on the logical assumption that the first statement describing a group reflects beliefs that are most strongly associated with the group label, we computed separate stereotype content indices on the basis of the very first sentences describing Groups A and B. One measure was a categorical variable, indicating whether the first statement about Group A included an "aggressive" synonym. A parallel categorical variable indicated whether the first sentence about Group A included a "creative" synonym. In addition, we computed diagnosticity scores indicating the degree to which first sentences described Group A as relatively more aggressive than Group B, and the degree to which these first sentences described Group A as relatively more creative than Group B.[3]

The preceding methods resulted in six separate indicators of the extent to which aggressiveness-relevant content was central to participants' stereotypes, and six

parallel indicators of the extent to which creativeness-relevant content was central to participants' stereotypes. On the basis of these individual indicators, we computed two composite measures of stereotype content. The six aggressiveness indicators were converted to z-scores and then averaged to yield a composite measure of aggressiveness-relevant content. The six creativeness indicators were converted to z-scores and then averaged to yield a composite measure of creativeness-relevant content.

Because they were created from aggregates of multiple face-valid indicators of stereotype content, these two composite measures offer the inferential advantage of being more reliable than any of the individual indicators from which the composites were created. For this reason, these composites were the primary focus of the statistical analyses reported below. However, note that mean scores on these composites' indices have a descriptive limitation: Unlike the individual indicators, the composites cannot reveal any baseline differences (differences that have nothing to do with the experimental manipulation) between the amount of aggressiveness- and creativeness-relevant content in stereotypes. As we shall discuss below, however, it is impossible to meaningfully interpret any such differences (differences that are irrelevant to the specific hypothesis tested here).

*Content coding of communication.* Using a master list of synonyms and antonyms, a coder (unaware of experimental condition) coded each note according to whether it conveyed content indicating aggressiveness and whether it conveyed content indicating creativeness. On the basis of these judgments, scores were computed indicating the total number of notes conveying aggressiveness-relevant content, and the total number of notes conveying creativeness-relevant content. In addition, each note was rated on 9-point rating scale according to the overall negative-positive valence of its contents.[4]

### Results

As in Experiment 1, responses within dyads cannot be assumed to be independent. Consequently, a dyad was treated as the unit of analysis. Descriptive and inferential statistics were computed on mean responses within dyads.

#### COMMUNICATION CONTENT

Initial analyses tested the effect of the Communication Belief manipulation on the contents of the notes that participants wrote to each other. As expected, general positivity was greater in the Positive Belief condition ($M = 5.34$) than in the Negative Belief condition ($M = 4.83$), $d = 0.80$. There is less than a 3% chance that sampling error alone could have produced this difference,

$t(26) = 2.11$, $p = .023$. Coding specific to aggressiveness content and creativeness content revealed no differences that can be interpreted with any confidence ($ts < 1$). Apparently, the effect of the manipulation on communication content was rather general.

### STEREOTYPE FORMATION

Table 2 presents descriptive and inferential statistics on all individual indicators of stereotype content, and on the two composite measures.

As Table 2 reveals, the manipulation generally exerted the predicted effects on the extent to which aggressiveness-relevant content emerged in the stereotypes held by dyad members (although these effects failed to emerge on the two indicators derived from the adjective list measure). As values on the composite measure indicate, under conditions in which people believed that they could make a good impression by communicating about negative features of others (and did, in fact, include more negative content in their communications), aggressiveness was more likely to become a central feature in emerging stereotypes. The likelihood is less than 4% that sampling error alone could have produced this predicted difference, $t(26) = 1.89$, $p = .035$.

In contrast, no interpretable effect was observed on the extent to which creativeness-relevant content emerged. Means on the composite measure were in the predicted direction, but the likelihood is substantial (33%) that the predicted difference could have emerged simply from sampling error.

### MEDIATION ANALYSES

A central feature of the social-evolutionary framework underlying the present investigation is that the effect of individual-level goals on stereotype content is mediated by the contents of interpersonal communication. Therefore, we conducted further analyses to see if the observed effect of the manipulation on aggressiveness-relevant content (as measured by the composite measure) was mediated by the positivity of participants' notes. If the positivity of the notes did serve as a mediator, then the following four effects must be observed (Baron & Kenny, 1986): (a) The manipulation must exert an effect on the positivity of the notes; (b) the manipulation must exert an effect on aggressiveness-relevant stereotype content; (c) the positivity of the notes must be correlated with aggressiveness-relevant stereotype content; and (d) the effect of the manipulation on the aggressiveness-relevant stereotype content must be reduced when the effect of note positivity is statistically controlled, whereas the effect of note positivity should not be reduced when the effect of the manipulation is statistically controlled. The first two effects have been described above. It was also the case that the note

**TABLE 2:   Experiment 2—Effect of Communication Beliefs on Emergent Contents of Group Stereotypes**

| Stereotype Content Measure | Communication Beliefs | | d | t(26) | p |
| --- | --- | --- | --- | --- | --- |
| | Positive | Negative | | | |
| Aggressiveness relevant | | | | | |
| Adjectives: Group A | 0.79 | 0.79 | 0.00 | 0.00 | NA |
| Adjectives: Diagnosticity | 0.89 | 0.79 | 0.12 | –0.32 | NA |
| Sentences: Group A | 0.61 | 0.96 | 0.57 | 1.50 | .073 |
| Sentences: Diagnosticity | 0.35 | 1.07 | 0.64 | 1.70 | .051 |
| 1st Sentences: Group A | 0.04 | 0.29 | 1.22 | 3.23 | .002 |
| 1st Sentences: Diagnosticity | –0.07 | 0.39 | 1.01 | 2.67 | .007 |
| Aggressiveness composite | –0.25 | 0.25 | 0.71 | 1.89 | .035 |
| Creativeness relevant | | | | | |
| Adjectives: Group A | 0.36 | 0.36 | 0.00 | 0.00 | NA |
| Adjectives: Diagnosticity | 0.21 | 0.18 | 0.07 | 0.18 | .429 |
| Sentences: Group A | 0.43 | 0.32 | 0.30 | 0.80 | .215 |
| Sentences: Diagnosticity | 0.25 | 0.11 | 0.27 | 0.71 | .244 |
| 1st Sentences: Group A | 0.11 | 0.11 | 0.00 | 0.00 | NA |
| 1st Sentences: Diagnosticity | 0.07 | 0.04 | 0.12 | 0.33 | .373 |
| Creativeness composite | 0.06 | –0.06 | 0.16 | 0.43 | .334 |

NOTE: NA = not applicable. The $d$ indicates the size of the observed difference between means, expressed in standard deviation units; $t$ indicates the value of the $t$ test statistic (positive values indicate mean differences that are consistent with those predicted); and $p$ indicates the likelihood that sampling error alone could have produced a difference between means in the predicted direction that is equal to (or greater than) the difference observed in these data (NA is recorded if the observed mean difference failed to conform to the prediction).

positivity was correlated in the predicted direction with the composite measure of aggressiveness-relevant stereotype content, $r = –.46$. To test for the existence of the fourth effect, additional regression analyses were conducted, describing the individual and joint effects of the manipulation and the proposed mediator on the composite measure of aggressiveness-relevant stereotype content. In one analysis, the manipulation alone was entered as a first predictor, followed by the entry of note positivity. Results revealed that the predictive effect of the manipulation on aggressiveness-relevant stereotype content was reduced after note positivity was also entered as a predictor (before: $B = –.50$, $\beta = –.35$; after: $B = –.29$, $\beta = –.20$), and that the entry of note positivity contributed substantially to the predictive use of the regression equation ($R^2$ change $= .122$, $F = 4.02$, $p = .056$). In a second analysis, the two predictor variables were entered into the regression equation in the reverse order. The results revealed that the predictive effect of note positivity was reduced very little after the manipulation was also entered as a predictor (before: $B = –.50$, $\beta = –.46$; after: $B = –.41$, $\beta = –.38$), and that the entry of the manipulation contributed very little to the predictive use of the regression equation ($R^2$ change $= .035$, $F = 1.16$, $p = .292$). These

results indicate that the observed effect of the manipulation on aggressiveness-relevant stereotype content was partially—although not completely—mediated by the contents of interpersonal communication.

### Discussion

We crafted a manipulation relevant to the use of communication as an impression-management tool. This manipulation exerted the predicted effect on the general positive/negative content of participants' interpersonal communications. Given this effect, we expected indirect effects of the manipulation on the emerging contents of stereotypes. This prediction was supported. Although all participants read and communicated about the same information, participants in the Negative Belief condition were—compared to those in the Positive Belief condition—more likely to form stereotypes with aggressiveness content. A trend consistent with predictions was also found on the tendency to form stereotypes with creativeness content, but this effect was much weaker and very possibly the result merely of sampling error.

It is not clear why the impression management manipulation had an effect on stereotypic perceptions of aggressiveness, but less so (and perhaps not at all) on stereotypic perceptions of creativeness. It is possible that the lack of interpretable effects on creativeness content was a function of the fact that there was, in general, less creativeness-relevant content evident in participants' stereotypes (see the means on each of the individual indicators summarized in Table 2). This begs the question as to why there were these differences. There is considerable evidence of asymmetric effects of positively and negatively valued information on various aspects of person perception (e.g., Rothbart & Park, 1986; Skowronski & Carlston, 1989), and it is plausible that there are some psychologically interesting reasons why people would be more likely to form stereotypes pertaining to aggressiveness than creativeness (reasons that may have their roots in biological-evolutionary as well as social-evolutionary processes). Nevertheless, it would be premature to draw any conclusions on the basis of the differences observed here. These results may simply reflect some idiosyncratic differences in the manner that information was presented in our stimulus materials or in the manner that our coding methods probed for stereotypic content. Moreover, it is impossible to draw conclusions about any general tendency to form negative (as opposed to positive) stereotypes in the absence of methods that sample a larger, more representative set of positive and negative traits.

It is worth noting that the observed effects on stereotype content occurred despite the fact that the manipulation was not directly relevant to stereotyping. We merely manipulated participants' beliefs about the relation between communication and possible life outcomes; for this manipulation to exert its predicted influence, participants had to care about self-presentation, recognize the relevance of the manipulated beliefs to self-presentation, and attempt to use these beliefs strategically in their communications to their dyad partner. Given the psychological distance that the manipulation had to travel to exert its effects, the effect on aggressiveness-related content is impressive (cf. Prentice & Miller, 1992).

Although these results are consistent with the social-evolutionary perspective that emphasizes the crucial role of interpersonal communication, it is important to rule out alternative processes through which the manipulation might have exerted its predicted effects. One alternative explanation is that the effect of the manipulation might simply have been the product of experimental demand: Participants may have attempted to impress the experimenter by communicating positive or negative information while completing their stereotype measures. Several other purely individual-level processes (that are interesting in their own right, but are psychologically distinct from social-evolutionary processes) might also have yielded the same effects on expressed stereotype content. For instance, given the variety of cognitive processes precipitated by communication (e.g., Brauer, Judd, & Gliner, 1995; Tetlock, 1983; Zajonc, 1960), participants in the two experimental conditions may have been differentially likely to attend to, encode, or otherwise process aggressiveness- versus creativeness-relevant information. Can these alternative explanations be ruled out?

To some extent, they can. Mediation analyses indicated that the affective valence of communication partially mediated the effect of the experimental manipulation on aggressiveness-relevant stereotype content. These results indicate that the effects on stereotype content were not purely the result of demand, attention, information processing, or any other individual-level process.

Of course, these results offer only indirect and incomplete evidence that purely individual-level processes did not account fully for the effect of the manipulation on stereotype content. Given the centrality of interpersonal communication processes to the social-evolutionary perspective, it was desirable to obtain further evidence pertaining to the role of communication in accounting for the predicted effects of impression-management goals. In Experiment 3, we attempted to replicate the primary effect observed in Experiment 2, but we used a different methodological strategy to test the extent to which interpersonal communication is necessary to the effects on stereotype content.

EXPERIMENT 3

If individual-level processes alone account for the effect of impression-management goals on stereotype content, then the pattern of results found in Experiment 2 would occur simply as a result of the intention to communicate—whether that communication actually takes place. On the other hand, if impression-management goals exert their impact on stereotype content through the mediating processes of interpersonal communication, then the pattern of results found in Experiment 2 should occur most strongly only when participants really do communicate with each other. Experiment 3 was designed to test the extent to which communication is necessary for the impression-management goal to influence stereotype content. Two of the four experimental conditions constituted a conceptual replication of Experiment 2. In both of these conditions, participants read information about two groups over the course of eight phases, and after each phase they wrote and exchanged notes with each other. Some of these participants had been informed earlier that communicating about negative information had been shown to be associated with success (Negative/Full Communication condition); others had been told nothing about any association between communication positivity and success (Control/Full Communication condition). As in the previous studies, we expected participants in these two conditions to differ in the extent to which participants formed stereotypes that coalesced around negative versus positive attributes. Participants in two additional conditions were also informed that communicating about negative information was associated with success, but were not provided an opportunity to actually communicate with each other. In one of these conditions (Negative/Read-Only), participants did not actually write notes to each other (although they did read notes written by previous participants). Thus, in this condition, there existed the opportunity for stereotypes to be influenced by experimental demand, but not by within-dyad communication processes. In another condition (Negative/Write-Only condition), participants were asked to write notes to each other with the intention of exchanging them, but never actually exchanged these notes. Thus, in this condition, there existed the opportunity for stereotypes to be influenced both by experimental demand and by any purely individual-level cognitive process that accompanies the preparation of communication, but not by actual within-dyad communication processes. To the extent that stereotypes in these latter two conditions differed from the stereotypes in the Negative/Full Communication condition, it provides stronger support for the mediating role of actual interpersonal communication—as predicted by the social-evolutionary perspective.

*Method*

PARTICIPANTS

There were 50 undergraduate students participating in groups of 2. Each dyad was assigned to one of the four experimental conditions. There were 10, 18, 10, and 12 participants in the Negative/Full Communication, Negative/Write-Only, Negative/Read-Only, and Control/Full Communication conditions, respectively.[5]

PROCEDURES

Upon arriving, participants were told that they would be participating in two studies concerning communication. The procedures then incorporated different aspects of Experiment 1 and Experiment 2.

*Manipulation of communication beliefs.* As in Experiment 2, participants first completed the bogus "Communication Positivity Scale" and were then debriefed as to its purpose. The debriefing differed across conditions. Most participants received feedback identical to that in the Negative Belief condition of Experiment 2: They were told that "people who have a tendency to talk about negative attributes of other people are more likely to be successful and happy later in life." Other participants were assigned to a Control condition in which they were told of the ostensible purpose of the questionnaire, but were told nothing about relations between communication positivity and life outcomes. Thus, in the Control condition, we did not attempt to create any specific belief that might influence the nature of communication.

*Stimulus materials.* Participants then participated in a second study, in which they were presented with stimulus materials identical to those used in Experiment 1. Over the course of eight phases, participants read about members of the Red Group and the Blue Group, who differed on the characteristics of aggressiveness and intelligence. Six of the nine Red Group members were portrayed as highly aggressive, whereas only three of the nine Blue Group members were portrayed as highly aggressive; six of the nine Red Group members were portrayed as highly intelligent, whereas only three of the nine Blue Group members were portrayed as highly intelligent. (Individuals not described as especially aggressive or intelligent were described in a manner that was neutral in regard to those focal traits.) Thus, members of the Red Group were both more aggressive and more intelligent than members of the Blue Group.

*Manipulation of actual communication.* Participants in the Control/Full Communication condition followed communication procedures identical to those of Experiments 1 and 2: After each phase, they wrote and exchanged notes indicating their impressions of the groups thus far. Among participants in the Negative

Belief condition, the writing and reading of notes differed according to an additional experimental manipulation. Participants in the Full Communication condition exchanged notes in exactly the same manner as in the Control condition. Participants in the Write-Only condition wrote notes following each of the eight phases, with the understanding that the notes would be exchanged en masse toward the end of the experiment. (In fact, this exchange never took place.) Thus, in the Write-Only condition, participants wrote notes to each other but never read notes from each other. Participants in the Read-Only condition did not write notes at all. However, at each phase they were given a note to read that had been written by a participant in a previous experiment session (in fact, all Read-Only participants read notes that had been composed by previous Write-Only participants).

*Measures of stereotype formation.* The methods used to assess content of stereotypes were identical to those used in Experiment 2 (except, of course, that judges coded the adjectives and sentence descriptions for intelligence-relevant rather than creativeness-relevant content). As a consequence of these codings, we computed six individual indicators of aggressiveness-relevant content and six individual indicators of intelligence-relevant content that were exactly parallel to those computed in Experiment 2. On the bases of those individual indicators, we followed the same procedures described in Experiment 2 to computed composite measures of aggressiveness-relevant stereotype content and intelligence-relevant stereotype content. These composite indicators served as the primary dependent variables.

*Content coding of communication.* In three of the four experimental conditions, participants wrote notes to each other. Each note was coded in a manner identical to that of Experiment 1, yielding three scores for each participant: (a) the mean positivity reflected across the 8 notes, (b) the total number of notes that contained aggressiveness-relevant content, and (c) the total number of notes that contained intelligence-relevant content.[6]

### Results

Dyads served as the unit of analysis. Descriptive and inferential statistics were computed on mean responses within dyads.

#### COMMUNICATION CONTENT

Participants wrote notes in three of the four experimental conditions. It was expected that, compared to notes in the Control condition, notes in the Negative/Full Communication and Negative/Write-Only conditions would contain more aggressiveness-relevant content and less intelligence-relevant content. Cell means revealed an interactive effect of experimental condition and focal content trait that was largely consistent with these expectations: Notes in the Control/Full Communication condition were about equally likely to contain aggressiveness-relevant and intelligence-relevant content (*M*s were 3.42 and 3.67, respectively), notes in the Negative/Write-Only condition were somewhat more likely to contain aggressiveness-relevant than intelligence-relevant content (*M*s were 3.22 and 1.89), and notes in the Negative/Full Communication condition were much more likely to contain aggressiveness-relevant than intelligence-relevant content (*M*s were 4.30 and 1.90). A repeated measures ANOVA revealed that the chances were less than 2% that sampling error alone could have accounted for any such interaction, $F(2, 17) = 5.43$, $p = .015$.

More generally, it was also expected that notes written in the two Negative Belief conditions would contain less positive content overall than the notes in the Control condition. Results were consistent with this hypothesis. The mean general positivity of the notes was greater in the Control condition ($M = 5.33$) than in either the Negative/Full Communication ($M = 4.96$) or Negative/Write-Only ($M = 5.04$) conditions. A planned contrast comparing the Control condition to the two Negative Belief conditions revealed a 6% likelihood that sampling error alone could have accounted for a difference of this magnitude in the predicted direction, $t(17) = 1.64$, $p = .06$.

#### STEREOTYPE FORMATION

Table 3 presents the means on the individual indicators of stereotype content in the four experimental conditions, and on the composite measures of aggressiveness- and intelligence-relevant content. Examining first the effect of the experimental manipulations on aggressiveness-relevant content, we focused our analyses on the composite measure and addressed three conceptually important questions by conducting three planned contrasts between means.

First, did these results replicate the effects obtained in Experiment 2? Yes. More aggressiveness-relevant stereotype content emerged in the Negative/Full Communication condition than in the Control/Full Communication condition, $d = 1.34$. The likelihood is less than 4% that sampling error alone could have produced this difference in the predicted direction, $t(21) = 1.89$, $p = .037$.

Second, was this difference merely the byproduct of demand characteristics? If so, then there should be no differences between stereotype content in the Negative/Full Communication condition and the Negative/Read-Only condition. In fact, however, there were differences: More aggressiveness-relevant content emerged in the

**TABLE 3: Experiment 3—Effect of Communication Beliefs and Actual Communication on Emergent Contents of Group Stereotypes**

| Stereotype Content Measure | Communication Belief/Actual Communication Condition | | | |
| --- | --- | --- | --- | --- |
| | Control/Full Communication | Negative/Full Communication | Negative/ Read-Only | Negative/Write-Only |
| Aggressiveness relevant | | | | |
| Adjectives: Red Group | 0.67 | 1.40 | 1.20 | 1.22 |
| Adjectives: Diagnosticity | 0.92 | 2.10 | 1.30 | 1.17 |
| Sentences: Red Group | 1.00 | 1.80 | 0.90 | 1.00 |
| Sentences: Diagnosticity | 1.58 | 1.90 | 0.70 | 1.22 |
| 1st Sentences: Red Group | 0.17 | 0.20 | 0.10 | 0.28 |
| 1st Sentences: Diagnosticity | 0.25 | 0.40 | 0.20 | 0.28 |
| Aggressiveness composite | −0.19 | 0.51 | −0.26 | −0.02 |
| Intelligence relevant | | | | |
| Adjectives: Red Group | 0.67 | 0.50 | 0.20 | 0.56 |
| Adjectives: Diagnosticity | 0.08 | 0.30 | −0.30 | 0.39 |
| Sentences: Red Group | 0.83 | 0.50 | 0.50 | 0.61 |
| Sentences: Diagnosticity | 0.58 | 0.70 | 0.40 | 0.56 |
| 1st Sentences: Red Group | 0.50 | 0.20 | 0.30 | 0.22 |
| 1st Sentences: Diagnosticity | 0.17 | 0.20 | 0.40 | 0.11 |
| Intelligence composite | 0.25 | −0.03 | −0.27 | 0.00 |

Full Communication condition than in the Read-Only condition, $d = 1.03$. The likelihood is just 3% that sampling error alone could have produced this difference in the predicted direction, $t(21) = 1.99$, $p = .030$.

Third, were these differences purely the result of some other individual-level cognitive processes that accompany attempts to communicate? If so, then there should be no differences between stereotype content in the Negative/Full Communication condition and in the Negative/Write-Only condition. Again, however, there were differences: More aggressiveness-relevant content emerged in the Full Communication condition than in the Write-Only condition, $d = 0.83$. The likelihood is less than 7% that sampling error alone could have produced this difference in the predicted direction, $t(21) = 1.57$, $p = .067$.[7] Although surely some individual-level processes do accompany within-dyad communication processes, it appears unlikely that these individual-level processes alone accounted for the effects observed here and in Experiment 2.

In contrast to the interpretable effects observed on the composite measure of aggressiveness-relevant stereotype content, no interpretable effects emerged on measures of intelligence-relevant stereotype content. Although some mean differences are apparent in Table 3, inferential analyses revealed no differences that are unlikely to be merely the result of sampling error.

*Discussion*

The results of Experiment 3 replicated and extended those of Experiment 2. A manipulation of beliefs relevant to impression-management goals had an impact on the contents of interpersonal communication and on the eventual contents of newly emerging stereotypes. Consistent with Experiment 2, these effects were specific to aggressiveness, but did not occur on the positively valenced trait (intelligence). As discussed above, these asymmetrical effects may reflect some psychologically interesting phenomenon, but may also merely reflect idiosyncratic aspects of our experimental methods.

The addition of two other experimental conditions helped to address questions concerning the psychological processes underlying the predicted effect on aggressiveness-relevant stereotype content. The pattern of results indicated that the effect cannot be explained by purely individual-level processes; differences between the Negative/Full Communication and Negative/Write-Only conditions reveal that something more is going on. Despite the fact that participants in both conditions wrote notes with the full intention of exchanging them with their partners, only those in the Negative/Full Communication condition actually did consummate the communication—and within those dyads stereotypes were more likely to coalesce around the focal trait of aggressiveness. Consistent with the social-evolutionary framework, this result implicates the importance of actual interpersonal communication in mediating the effect of individual-level goals on the emerging contents of stereotypes.

GENERAL DISCUSSION

Much research reveals that stereotypic beliefs influence the contents of interpersonal communication (Giles, 1977; Harasty, 1997; Maass & Arcuri, 1996; van Dijk, 1987). As a consequence, stereotypes are transmitted anew to others. Throughout this literature, commu-

nication processes have been cast as a mechanism through which preexisting stereotypic beliefs are perpetuated and become consensual. The present results reveal that communication processes also are instrumental in guiding the content of new stereotypes as they form. These results suggest that to answer the question of why stereotypes have the contents that they do, we should examine what people talk about when they discuss groups and group members.

This begs a further question: Why do people talk about what they talk about? A variety of individual-level cognitions, motives, and goals may influence the manner in which people converse about groups and group members. For instance, previous research has shown that cognitions and goals associated with social categorization influence communication about groups (e.g., Harasty, 1997; Maass & Arcuri, 1996). The obvious implication is that individual-level tendencies toward ingroup favoritism are likely to become more exaggerated and consensually shared as a result of interpersonal communication. Although goals associated with social categorization may exert particularly powerful effects on group-relevant communications, they are not the only social goals that influence the contents of these communications. The present investigation tested and supported the hypothesis that individuals' impression-management goals influence group-relevant communication, and consequently play an important role in determining the contents of emerging group stereotypes.

To our knowledge, this is the first investigation to demonstrate the indirect effect of impression-management goals on stereotype formation. Of course, there are certain limitations to the manner in which we addressed the impression-management hypothesis in Experiments 2 and 3. We assumed participants would desire to make a positive impression on their interaction partner, and so we manipulated beliefs relevant to the means through which a positive impression might be crafted. In the absence of any direct measure of impression-management motives, however, we must entertain the possibility that some other cognitions might have affected the contents of communication and the consequent effects on stereotype content. We have articulated the hypothesis in terms of strategic self-serving communication, but it is possible that the effects on communication were not strategic at all. It is plausible that our manipulation of communication beliefs temporarily affected participants' self-concepts (Kunda & Santioso, 1989) and that participants simply communicated with each other in a manner consistent with their self-concepts. Furthermore, even if we assume some strategic impression-management, it is not clear whether participants are most interested in presenting a positive impres-

sion to their interaction partner, to themselves, or to both (Tesser & Paulhus, 1983). There may also be boundaries on the social contexts within which the observed effects emerge. It seems plausible that impression-management concerns might interact with social identity motives; the effects documented here may vary depending on the desired affiliation with a communication partner, and on the partner's affiliation with a group about which communication is taking place. Additional research would be necessary to address these and other unanswered questions about the influence of impression-management motives on stereotype content.

Regardless of the exact nature of the individual-level goals precipitated by the manipulation, the results reveal that these goals influenced stereotype content indirectly, as a result of the implicit social influence that occurs through communication.

The theoretical framework underlying the present studies is not specific to the operation of impression-management motives; the framework addresses more generally effects of individual-level psychological variables on interpersonal communication and the consequent effects on shared beliefs. The result with the greatest conceptual implication is that an individual-level variable that was phenomenologically unrelated to intergroup perception nonetheless exerted an influence in defining the contents of group stereotypes. The different stereotypes that emerged under different conditions seem to have emerged unintentionally—not as direct consequences of motives relevant to intergroup perceptions, but as a result of other psychological variables operating within the dynamic processes of interpersonal communication. The specific contents of these stereotypes can be thought of as something of a predictable accident.

The important role of interpersonal communication suggests some similarities between the process examined here and other processes involving interpersonal communication (all of which might be located under the broad social-evolutionary meta-theoretical umbrella). For instance, there are some superficial similarities to the processes of group polarization (e.g., Brauer et al., 1995). However, there are some fundamental differences as well. Group polarization research generally addresses the question, "Given that individuals have formed beliefs of some specific content, what happens when they communicate with each other?" The studies reported here address the conceptually distinct question, "Given that individuals communicate with each other, what determines the specific contents of the beliefs that they form?" There are also similarities to investigations into the emergence of attitudinal clustering and/or consensus (Crandall, 1988; Haslam, 1997; Latané, 1996; Ruscher et al., 1996; Sherif, 1936). How-

ever, again, the fundamental question here is distinct: Rather than asking what processes and variables ultimately influence patterns of consensus that emerge over time, our primary conceptual focus has been on content. Thus, we suggest that the present studies extend the range of phenomena explained by dual considerations of individual goals and interpersonal communication. Not only do individual-level and interpersonal-level processes conspire to influence the extremity, consensus, and clustering of beliefs, they also conspire to determine the very contents of those beliefs as they form.

This broader perspective highlights the potential value of a social-evolutionary perspective toward answering questions concerning the emergence of the many consensually shared beliefs and norms that define a culture. Sperber (1990) wrote that "culture is the precipitate of cognition and communication in a human population" (p. 42). The results reported here revealed support for novel predictions about stereotype content that emerged from a dual consideration of individual psychology and interpersonal communication. The same sort of analysis might be applied to other cultural beliefs, and may allow us to predict better the contents of those structures that do precipitate from the interaction of cognition and communication. In general, we might better understand the origins of culture if we assumed a social-evolutionary process—and explored fully its consequences.

## NOTES

1. Following the completion of these free-response measures of stereotypes, participants in this and the ensuing two experiments also completed a set of trait-rating scales in which they rated each group on a set of presented adjectives. Included in this set were specific focal adjectives (aggressive and smart in Experiments 1 and 3, and aggressive and creative in Experiment 2). Conceptually, these trait ratings are distinct from free-response measures. Trait ratings reflect judgments about groups but are insensitive to the strength of associative links between group labels and traits in individuals' cognitive structures. For this reason, they are probably less valid as indicators of actual stereotypes (Ford & Stangor, 1992). Consistent with this conceptual framework and with previous research on stereotype formation (Ford & Stangor, 1992), all three experiments revealed that trait ratings were relatively insensitive to the effects of the experimental manipulations. We do not discuss results on these measures further.

2. For each dependent measure that was based on content coding, reliability was assessed through a procedure in which second raters coded subsamples of adjectives, sentences, and notes. On a sample of 80 adjectives, there was 100% interrater agreement on judgments of aggressiveness- and intelligence-related content. On a sample of 73 sentences, interrater agreement exceeded 97% on each judgment. On a sample of 64 notes, interrater agreement exceeded 88% on each judgment; and on a sample of 80 notes, the correlation between the two ratings of general positivity was $r = .91$.

3. Reliability of these codings was assessed through a procedure in which a second rater coded subsamples of adjectives and sentence descriptions. On a sample of 90 adjectives, interrater agreement exceeded 91% on each content-related judgment. On a sample of 76 sentences, interrater agreement exceeded 97% on each judgment.

4. Reliability of these codings was assessed through a procedure in which a second rater coded a subsample of 90 notes. Interrater agree-

ment exceeded 96% on each judgment about aggressiveness- and creativeness-relevant content, and the correlation between the two ratings of general positivity was $r = .80$.

5. An experimenter's error was the cause of the especially high number of participants in the Write-Only condition. Because of these unequal cell sizes, we were especially attentive to violation of the homogeneity of variance assumption when conducting statistical analyses on the results. Generally, no problematic violations of this assumption occurred—and when violations did occur, the effect was such that the nominal results of inferential analyses were conservative (see Note 7). We were also concerned that the experimenter responsible for the assignment error might have made other undetected errors in conducting experimental sessions, and so we did separate analyses on the data with this experimenter's sessions excluded. Reassuringly, the patterns of results were the same as those from the full sample reported in the Results section.

6. For each dependent measure that was based on content coding, reliability was assessed through a procedure in which second raters coded subsamples of adjectives, sentences, and notes. On a sample of 80 adjectives, interrater agreement exceeded 89% on each content-related judgment. On a sample of 80 sentences, interrater agreement exceeded 93% on each judgment. On a sample of 80 notes, interrater agreement exceeded 96% on intelligence-related and aggressiveness-related content, and the correlation between the two ratings of general positivity was $r = .79$.

7. In fact, because there was a positive relation between sample size and variance within the experimental conditions, this nominal $p$ value actually overestimates the true likelihood that the differences resulted from sampling error. A quasi-$t$ test based on separate variance estimates reveals that the true likelihood that sampling error alone accounted for this difference is $p = .051$.

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