

Self-Categorization as a Social Process

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Categorical context, including relevant comparison dimensions, a group's position on those dimensions, and the selection of an outgroup with which to compare one's own group, is important for the categorization process as described by self-categorization and social identity theories. However, despite evidence that talk is important in the formation of a group identity and the theoretical importance of sharing a categorical context, little work has been done regarding how groups come to develop and share knowledge of this context. The verbal interactions of 46 three-person groups were recorded and analyzed to test hypothesized positive correlations among group members' talk about categorical context, their subsequent agreement about the group's prototype, identification with the group, and displays of ingroup biases. The lack of support for the hypothesized relationships and the possible implications of these results for self-categorization and social identity theory are also discussed.

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Self-Categorization as a Social Process in Small Groups

Social identity theory ([Tajfel, 1982](#)) and self-categorization theory ([Turner, Hogg, Oakes, Reicher, & Wetherell, 1987](#)) have been very influential in social psychology (see [Hogg, 2001](#); [Reicher & Hopkins, 1996](#); & [Terry, Hogg, & White, 2000](#)). Both theories propose that an individual's self-concept depends in part on the groups to which he or she belongs (e.g. [Hogg & Abrams, 1988](#); [Tajfel, 1982](#); [Turner et al., 1987](#)). These groups can range from small, face-to-face interactive groups, such as sports teams or work groups, to larger social categories, such as gender or nationality. Most research on social identity, however, has focused on the latter kinds of groups; social identity and self-categorization in small groups have been largely neglected. Hogg ([1996, 2001](#)) argues that this neglect has been detrimental both to theorizing about social identity and to research on groups.

Most research on social identity has also focused on situations in which the ingroup and outgroups are very clear to participants (see [Reicher & Hopkins, 1996](#)). Knowledge of the social context, including relevant comparison dimensions, the ingroup's position on those dimensions, and the selection of an outgroup with which to compare the ingroup on those dimensions, is vital to the categorization process, but the issue of how such knowledge is acquired has been ignored. Group boundaries are often discussed as though they are obvious, so that categorization becomes a simple, almost automatic process that people can carry out on their own. This view of categorization, as an individual cognitive process, ignores the fact that categorization is often an interactive social process. In fact, social identity and categorization can be seen as forms of socially shared cognition that require interaction (see [Haslam, Turner, Oakes, McGarty, & Reynolds, 1998](#); [Hinsz, Tindale, & Vollrath, 1997](#); [Larson & Christensen, 1993](#); [Resnick,](#)

[Levine, & Teasley, 1991](#); [Thompson & Fine, 1999](#)). Without collaboration, categorization could be very difficult.

I will first provide a brief overview of social identity theory and self-categorization theory, then review research suggesting that self-categorization often involves social interaction, and finally discuss an experiment that examined the processes by which small groups form prototypes and the relationship between such prototypes and group behavior.

Self-Categorization

Self-categorization theory ([Turner et al., 1987](#)) is an outgrowth of Tajfel and Turner's ([1979](#)) theory of social identity. Social identity theory identifies three processes through which group membership can play a role in the self-concept. The first process is categorization. Categorizing objects and people allows people to make sense of the world and plan effective action (e.g. [Bruner, 1957](#), [Doise, 1978](#), [Hogg, 2001](#)). For example, categorizing people clarifies the boundaries between groups and thus guides social behavior. The second process is social identity. Social categorization orients an individual and defines his or her place in the social world. The piece of someone's self-concept that is derived from the knowledge of his or her membership in a social category combined with the emotional significance of that membership becomes that person's social identity ([Tajfel, 1978](#)). The third process is social comparison. Social identity theory assumes that people need to view themselves positively in relation to others, so they use social comparison to determine whether their group is better or worse than other groups. If it is not, their social identity can be improved in any of several ways, including social mobility (i.e. moving to another, better group), social competition (e.g. trying to become better than another group), and social creativity (e.g. finding new outgroups for social comparison that are worse than the person's own group).

Self-categorization theory ([Turner et al., 1987](#)) also emphasizes the importance of social identity, but goes on to elaborate the categorization process. Categorization is based on the accessibility of a given category and the ‘fit’ between that category and reality (do the known properties of that category match social or sensory input?). Categorization also involves the principle of meta-contrast -- the maximization of similarities within categories and differences between categories. For example, if a person is categorizing at the individual level, then he or she will focus on those qualities that distinguish one individual from another, but if categorization is at the group level, then the most salient qualities will be those that distinguish one group from another.

When categorization occurs at the group level, it leads to the formation of a prototype that embodies the “typical” group member. The qualities that comprise this prototype maximize similarities within the ingroup and the outgroup, as well as differences between the ingroup and the outgroup ([Turner, 1985](#); [Turner et al., 1987](#)). Categorization thus leads to a perceptual homogenization of both ingroups and outgroups, centered around their respective prototypes (e.g. [Taylor, Fiske, Etcoff, & Ruderman, 1978](#)). So, when people categorize at the group level, they see the world not as a collection of unique individuals, but as sets of people who match relevant group prototypes to varying degrees (see [Hogg, 2001](#)). This creates a kind of “depersonalization,” in which members become interchangeable exemplars of their groups. Group prototypes and depersonalization are the basis for all group behavior, including intergroup biases, according to self-categorization theorists.

All of this is not restricted, however, to the perception of others. Just as people categorize and depersonalize others based on their group memberships, they also categorize and depersonalize themselves ([Turner et al., 1987](#); [Turner & Oakes, 1989](#)). As a result, people see in

themselves the qualities that they share with other ingroup members and that distinguish them from outgroup members (see [Hogg, 2001](#)). A person's self-concept may thus reflect the prototypes of whatever groups are salient to him or her at a given time.

As Hogg reminds us, "Groups exist by virtue of there being outgroups." ([2001](#), p.56). Essential to the principle of meta-contrast is the existence of one or more outgroups with which to contrast the ingroup. Although some new research suggests that intragroup processes alone may be enough for group formation and ingroup bias ([Gaertner, Iuzzini, Witt, & Guerrero, 2006](#)), most of the research in this area supports the idea that outgroups are very important to group processes and behaviors. For example, Voci ([2006](#)) found that depersonalization and ingroup bias only occurred when the existence of an outgroup was made salient to group members (high accessibility). Although participants were explicitly asked to consider intragroup issues (i.e. to indicate prototypical behaviors of members of their own organization), group identification and behaviors were not triggered without mention of an outgroup.

Other research has shown that the group prototype depends on whatever outgroup(s) people compare their own group to in a specific context (e.g. [Doosje, Haslam, Spears, Oakes, & Koomen, 1998](#)). Changes in the categorical context necessarily change a group's prototype, and thus alter the self-concepts of group members. As noted earlier, the categorical context includes the choice of relevant comparison dimensions, the position of the ingroup on these dimensions, and the selection of an outgroup with which to compare ([Reicher & Hopkins, 1996](#)). Interdependence between the categorical context and the group prototype is an important aspect of self-categorization. Yet in most self-categorization research, an experimenter stipulates the categorical context for participants and then studies its effects on their self-concepts and intergroup behavior (see [Reicher & Hopkins, 1996](#)).

For example, a common method for studying social identity and ingroup/outgroup biases is the minimal group paradigm (e.g. [Brewer, 1979](#); [Makimura & Yamagishi, 2003](#); [Nesdale & Flessner, 1991](#); [Tajfel, 1970](#); [Tajfel, Billig, Bundy, & Flament, 1971](#); also see [Rabbie & Schot, 1990](#); [Tajfel, 1982](#) for reviews). In this paradigm, participants are assigned to “groups” using novel and meaningless criteria (e.g. whether they prefer the abstract painter Klee or Kandinsky, or what color poker chip they draw). These groups have no history of prior interactions, nor is any interaction allowed within or between groups during the experiment. Once the groups have been created, participants are asked to distribute rewards or punishments to one another (but not to themselves) based solely on their knowledge of group memberships. The fact that ingroup bias is seen even in these “minimal” groups reveals the strength of that bias.

Although this paradigm is valuable, it masks the natural categorization processes that occur in more realistic settings. The paradigm reveals nothing about the relationship between a group’s choice of a categorical context and the resulting group prototype and behavior. The entire categorical context, including the choice of relevant comparative dimensions, the group’s position on those dimensions, and the choice of outgroups, is stipulated for participants.

A few researchers have gone beyond Tajfel et al.’s ([1971](#)) classic minimal groups research by using a similar paradigm to examine the effects of intragroup interaction on ingroup bias (e.g. [Gaertner & Schopler, 1998](#); [Petersen, Dietz, & Frey, 2004](#)). For example, Petersen and his colleagues randomly assigned participants to three-person groups, supposedly based on their Klee or Kandinsky preferences. These groups then assigned rewards to other groups (not in their immediate three-person group) deciding either collectively (as an interacting group) or individually. The only information they had about these other groups was whether they preferred Klee or Kandinsky. The researchers found that interaction among group members

increased bias towards the superordinate ingroup. They attributed this to the fact that interaction and discussion increases the salience of category boundaries between ingroup and outgroup members and thereby enhances categorization processes. Though their paradigm encourages discussion and interaction, these researchers still did not analyze this interaction or examine how the categorical context formed.

Even in field research on natural groups, many aspects of the categorical context are often stipulated. When Hogg, Cooper-Shaw, & Holzworth ([1993](#)) measured group prototypes in work units, for example, they asked participants to think about the qualities that set their own work group apart from other work groups, thus indicating to participants what the relevant outgroups were. Although Hogg and his colleagues did not specify the comparative dimensions or ingroup positions on these dimensions, stipulating the relevant outgroups probably influenced the prototypes that participants developed. This experiment also failed to examine the process by which those prototypes were refined and shared. Other social identity and self-categorization researchers have also stipulated parts of the categorical context for participants (e.g. [Lord, Lepper, & Mackie, 1984](#); [Rijswijk & Ellemers, 2002](#); [Wenzel, Mummendey, Weber, & Waldzus, 2003](#)). In fact, all three components of that context are often stipulated (e.g. [Hinkle, Taylor, Fox-Cardamone, & Crook, 1989](#); [Jetten, Spears, & Manstead, 1997](#); [Marques & Paez, 1994](#)).

Researchers have traditionally ignored the processes by which groups choose and share a categorical context, even when they are explicitly interested in the role of comparative contexts in ingroup prototypes. For example, Doosje et al. ([1998](#)) specified one of two outgroups (physics or drama students) and a comparative dimension (scientific or artistic) for psychology students and measured how this affected their descriptions of the ingroup. In line with social identity and self-categorization theories, they found that changing either the relevant outgroup or

the relevant comparative dimension changed how people described their ingroup. This study is important because it demonstrates that large changes in a group prototype can occur depending on the categorical context, but it does not help us understand how a group chooses or communicates the context so that members can agree about a prototype.

Other researchers have also studied the effects of context on descriptions of the ingroup. Haslam, Oakes, Turner, and McGarty (1995) and Hopkins and Murdoch (1998) both used a “one-group/ two-group” paradigm to examine differences in group descriptions based on whether or not an outgroup was stipulated. In the Haslam et al. experiment, Australian participants were asked to describe either Australians (the ingroup) or Americans (the outgroup). In the ‘one-group’ condition, only one group was mentioned. In the ‘two-group’ condition, participants were explicitly asked to describe one group in comparison to the other. Hopkins and Murdoch (1998) used a similar procedure, stipulating the British as the ingroup and Americans as the outgroup. In both experiments, descriptions of the outgroup were similar in the ‘one-group’ and ‘two-group’ conditions. However, descriptions of the ingroup changed dramatically from one condition to the other, underscoring the importance of the context. Hopkins and Murdoch also found that there was significantly greater agreement among participants’ descriptions of the ingroup in the ‘two-group’ condition than in the ‘one-group’ condition. This suggests that greater agreement among group members regarding the categorical context leads to greater agreement about the group’s prototype.

Such research begs several questions. How is the categorical context determined when it is not stipulated? How do group members develop a shared prototype? How much do they agree about their outgroup(s)? In experimental groups, the context can be specified, but what processes are taking place in real groups?

Self-Categorization as a Social Process

A few researchers have at least acknowledged the role and effects of social interaction in categorization and its effects. One important assumption of self-categorization theory is that *shared* membership in a social category is what influences our thoughts, feelings, and behavior ([Turner, 1987](#); see also [Turner & Oakes, 1989](#)). When people perceive that they share membership in a group, they also expect to agree with each other on issues relevant to that group. Haslam et al. ([1998](#)) argued that this expectation should motivate people to actively seek such agreement. Relevant efforts include specifying frames of reference, identifying shared beliefs, and exchanging information about interpersonal similarities and differences. As Haslam, Turner, Oakes, Reynolds, and Doosje ([2002](#)) noted, stereotypes (even stereotypes of an ingroup) are collective achievements.

If group members are indeed motivated to agree about identity-related issues, then seeking such agreement should be one of the first activities to occur in a newly-formed group. Some models of group development indeed claim that establishing a group identity is the first task that group members tackle. For example, Worchel's ([1998](#)) dynamic model of group development includes (in order) stages of group identity, group productivity, individuation, and decay. The identity stage involves defining group boundaries, locating the group in relation to other groups, and understanding relationships among group members. Norms are established, group boundaries are set, and relations with outgroups may become strained. The goal is to strengthen group members' social identity and weaken their personal identities (cf. Kanter, 1968).

In one study exploring this model, Worchel and his colleagues ([Worchel, Coutant-Sassic, & Wong, 1993](#); see also [Worchel, 1998](#)) examined the conversations of small laboratory groups

that met together over several sessions to work on various creative tasks. They found that group members indeed spent the early portion of their time together getting acquainted, exploring similarities in backgrounds and interests, establishing norms and roles, discussing how their group was unique, and agreeing to perform better than other groups in the study. This discussion, or talk, was important in establishing and sharing identity. However, Worchel did not study group prototypes or how they emerged, nor did he examine the relationship between identity talk and later measures of group behavior.

Talk about identity issues may be one of the most important social processes in groups. Several researchers have studied talk among the members of natural groups about their social identity. For example, Lyon ([1974](#)), a sociologist, described life in a small, avant-garde theater company. Company members often discussed what made them different from other theater groups, what constituted ‘true membership’ in the group, and what types of plays their group should perform to reflect its identity. This kind of talk helped to clarify the group prototype for incoming members, and justified to current members the sacrifices (e.g., little or no pay) they had to make because of limited resources.

Other work in sociology also provides evidence for the importance of communication in establishing group identity. For example, Hunt and Benford ([1994](#)) conducted qualitative, ethnographic studies of talk among political activists. Their goal was to illustrate how personal and collective identities were formed and reinforced through ‘identity talk’ in the stories told by group members. Six types of stories were told, namely 1) associational declarations, 2) disillusionment anecdotes, 3) atrocity tales, 4) ‘personal is political’ reports, 5) guide narratives, and 6) war stories. Although Hunt and Benford did not analyze these stories in terms of ingroups and outgroups, self-categorization, or prototypes, many of their examples of identity talk seemed

to involve categorical contexts. Associational declarations, for example, often contained references to what a group was not (usually in reference to a specific outgroup), as well as what it was. Relevant dimensions of comparison and ingroup positions on those dimensions were also discussed. The other types of stories contained categorical elements as well. For example, atrocity tales involved villains and victims, who were described in ways that led the audience to identify with the victims (the ingroup) and reject the villains (the outgroup).

Within social psychology, talk and language have also been viewed as factors in social identity. For example, Maass, Salvi, Arcuri, and Semin ([1989](#)) showed that people use more abstract language to talk about favorable ingroup and unfavorable outgroup behaviors, and more concrete language to talk about unfavorable ingroup and favorable outgroup behaviors. This pattern of speech is called the linguistic intergroup bias. And in communications, discourse analysis (see [Potter & Wetherell, 1987](#)) has also been used to reveal how language can produce positive self-images through blame and mitigation and how individuals talk about themselves in relation to others (see [Reicher & Hopkins, 1996](#)). Condor ([2006](#)) used discourse analysis to explore the use of prejudiced talk about outgroups as a socially shared (rather than an individual cognitive) process. Until recently, however, there have been few discourse analyses of categorical processes. Even less attention has been paid to the role of discourse in self-categorization.

One exception is some work by Reicher and Hopkins ([1996](#)), who studied a speech given to a group of medical students by an anti-abortion advocate. Because the categorical context is so important, they hypothesized that the speaker would pay particular attention to a) defining the ingroup to include himself, b) defining ingroup boundaries broadly enough to include most or all of the audience, and c) defining the proposed actions as prototypical of the group. Reicher and

Hopkins then analyzed the speech for material that seemed to (re)define category boundaries. The speaker accomplished this by categorizing the medical profession (the audience) and himself as a single group of caring, principled, professionals (the ingroup), in contrast to selfish, unprincipled mercenaries (the outgroup). Interestingly, this grouping contradicts the traditional cultural categorization (in Britain) of doctors who provide abortions as people concerned with the well-being of women, and of anti-abortionists as dogmatic religious fanatics.

Although this study was intriguing, it did not reveal whether the speaker achieved his apparent goals, or whether the doctors in his audience indeed adopted the categorization context suggested by the speaker. As Condor ([2006](#)) points out, many social psychologists treat rhetoric and dialogue as nearly synonymous, even though they can function in very different ways. Rhetorical attempts at category transformation may be resisted. All of the members of a group must agree on a categorical context for a shared group prototype to exist. Using rhetoric to alter the comparative context may or may not accomplish that goal.

My Research

At the heart of self-categorization theory is the idea of a shared group prototype, which depends on a particular categorical context. Talk among group members about identity can shape that context, but this process has seldom been studied. My special contribution to this area will be to examine the social processes involved in determining the categorical context for groups and the subsequent formation of group prototypes. An experiment to test several hypotheses suggested by self-categorization theory and research on talk and identity was thus performed.

Because a categorical context is so important in determining group identity, and because a shared identity is what makes group behavior possible, establishing a categorical context should be a high priority for every group. Thus, my first hypothesis was that:

- 1) Without intervention from an experimenter, group members will develop their own categorical context that includes dimensions of comparison, the group's positions on those dimensions, and a comparative outgroup or outgroups.

In natural groups, interaction (especially talk) contributes to social identification through the development of a categorical context (e.g. [Hunt & Benford 1994](#); [Maass, et al., 1989](#); [Reicher & Hopkins, 1996](#)). In task-focused, zero-history laboratory groups, however, talk may be constrained to task issues ([Scheerhorn, Geist, & Teboul, 1994](#)). Groups that have time to talk without being distracted by a task may thus be even more likely to consider and discuss their own categorical context. This led to my second hypothesis:

- 2) Groups that are given time to talk before working on a task will discuss their categorical context more extensively than groups that must immediately start work on the task

As outlined in self-categorization theory ([Turner et al., 1987](#)), a group's prototype arises through social comparison processes, guided by the principle of meta-contrast. This suggests that greater agreement among group members about the categorical context will lead to greater agreement about the group's prototype. Groups whose members talk more about the categorical context should thus display greater agreement about their prototypes.

- 3) More discussion of the categorical context will be associated with greater agreement among group members about their prototype.

A final hypothesis is based on research showing that people who identify more strongly with their groups display greater ingroup/outgroup biases (e.g. [Hinkle et al., 1989](#); [Tajfel et al., 1971](#)). Strong identification requires a clear prototype. This suggests that groups with greater prototype agreement will be more biased.

- 4) Greater agreement about a group prototype will be positively correlated with ingroup/outgroup biases.

Methods

Participants

Participants were 144 (82 male, 62 female) students from Introduction to Psychology classes at the University of Pittsburgh. In exchange for their participation, these students received credit towards a course research experience requirement. Participants were tested in 48 groups, each composed of three unacquainted persons. The first eleven groups were run as a pilot study. Because there were no meaningful changes to the procedure and no significant differences between these groups and the additional groups, all of the data were combined for the final analyses. One group's data were lost due to an equipment malfunction and another group's data were excluded due to their failure to follow instructions. The final sample thus contained 46 groups. Participants were randomly assigned to groups and groups were randomly assigned to conditions.

Materials and Equipment

The groups designed posters using Microsoft PowerPoint™ software on a Dell desktop computer with a 15" flat-screen monitor. Digital video recordings of group interaction were made (with all participants' permission) using a LogiTech QuickCam cordless webcam mounted

on the wall near the computer. Each recording was later edited into segments (free talk and working on the posters) using Microsoft MovieMaker™ software.

Procedure

As the three members of each group arrived at the laboratory's waiting room, they were seated and asked not to interact with anyone there. Once everyone arrived, they were taken to a laboratory room and told that the purpose of the experiment was to study group processes. Each group was told that it would use a computer to design a poster promoting responsible drinking behaviors. Participants were informed that a “tips” sheet for performing common operations in PowerPoint™ would be provided when the group actually began to work on its poster, that an independent panel of judges would evaluate the poster, and that members of the groups with the two best posters would receive a cash prize of \$10.00 per person.

Each group was then assigned to one of two conditions. In the Task-plus condition, group members were given 20 minutes to talk before the task began. They were told to discuss anything that they liked, but not to begin working on the task until the 20 minutes ended. In the Task-only (control) condition, group members began the task immediately. This manipulation was designed to test Hypothesis 2, that groups given time to talk without distraction would discuss the categorical context more than groups that were not given such time. All groups had 40 minutes to complete their posters. All group interaction, including the 20-minute free-talk segments, was recorded.

After completing its poster, each group was given up to 10 minutes to choose 10 qualities that best described its prototype. Specifically, each group was asked to choose the words that ‘best capture your group’s core identity or best describe what it means to be a member of this group.’ These qualities were chosen from a list of the 200 trait adjectives ([see Appendix A](#))

rated as most meaningful by Anderson's (1968) college sample. Each word was also rated by Anderson's sample on a positivity scale that ranged from 0 (*extremely unfavorable*) to 6 (*extremely favorable*). The average positivity rating for all 200 of the words shown to participants was 2.89 and the list included both favorable and unfavorable words. The amount of time the group took to complete this task was used to measure the clarity of its prototype. Groups whose prototypes were clearer should have completed the task more quickly. This measure of prototype clarity was used to test Hypotheses 3 and 4. A positivity score was also calculated for each group by averaging the ratings for the 10 prototype descriptor words chosen by that group, with higher scores indicating more ingroup bias. (Hypothesis 4).

Each person then wrote down all 10 words selected by the group, and was taken to a separate table. Working independently, he or she was asked to rank the words by putting a "1" by the word that best described the group's identity, a "2" by the next most descriptive word, and so on. A rank order correlation was later computed between every possible pair of group members. The average of the Fischer's r to z transformed correlations within each group served as a measure of prototype agreement among group members. This provided another way to test Hypotheses 3 and 4.

After all group members finished their rankings, each person was given up to 20 minutes to complete a questionnaire (see Appendix B) that assessed the three components of categorical context described earlier. The questions were designed to capture what each group member viewed as relevant comparative dimensions, the group's positions on those dimensions, and the relevant outgroup(s) for comparative purposes. Agreement among participants' responses constituted another measure of prototype agreement (Hypothesis 3). Because so many studies have shown a link between group identification and ingroup bias (e.g., see Brown, 2000), the

questionnaire also included Hinkle, Taylor, Fox-Cardamone, & Crook's (1989) nine-item scale of group identification.

After completing their questionnaires, group members were brought back to their original positions around the computer. There they viewed a slide show of three posters made by other groups in the experiment, along with their own poster. The comparison posters were chosen from a group of 11 posters created during pilot testing (comparison posters for the 11 pilot groups were created by the experimenter). The choice of comparison posters was based on ratings made by four psychology graduate students. These students, working independently, gave each poster ratings on four dimensions (creativity, artistic merit, clarity of message, and effectiveness) using scales that ranged from 1 (*poor*) to 10 (*excellent*). Each judge also assigned an overall rating to each poster on the same scale. Ratings on the four dimensions were meant to ensure that every judge's overall ratings would be based on the same criteria. The three posters in the middle of the distribution of overall ratings were chosen as comparison posters.

Working independently, participants were asked to rate all four posters on the four dimensions just named, and then to give each poster an overall rating on a scale from 1 (*poor*) to 10 (*excellent*). Each person's ratings (on the overall measure) of the three outgroup posters were averaged to form an outgroup score. Ingroup and outgroup scores were then averaged across group members and the difference (ingroup – outgroup) between these numbers was computed as a group measure of 'simple bias', with higher scores indicating greater ingroup bias.

At the end of the experiment, participants were debriefed and asked what they suspected the true purpose of the study was. None suspected that it had anything to do with their discussion of other groups (most suspected that I was studying leadership or gender relations).

Participants were informed of the true purpose of the study and asked to provide an email contact so that they could be notified if their poster was selected as a prize-winner.

The same graduate students who rated the pilot posters also rated each group's own poster. A measure of the four judges' interrater reliability was calculated by computing an intraclass correlation among their ratings. Their ratings were significantly correlated, $r=0.58$, $p<.01$. The ratings were thus averaged and used as an independent measure of a poster's "real" quality. That number was then subtracted from the group's rating of its own poster to create another measure of ingroup bias ('aggrandizement'), with higher scores indicating greater bias. The simple bias and aggrandizement measures were used to test Hypothesis 4.

The average of the judges' ratings was also used as the basis for awarding the cash prizes for the top poster in each condition. The members of the winning groups were notified and five of the six winners had checks mailed to them (the sixth failed to respond).

Coding

Two coders (the experimenter and a person who was blind to both the experimental hypotheses and to the conditions from which the materials that she coded were drawn), evaluated the 40-minute segment of each video recording that showed the group working on its poster. The coders looked for evidence of talk describing comparative dimensions, making claims about the group's position on those dimensions, and naming an outgroup or outgroups ([see Appendix C](#) for the full coding scheme). Counts of statements reflecting these three dimensions of comparative context were used in testing Hypotheses 1, 2, and 3.

The blind coder was trained using video recordings of the pilot sessions. After the different kinds of identity talk were explained to her, she and the experimenter separately evaluated five of the 10 recordings (one pilot group was dropped for failure to follow

instructions). The coders discussed any differences in their counts, to refine their understanding of the coding scheme. Then they recoded those five recordings and coded the remaining six recordings. A measure of the coders' reliability was calculated by computing a series of intraclass correlations involving their coding of the three main measures. Outgroups [$r=.98$, $p<.01$], comparative dimensions [$r=.87$, $p<.01$], and the group's position on those dimensions [$r=.81$, $p<.01$] showed significant correlations. The blind coder then evaluated the remaining video recordings.

A different coder, also blind to the hypotheses, was trained in the same coding system. She coded the 20-minute segments of groups in the Task-plus condition. Recordings from the six groups in the pilot study that were in the Task-plus condition were used for the purposes of training and establishing reliability with the experimenter (Intraclass correlations for mentions of outgroups, comparative dimensions, and group positions were $r=.88$, $r=.86$, and $r=.80$ respectively, $p<.01$).

The second coder also evaluated agreement among group members' responses to the open-ended questions on the questionnaire. These questions asked participants to list what it meant to be a member of the group (prototype agreement), how they were different from other people and other groups (comparative qualities), and what groups they would use as comparison targets for their group. The coder rated all three group members' responses to each question on a scale that ranged from 1 (*high disagreement*) to 5 (*high agreement*). See [Appendix D](#) for the full coding scheme.

Results

Response Interdependence

Most measures, including which prototype descriptors each group chose and how much time each group took to choose those descriptors, were collected at the group level, with group members making joint responses. However, measures of group identification and ingroup bias were collected at the individual level. It was therefore important to establish whether there was significant interdependence among the responses of individual group members before treating group averages as single data points. Following Kenny and Judd (1986; see also Kenny, Mannetti, Pierro, Livi, and Kashy, 2002) a series of one-way ANOVAs was conducted using group membership as the independent variable and each individual's scores or ratings as the dependent variables. The mean squares from these ANOVAs were used to calculate an intraclass correlation for each measure.

For the group identification scale, the intraclass correlation was significant, ($r=.027$, $p<.05$). For the ingroup bias measures that involved participants ratings of their own and others posters, the intraclass correlations for the first comparison poster, $r=.033$, $p<.05$, the second comparison poster, $r=.015$, $p<.05$, and each groups' own poster, $r=.030$, $p<.05$, were significant. The intraclass correlation for the third comparison poster, however, was not, $r=-.003$, $p>.05$. Because there was evidence of response interdependence on group identification and nearly all of the poster ratings, these scores were averaged and analyzed at a group level in every case.

Hypothesis 1

The first hypothesis was that group members would propose a categorical context that included dimensions of comparison, the group's positions on those dimensions, and a comparative outgroup or outgroups, all without intervention from the experimenter. To test this,

a series of one sample *t*-tests (comparing the means with zero) was conducted using counts of how often outgroups, comparative dimensions, and a group's position on those dimensions were mentioned.¹

Evidence for Hypothesis 1 was weak. Groups in the Task-plus condition did mention outgroups in the 20-minute free-talk sessions [$M=4.0$, $SD=2.76$, $t(20)=6.69$, $p<.01$]. However, no groups mentioned comparative dimensions or their group's position on those dimensions in that session. Regardless of condition, groups also mentioned outgroups [$M=3.68$, $SD=3.48$, $t(43)=7.01$, $p<.01$] and comparative dimensions ($M=.43$, $SD=1.24$) during the 40-minute poster-making sessions [$t(43)=2.3$, $p<.05$]. But group positions on these dimensions were rarely mentioned [$M=1.66$, $SD=9.69$, $t(43)=1.35$, $p>.05$]. Talk about one aspect of the categorical context did not seem to increase talk about another. There were no significant correlations among any of these measures of categorical context in either the 20-minute, 40-minute, or total combined sessions.

Hypothesis 2

Hypothesis 2 was that groups given time to talk without distraction would discuss their categorical context more extensively. Not surprisingly, the total number of times groups mentioned outgroups during the entire course of the experiment was significantly higher for groups in the Task-plus condition ($M=7.86$, $SD=4.30$) than in the Task-only condition ($M=3.68$, $SD=3.99$), $t(41)=3.30$, $p<.01$. However, when comparing how often outgroups were mentioned divided by the total number of minutes available to a group for conversation (60 for groups in the Task-plus condition and 40 for groups in the Task-only condition), there was not a significant difference between the Task-plus ($M=.13$, $SD=.07$) and Task-only ($M=.09$, $SD=.09$) conditions [$t(41)=1.46$, $p>.05$], although the trend was in the predicted direction.

There was also no difference between the conditions in how often the groups discussed aspects of the comparative context during just the 40-minute poster making sessions. Groups in the Task-plus condition ($M=3.68$, $SD=2.98$) did not mention outgroups more often than did groups in the Task-only condition ($M=3.68$, $SD=3.99$), $t(42)=0$, $p>.05$. And there was no significant difference in the Task-plus ($M=.59$, $SD=1.70$) and the Task-only ($M=.27$, $SD=.46$) conditions in how often they mentioned comparative dimensions, $t(42)=.84$, $p>.05$. Finally, the number of times groups mentioned their own position on a comparative dimension did not differ significantly between the Task-plus ($M=2.90$, $SD=13.64$) and Task-only ($M=.41$, $SD=1.71$) conditions, $t(42)=.85$, $p>.05$.

Hypothesis 3

Hypothesis 3 was that more discussion of the categorical context would be positively correlated with greater prototype agreement. As explained earlier, one measure of prototype agreement was created by averaging the Fisher r -to- z ' transformed correlations between each possible pair of group members (ranking agreement). Across all groups, the average of these averaged z ' scores was .35 ($SD=.33$). This was then converted back to a regular correlation, namely $r=.34$ ($N=46$), $p<.05$. Prototype agreement was also measured by the total amount of time each group took to choose 10 prototype descriptor words (agreement time), with lower times indicating greater agreement. The average time it took each group to complete this task was 204.59 seconds ($SD=90.24$).

Other measures of prototype agreement were derived by coding participants' responses to the three open-ended questions on the questionnaire. These questions asked participants to list what it meant to be a member of the group (prototype agreement), how they were different from other people and other groups (comparative qualities), and what groups they would use as

comparison targets for their group. Because the average ratings of agreement scores on these three questions were not significantly correlated (see [Table 3](#)), they were considered separately and an overall average was not computed. A series of *t*-tests was conducted comparing the average agreement score on these three questionnaire measures with the neutral point (3.00) which was the code for no evidence of agreement or disagreement (see [Appendix D](#) for full coding scheme for these questions). For prototype agreement, the average was 3.45 (SD=.69), $t(44)=4.38, p<.01$. For comparative qualities, the average agreement score was 3.66 (SD=.78), $t(44)=5.64, p<.01$. Agreement about choice of comparison targets, however, was not significantly different from the neutral midpoint [$M=3.11, SD=.44, t(44)=1.70, p=.10$].

There were some interesting correlations among the different measures of agreement. The time it took groups to choose prototype descriptor words was significantly correlated with the questionnaire measures of prototype agreement ($r = -.33, p<.05$) and comparative qualities ($r = -.31, p<.05$), such that groups that took less time to choose descriptor words (indicating greater prototype clarity) showed more agreement in their responses to what it meant to be a member of their group and more agreement about how their group was different from other people and/or groups. And the prototype ranking agreement measure was significantly correlated with the questionnaire measures of comparative qualities agreement ($r = +.35, p<.05$) and comparison targets agreement ($r = +.37, p<.05$). This means that groups that had higher agreement in ranking the importance of their group's chosen descriptor words also had higher agreement in their response to the question about how they were different from other people and/or groups and higher agreement about what groups they would use as comparison targets for their group. See [Table 3](#) for these correlations.

Contrary to the hypothesis, however, discussion of the categorical context was not related to prototype agreement. Mentions of outgroups, comparative dimensions, and the group's position on those dimensions were not significantly correlated with any measure of agreement or prototype clarity for either the 20- or 40-minute sessions.

Hypothesis 4

Hypothesis 4 focused on ingroup bias. As described earlier, two measures of in-group bias were calculated, simple bias and aggrandizement. These measures were significantly correlated ($r = +.50, p < .01$). One-sample t -tests were conducted, comparing each measure against a value of zero, to test whether there was evidence of in-group bias in the poster ratings. Such evidence was found for both simple bias [$M = 1.24, SD = 1.36, t(43) = 6.04, p < .01$] and aggrandizement [$M = 1.88, SD = 1.20, t(43) = 10.33, p < .01$]. Another possible measure of ingroup bias is the average positivity of the prototype descriptor words chosen by each group. Group positivity scores ranged from 3.48 to 4.80 with a mean of 4.43 ($SD = .29$). A one-sample t -test showed that this mean was significantly greater than the average positivity score (2.89) of the words from which participants could choose, $t(43) = 35.52, p < .01$. However, this measure was not significantly correlated with any of the other measures of ingroup bias.

Given this evidence for ingroup bias, the next step was to look at possible predictors. Research in the social identity/self-categorization context has most often looked at group identification as a predictor of ingroup bias (see [Brown, 2000](#); [Hewstone, Rubin, & Willis, 2002](#)). The average of group members' scores on Hinkle et al.'s (1989) scale of group identification was computed to provide a group measure of ingroup identification. Group members tended to identify strongly with their groups, with a mean identification score of 7.03 ($SD = .82$) out of a possible high score of 9. Group identification was significantly positively

correlated with two measures of bias, namely aggrandizement ($r=.42, p<.01$) and positivity ($r=.49, p<.01$). It was not, however, significantly correlated with simple bias.

Group identification was also significantly and positively correlated with both comparative qualities agreement ($r=.43, p<.01$) and outgroup agreement ($r=.33, p<.05$), although not with any measures of agreement about the group's prototype itself (prototype ranking agreement, time taken to choose prototype words, or questionnaire prototype agreement). There was also no significant difference between Task-plus ($M=7.22, SD=.65$) and Task-only ($M=6.84, SD=.94$) conditions on the identification measure [$t(42)= 1.56, p=.13$].

As predicted in Hypothesis 4, there were significant positive correlations between aggrandizement and a group's agreement about what made them different from other groups ($r=.30, p<.05$) and also its agreement about comparison targets ($r=.34, p<.05$). There were not, however, significant correlations between any of the prototype agreement measures (prototype ranking agreement, time taken to choose prototype words, or questionnaire prototype agreement) and any of the bias measures. See [Tables 3](#) and [4](#) for all of correlations involving bias and group identification.

There were also no significant differences in simple bias scores between the Task-plus ($M=1.54, SD=1.55$) and Task-only ($M=.94, SD=1.1$) conditions, $t(42)= 1.46, p=.15$, although the trend was in the hypothesized direction. There was also no significant difference between the Task-plus ($M=2.16, SD=1.35$) and Task-only ($M=1.59, SD=1.1$) conditions in aggrandizement scores, $t(42)= 1.60, p=.12$, although the difference was again in the hypothesized direction. Group positivity scores also did not differ significantly between the Task-plus ($M=4.43, SD=.28$) and the Task-only ($M=4.44, SD=.31$) conditions, $t(42)=-.13, p>.05$.

Discussion

As predicted in Hypothesis 1, most groups did spontaneously mention outgroups in their conversations, during both the 40-minute and the 20-minute sessions. For example, over 75% of the groups either implicitly or explicitly mentioned the existence of the other groups participating in the experiment. They did not, however, discuss the full categorical context, including comparative dimensions and their own group's stance on those dimensions. Although Reicher and Hopkins (1996) emphasized the importance of all three of these elements, it is possible that the constraints of the experimental situation made such discussion unnecessary. It is possible that the comparative dimension and the group's position on that dimension (skill at poster-design, with the belief that the ingroup was better in that regard) were implied by the situation. The nature of the experiment, including the fact that the group was told that it was competing against other groups for cash prizes, may have made more than a brief mention of these outgroups by group members unnecessary. The experimenter's acknowledgement of their existence could have made these outgroups highly accessible and may have been all that was needed to establish the relevant outgroup, comparative dimension, and the groups' position on that dimension without extensive discussion by the group.

There are other factors that could make a particular categorical context accessible to group members without the need for discussion. For example, Oakes (1987) discusses the idea of 'chronic accessibility' - for some individuals, certain ingroup/outgroup characterizations are so familiar that they are always highly accessible and likely to be used. If several people with the same 'chronically accessible' categorizations came together, then they might automatically agree on a categorical context without the need for discussion or any other cues. Alternatively, situational salience could activate the same categorical context for group members. Because the

accessibility of a category depends on the current goals and objectives of the perceiver ([Oakes, 1987](#)), group members who are given the same goal may all focus on the same categorical context.

Hypothesis 2 had some support, in that groups given more time to talk did indeed mention the comparative context more often than did groups given less time to talk. However, the fact that any particular type of talk occurred more in groups that had more overall time to talk does not seem surprising. When discussion of categorical context was divided by how many minutes each group had for discussion, there was no difference between conditions. There was also no difference between conditions in the number of times that groups discussed their categorical context in just the 40-minute sessions. This suggests that the rate of discussion of outgroups was not necessarily affected by whether or not the group was actively engaged in the task, although the trends were in the predicted directions.

Hypothesis 3, that more discussion of the categorical context would be positively correlated with greater prototype agreement, was also not supported. There were no significant correlations between the amount of discussion of categorical context and any measure of prototype agreement. Again, it is possible that the experimental conditions made a relevant comparative outgroup and categorical context obvious to participants so that a strong group prototype could be developed without discussing the categorical context.

It is also possible that more discussion of the categorical context does lead to greater agreement about that context among group members, but that this agreement does not lead to greater agreement about the ingroup's prototype. This is not likely, however, given evidence that when a categorical context is stipulated (thus creating agreement), there is more agreement about the ingroup prototype (e.g. [Haslam et al., 1995](#); [Hopkins & Murdoch, 1998](#); [Voci, 2006](#)).

Hypothesis 4, that greater prototype agreement would be positively correlated with ingroup/outgroup biases, was not supported. As many researchers have found (see [Hewstone, Rubin, & Willis, 2002](#) for review), ingroup bias is common, and I found clear evidence of it as well. The strength of that bias, however, was not correlated with discussion of the categorical context or prototype agreement. However, groups that displayed greater agreement about who their target outgroups were, or about what made their group different from other people and groups, did have higher aggrandizement scores. So, agreement about these two facets of the comparative context does seem to be related to increased bias.

Hypothesis 4 was based on the notion that a clear prototype is required for ingroup identification, which is the basis for ingroup bias. But further reflection suggests that it may have been possible for each group member to have a strong, clear prototype without much agreement among group members about what that prototype was. Even if each person had a different idea about what it meant to be a group member, they might still have identified with the group and displayed ingroup bias. In fact, group identification as measured by the questionnaire was significantly correlated with bias (aggrandizement and positivity) and with agreement about comparison groups. Ingroup bias is often stronger in the presence of a highly accessible outgroup (e.g. [Voci, 2006](#)), and more agreement among group members about comparison groups and about qualities that set members of their group apart may indicate a more accessible outgroup, with or without discussion about who that outgroup is.

Although Voci ([2006](#)) found that ingroup bias was stronger when an outgroup was made highly accessible, metacontrast may be only one of several processes that can lead to increased ingroup bias. Gaertner et al. ([2006](#)) have shown that in laboratory groups, intragroup processes (e.g. awareness of common fate, attraction, cooperation, interaction, and increased entitativity)

can lead to higher levels of ingroup regard even when there is no explicit outgroup for comparison. Although it could be argued that laboratory experiments have inescapable comparison outgroups, the researchers took pains to rule out the explanation that group members were thinking about other groups.

Gaertner et al.'s (2006) findings suggest that proponents of social identity and self-categorization theories may be too strong in their statements that groups only “exist” when there are outgroups (e.g. Hogg, 2001; Turner et al., 1987). It is possible that the ingroup biases in my experiment were not correlated with the amount of talk about the comparative context because they were based on the same kinds of intragroup processes described by Gaertner et al., not intergroup processes. Future researchers will need to do more detailed analyses of both of these types of processes to determine how groups come to define themselves.

Although this experiment was a good first step in understanding the relationship between talk, categorical context, and prototype strength during group formation, it did have several limitations. One problem was the test of whether greater agreement among group members about the three components of categorical context is actually correlated with greater prototype agreement. This is assumed by self-categorization theory and the principle of meta-contrast, but it has not been explicitly tested in previous research. Although I measured group members' agreement about comparative targets and the qualities that made them different from other groups, these measures probably did not fully capture categorical context. The questions used for these measures (e.g. “What specific kinds of people or groups would you compare your group to?”) may have been unclear. Indeed, several participants expressed confusion during debriefing about what was expected of them (e.g. asking if I meant who the group was similar to or who the group was different than) in answering the open-ended questions, although these

concerns did not appear during pilot testing. Development of a valid and reliable measure of agreement about the categorical context, separate from discussion about it, is needed.

The other main limitation was the constrained nature of the participants' interactions. I had hoped that each group would discuss a variety of possible outgroups and that the resulting group prototypes would partially depend on how much agreement there was about those outgroups. As discussed earlier, however, giving each group a specific goal (to create a poster) and explicitly telling it about the existence of other groups, may have inadvertently made the entire categorical context as obvious as it has been in previous studies.

Maybe this shortcoming is inherent to laboratory research. By virtue of the voluntary sign-up system, participants know that there will be other groups in the same experiment (relevant outgroups). They also have expectations that the experimenter will tell them what to do and that these other groups will be doing the same or similar things (dimensions of comparison). If the task is performance-based, then the group's stance on these dimensions of comparison will probably be that it is more competent at the task than are other groups. It may be possible to have a group decide its own position or stance on dimensions of comparison in a laboratory setting by having an opinion-based task, but the other components of the categorical context are difficult to leave open.

One way to address this issue might be to conduct a series of field studies specifically looking at the same hypotheses. Studying real-world groups would make it possible to examine these hypotheses in an environment where the categorical context is not stipulated directly or indirectly by the experimenter. Although many types of groups could be studied, on-line virtual groups might be a good choice. This would ensure the capture of most of the communications amongst group members, eliminate the need for transcription, and remove communication

through non-verbal cues. Although there are differences between virtual groups and face-to-face groups, virtual groups and group members tend to engage in similar types of identity behaviors (see [McKenna & Green, 2002](#)).

A first step in such research would be to establish whether these groups do in fact talk about the categorical context while establishing their group identity. The coding scheme developed for the current study could be used to address this question. Coders would examine transcripts of the first few days of communication among group members, looking for evidence of any discussion about the categorical context.

Testing whether or not more discussion of this context is related to greater agreement about the group's prototype or with greater incidence of various behaviors related to group identity could be done by questionnaire. Each member of the group would be asked to respond to questions about what he or she believes to be the most relevant outgroup, what dimensions are important in comparing the two groups, and what each group's position is on those dimensions. The questionnaire would also include items assessing each member's ideas about the group's prototype, his or her identification with the group, and a measure of ingroup bias. Analyses would be similar to those conducted here.

If the results of this or similar studies support the hypotheses, then the next step would be to return to the laboratory under more controlled conditions to explore related questions. One important manipulation might be to encourage newly formed groups to explicitly discuss the categorical context. Would such encouragement actually lead to more talk about the categorical context? If so, then would the increase be enough to produce greater agreement among group members about that context? Would that, in turn, lead to greater agreement about the group

prototype? And would greater agreement about the prototype lead to greater identification with the group and/or an increase in ingroup bias?

Such a return to the laboratory, however, brings us back to the problem of inadvertently stipulating to the groups that the relevant outgroups are the other groups in the experiment, that performance on the task is the comparative dimension, and that the only stance they need to worry about is that they are more competent at the task than the other groups. This problem could be ameliorated by accepting that groups will compare themselves to other groups in the experiment and manipulating the task so that they need to choose which other group(s) will be their comparison targets. This could be done by presenting a more open-ended task, such as preparing a grant proposal. Groups could be asked to make a case for funds from a limited monetary pool to be given to the group's choice of any charity, research, school improvement fund, etc. To shift the focus from "those other groups" to specific groups as relevant outgroups, materials about fictitious "groups" and their proposals could be "accidentally" left in conspicuous places. The open-ended nature of the task, combined with information about several possible comparison groups, might be enough to increase the variability in the amount and kinds of talk that occurs, perhaps enough to see patterns and relationships.

Given the importance of social identity and self-categorization theory to the field of social psychology, it is important to continue to explore the categorical context and how groups come to know what that context is. But if Gaertner et al. ([2006](#)) are correct in their assertion that the principle of metacontrast is not crucial to group processes, it may be even more important to the field to continue this line of research. If future research demonstrates, as mine did, that groups do not discuss categorical context or agree about categorical context, but still have strong

group identification and behaviors, this could lend support to the challengers of self-categorization theory.

This research has been useful in several ways. Although I believe the laboratory setting may have hampered the natural social process of group identity formation, the attempt to examine these processes in an in-depth fashion suggests several future lines of study that combine traditional social cognition theories with the methodologies of sociology and small groups researchers. My development and implementation of a coding system for quantifying this type of talk could also aid future research in this area. Most importantly, it has been a first step in understanding the social, interactive processes that are important in group identity formation and in developing ideas about the importance of outgroups in identity formation and identity talk.

Notes

¹ Each of these measures was significantly positively skewed. Following Kirk (1968), a logarithmic transformation was conducted. However, the data were still significantly skewed even after the transformation. Given Kirk's assertion that F and t - tests are relatively robust even with skewed data, the original, non-transformed counts were used for analysis.

Table 1.

Means and Standard Deviations by Condition

Variable	<u>Task-Plus</u>		<u>Task-Only</u>		<u>Total</u>	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
-20 min. – Mention Outgroups	4	2.76	NA	NA	4	2.76
-20 min. – Comparative Dimensions	0	0	NA	NA	0	0
-20 min. – Mention Group Position	.048	.22	NA	NA	.048	.22
-40 min. – Mention Outgroups	3.68	2.99	3.68	3.99	3.68	3.48
-40 min. – Comparative Dimensions	.59	1.71	.27	.46	.43	1.25
-40 min. – Mention Group Position	2.91	13.64	.41	1.70	1.66	9.69
-Total – Mention Outgroups	7.86	4.30	3.68	3.99	5.72	4.61
-Total – Mention Comparative Dimensions	.62	1.75	.27	.46	.44	1.26
-Total – Mention Group Position	3.10	14.18	.41	1.71	1.72	9.96
-Prototype Choice Time (in sec.)	179.77	75.79	229.41	98.64	204.59	90.24
-Prototype Ranking Agreement	.37	.38	.33	.28	.35	.33
-Prototype Agreement – Questionnaire	3.5	.58	3.4	.80	3.45	.69
-Comparative Qualities Agreement – Questionnaire	3.73	.77	3.59	.80	3.66	.78
-Comparative Target Agreement – Questionnaire	3.05	.38	3.18	.50	3.11	.44
-Simple Bias	1.53	1.55	.94	1.10	1.24	1.36
-Aggrandizement	2.16	1.35	1.59	.98	1.87	1.20
-Positivity	4.43	.28	4.44	.31	4.43	.29
-Group Identification	7.22	.65	6.8	.94	7.03	.82

Table 2

Correlation Among Categorical Context and Prototype Measures

	<i>a.</i>	<i>b.</i>	<i>c.</i>	<i>d.</i>	<i>e.</i>	<i>f.</i>	<i>g.</i>	<i>h.</i>	<i>i.</i>	<i>j.</i>
<i>a.</i> 20 min. - Mention Outgroups	—									
<i>b.</i> 20 min. - Mention Group Position	.166	—								
<i>c.</i> 40 min. - Mention Outgroups	.142	.245	—							
<i>d.</i> 40 min. - Mention Comparative Dimensions	-.104	.050	-.075	—						
<i>e.</i> 40 min. - Mention Group Position	.166	1.00*	.164	.080	—					
<i>f.</i> Prototype Choice Time	-.140	-.046	.070	-.206	-.065	—				
<i>g.</i> Prototype Ranking Agreement	-.305	-.091	.221	.190	-.060	.168	—			
<i>h.</i> Prototype Agreement - Questionnaire	-.038	.034	-.021	.105	.025	.328*	.224	—		
<i>i.</i> Comparative Qualities Agreement - Questionnaire	-.046	.084	-.170	.252	.077	.312*	.347*	.210	—	
<i>j.</i> Comparative Target Agreement - Questionnaire	-.189	-.028	.024	-.091	-.045	-.047	.367*	.132	.251	—

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

"20 min. – Mention Comparative Dimension" not included because variable was constant (0)

Table 3

Correlation Among Prototype, Bias, and Identification Measures

	<i>f.</i>	<i>g.</i>	<i>h.</i>	<i>i.</i>	<i>j.</i>	<i>k.</i>	<i>l.</i>	<i>m.</i>	<i>n.</i>
<i>f.</i> Prototype Choice Time	–								
<i>g.</i> Prototype Ranking Agreement	.168	–							
<i>h.</i> Prototype Agreement - Questionnaire	-.328*	.224	–						
<i>i.</i> Comparative Qualities Agreement - Questionnaire	-.312*	.347*	.210	–					
<i>j.</i> Comparative Target Agreement - Questionnaire	-.047	.367*	.132	.251	–				
<i>k.</i> Simple Bias	-.138	.125	.132	.190	.174	–			
<i>l.</i> Aggrandizement	-.132	.145	.136	.298*	.339*	.498**	–		
<i>m.</i> Positivity	-.277	.183	.291	.243	.194	-.258	.112	–	
<i>n.</i> Group Identification	-.174	.190	.138	.429**	.333*	.180	.415**	.485**	–

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 4

Correlation Among Categorical Context, Bias, and Identification Measures

	a.	b.	c.	d.	e.	k.	l.	m.	n.
a. 20 min. - Mention Outgroups	—								
b. 20 min. - Mention Group Position	.166	—							
c. 40 min. - Mention Outgroups	.142	.245	—						
d. 40 min. - Mention Comparative Dimensions	-.104	.050	-.075	—					
e. 40 min. - Mention Group Position	.166	1.00**	.164	.080	—				
k. Simple Bias	.056	.602**	-.080	-.001	.487**	—			
l. Aggrandizement	.147	.231	-.079	-.030	.197	.498**	—		
m. Positivity	-.165	-.483*	-.014	-.131	-.331*	-.258	.112	—	
n. Group Identification	.027	-.181	-.227	-.007	-.085	.180	.415**	.485**	—

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Appendix A

Meaningful trait adjectives

Absent-minded	Emotional	Materialistic	Serious
Aggressive	Energetic	Mean	Short-tempered
Alert	Enthusiastic	Modest	Shy
Ambitious	Envious	Moody	Silent
Amusing	Excitable	Narrow-minded	Sincere
Angry	Excited	Neat	Sloppy
Argumentative	Fault-finding	Nervous	Sociable
Attentive	Fearful	Noisy	Stubborn
Bashful	Forgetful	Nonconforming	Studious
Boastful	Forgiving	Nosy	Superstitious
Bold	Frank	Obedient	Systematic
Boring	Friendly	Obnoxious	Talented
Broad-minded	Generous	Observant	Talkative
Calm	Gloomy	Orderly	Thoughtful
Capable	Gossipy	Outgoing	Thrifty
Careful	Greedy	Overconfident	Tidy
Careless	Gullible	Overcritical	Timid
Cautious	Happy	Oversensitive	Tolerant
Cheerful	Helpful	Patient	Trustful
Clever	Honest	Perfectionistic	Trustworthy
Clumsy	Hostile	Persistent	Truthful
Cold	Hot-tempered	Persuasive	Unappreciative
Competent	Humorous	Pessimistic	Unattentive
Complaining	Idealistic	Phony	Unconventional
Conceited	Ill-mannered	Pleasant	Understanding
Confident	Imaginative	Polite	Unemotional
Conformist	Impolite	Possessive	Unfriendly
Considerate	Impractical	Practical	Ungrateful
Cooperative	Impulsive	Prejudiced	Unhappy
Courteous	Inconsistent	Prompt	Unhealthy
Cowardly	Indecisive	Proud	Unimaginative
Creative	Independent	Punctual	Unintelligent
Critical	Indifferent	Quarrelsome	Uninteresting
Cruel	Inquisitive	Quiet	Unkind
Curious	Insecure	Rebellious	Unobservant
Daring	Insincere	Relaxed	Unpleasant
Daydreamer	Intelligent	Reliable	Unpredictable
Dependable	Irresponsible	Responsible	Unpunctual
Dependent	Irritable	Restless	Unreliable
Depressed	Irritating	Rude	Unselfish
Disagreeable	Jealous	Sarcastic	Unsociable
Discourteous	Kind	Self-assured	Unsympathetic
Dishonest	Lazy	Self-centered	Untidy
Disobedient	Liar	Self-confident	Untrustworthy
Distrustful	Logical	Self-conscious	Untruthful
Dominating	Lonely	Self-critical	Warm
Domineering	Lonesome	Selfish	Wasteful
Easygoing	Loud-mouthed	Self-reliant	Well-mannered
Efficient	Loyal	Sensible	Witty
Egotistical	Malicious	Sentimental	Worrier

Appendix B

Questionnaire

Please answer the following questions. Please do not discuss your responses with any of the other members of your group. Your responses will be completely confidential.

1. Gender M F
2. Age: _____
3. Native English Speaker? Yes No
4. Race or Ethnicity: _____
5. Undergraduate Major: _____

Please answer the following questions about the group you worked with today:

6. Aside from the adjectives your group chose from the list today, how would you describe what it means to be a member of your group?

7. In what ways is your group different from other people or other groups?

- a.
- b.
- c.
- d.
- e.

f.

g.

8. What specific kinds of people or groups would you compare your group to?

a.

b.

c.

d.

e.

f.

g.

Please circle the number that best describes your reactions to the following statements.

15. I identify with this group

1 2 3 4 5 6 7 8 9

Strongly Disagree

Strongly Agree

16. I am glad to belong to this group.

1 2 3 4 5 6 7 8 9

Strongly Disagree

Strongly Agree

17. I feel held back by this group.

1 2 3 4 5 6 7 8 9

Strongly Disagree

Strongly Agree

18. I think this group worked well together.

1 2 3 4 5 6 7 8 9

Strongly Disagree

Strongly Agree

19. I see myself as an important part of this group.

1 2 3 4 5 6 7 8 9

Strongly Disagree

Strongly Agree

20. I do not fit in well with the other members of this group.

1 2 3 4 5 6 7 8 9

Strongly Disagree

Strongly Agree

21. I do not consider the group to be important.

1 2 3 4 5 6 7 8 9

Strongly Disagree

Strongly Agree

22. I feel uneasy with the members of this group.

1 2 3 4 5 6 7 8 9

Strongly Disagree

Strongly Agree

23. I feel strong ties to this group.

1 2 3 4 5 6 7 8 9

Strongly Disagree

Strongly Agree

Appendix C

Videotape Coding Scheme

Codes and descriptions

<p>1 - Outsiders</p> <p>1a - Experimenter (any mention of the experimenter)</p> <p>1b - Explicitly mention other groups in the experiment ('I wonder how many other groups they are'; 'We're better than all the other groups')</p> <p>1c - Implicitly mention other groups in experiment ('Let's win the \$10.00')</p> <p>1d - Other individuals</p> <p>1e - Outside concrete groups (cheerleading squad, sorority, psych class, etc.) (does not include groups that one or more group members belong to)</p> <p>1f - Outside social categories (gender, age, race, fat people, drunks, etc.) (does not include groups that one or more group members belong to)</p> <p>1g - new group? (put an x in this box if this is a group or individual that has not been mentioned before)</p>
<p>2 - Affiliations</p> <p>2a - other group membership (mention of concrete groups that one or more group members belong to with the exception of the lab group - fraternities, religions, book clubs, etc.)</p> <p>2b - social classes (mention of social class that one or more group members belong to - race, gender, age, etc.)</p> <p>2c - new affiliation? (put an x in this box if this is a group affiliation that has not been mentioned before)</p>
<p>3 - Comparative Dimensions</p> <p>3a - Implied dimension ('we're the best' (at what?); 'we're not as good'; etc. - must be a comparison - 'we're better' - yes, 'we're good' - no)</p> <p>3b - explicit dimension ('we're the worst at making this poster'; 'my teacher draws well'; 'they drink a lot'; 'we're smarter')</p>
<p>4 - Stance (where the group or individual stands on a particular comparative dimension - 'we're smarter'; 'we're less creative'; 'I drink less than she does')</p> <p>4a - group stance (we/us or general agreement)</p> <p>4b - individual stance (I/me or lack of general agreement)</p>
<p>5 - Descriptions of group (we're good, we're funny, we're smart, etc. - NOT comparisons (we're better than, we're funnier, we're smartest))</p>
<p>6 - Individual Self Statements (I am..., I like..., I believe, I'm from Chicago, I'm good at...) (Not about task - I think we should)</p>
<p>7 - Me too (acknowledgement that group member shares a personal characteristic - I'm from Chicago too, I'm also in that psych class)</p>
<p>8 - Not me (saying that another person's individual self statement does not apply to self - "I'm from Rhode Island" (immediately following a statement of I'm from Chicago - this would count both as a self statement and as a 'not me')</p>
<p>9 - Asking for self info (where are you from?; Are you a Capricorn too?; Don't you just love Chocolate?)</p>

Appendix D

Questionnaire Coding

- 1 – *Strong Disagreement* – no two group members show evidence of agreement and at least two group members contradict one another (e.g., A – “We’re all very lazy”, B – “We’re hard workers”, C – “Everyone was friendly”) or there is disagreement on two or more qualities, even if there is agreement on other qualities or between two group members.
- 2 – *Disagreement* – at least two group members contradict one another on one quality, but there is agreement between group members on another quality or between two other group members on the same quality (e.g., A – “we’re smarter, we’ve never met before, we don’t talk much”, B – “we talk a lot, we’re really smart, we are all girls”, C – “we have no history together, we all hate this experiment”).
- 3 – *Neutrality* – No evidence of agreement or disagreement (i.e. all three group members talked about unrelated qualities or groups).
- 4 – *Agreement* – Two group members indicate agreement on at least one quality or dimension and there is no evidence of disagreement (e.g., A - “We’re harder working than other groups, we love psychology”, B – “we all worked really hard”, C – “We talk a lot, we are good artists”).
- 5 – *Strong Agreement* – There is no evidence of disagreement and all three group members show evidence of agreement on one dimension or there is evidence of agreement between two group members on two or more dimensions.

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