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Social Categorization and Memory for In-Group and Out-Group Behavior

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To examine the effects of social categorization on memory for behaviors associated with in-group and out-group members, three experiments were conducted. In the first experiment we predicted and found that social categorization generates the implicit expectancy that the in-group engages in more favorable and/or less unfavorable behaviors than does the out-group. To test the hypothesis that such expectancies bias memory for behaviors associated with in-groups and out-groups, subjects in a second experiment were given favorable and unfavorable information about in-group and out-group members and were later tested for recognition memory. Subjects showed significantly better memory for negative out-group than for negative in-group behaviors. A third experiment assessed the locus of the memory effect and found that the effect could not be attributed to a simple response bias. Possible theoretical bases of these findings are outlined, and implications of the results for intergroup perception are discussed.

Recent research on cognitive factors in stereotyping has shown that judgment about the characteristics of a group can be predicted from a knowledge of people's memory for salient group members. Thus, research by Hamilton and Gifford (1976) and by Rothbart, Fulero, Jensen, Howard, and Birrell (1978) has shown that even when subjects have no prior expectancies about a group's characteristics, they may develop inaccurate impressions of that group because of selective memory for salient but unrepresentative group members. When subjects do have prior expectancies about a group, memory processes serve to confirm already existing beliefs. For example, Rothbart, Evans, and Fulero (1979) found that subjects demonstrated superior memory for individual behaviors that corroborated prior expectancies about a group's attributes. Subjects would remember, for example, intelligent behaviors better when these behaviors were expected than when they were not expected. Selective memory for confirming events thus may allow previously existing stereotypes to be perpetuated even under conditions of minimal corroborating evidence.

Selective memory for expected events may play a particularly important role in the perception of in-group and out-group behavior. The tendency to group human beings into social categories distinguishing self from others has been pervasive (Allport, 1954; Brown, 1965). Moreover, distinctions between in-group and out-group appear to reflect clear preferences for the in-group. It was, in fact, the widespread perception of in-group superiority that led Sumner (1906) to define ethnocentrism as the

> view of things in which one's own group is the center of everything and all others are scaled and rated

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with reference to it . . . . Each group nourishes its own pride and vanity, boasts itself superior, exalts its own divinities, and looks with contempt on outsiders . . . . Each state . . . regards itself as the leader of civilization, the best, the freest, and the wisest, and all others as inferior. (pp. 13–14)

It is certainly not surprising to find that people develop biases in favor of their own group, since they are likely to admire the values, attitudes, and behaviors with which they are most familiar. More surprising, however, is evidence that seemingly arbitrary assignment to one of two mutually exclusive social categories (e.g., under- vs. overestimators of dots) is sufficient to generate in-group favoritism in the form of greater allocation of rewards to in-group than to out-group members (Allen & Wilder, 1975; Billig & Tajfel, 1973; Tajfel, 1970).

The purpose of the present research was to clarify some of the attitudinal and cognitive consequences of social categorization by examining subjects' expectancies of and memory for in-group and out-group behaviors. The first experiment tested the hypothesis that categorizing subjects into one of two mutually exclusive categories activates the implicit expectation that the in-group is more favorable than the out-group; that is, subjects expect the in-group to engage in more favorable (or less unfavorable) behaviors than the out-group. The second experiment tested the hypothesis that the effect of these implicit expectancies is to structure either the learning or the memory of favorable and unfavorable behaviors regarding the in-group and out-group, such that subjects remember more favorable behaviors and/or fewer unfavorable behaviors when these behaviors are attributed to in-group members than when they are attributed to out-group members.

Experiment 1

Method

Overview. Subjects first performed a dot estimation task and then were arbitrarily categorized into two groups, overestimators and underestimators, using a procedure similar to that developed by Tajfel (1970). A set of favorable and unfavorable behavior statements, ostensibly from a previous experimental session, was presented to subjects with instructions to sort them according to whether the actor was an overestimator or an underestimator. Dependent variables were the number of favorable and unfavorable statements assigned to the subject's in-group and the relative favorableness of the bipolar adjective rating scales completed for each group.

Subjects. Subjects were 20 college-age men, recruited from lower division psychology classes at the University of Oregon and paid for their participation. They participated in groups of 6–8 persons.

Procedure. Behavior statements for the sort task in this and the following experiments were collected in pilot sessions by asking subjects to give us "self-disclosure" information by listing the three things they had done that made them happiest, the three that made them most proud, the three that made them unhappiest, and the three that made them most ashamed. Subjects were assured of privacy and anonymity.

The resultant behavior statements were reviewed by our six-person research group, and a stimulus set of 24 favorable and 24 unfavorable behavior statements was selected and approximately balanced for plausibility and extremity, with extremely favorable and extremely unfavorable behaviors excluded. Sentences were rewritten as necessary to eliminate grammatical errors or excessive length and were then printed on index cards, one statement to a card, and arranged in random order in decks of 48 cards. Typical stimulus sentences resulting from this process included:

"I took two disadvantaged kids on a one-week vacation"; "I saved enough money to spend a year travelling in Europe"; "I had two brief affairs with other people while I was married"; and "I spread rumors that my roommate was dishonest."

Upon entering the experimental room, subjects were introduced to the experiment by written and verbal instructions that outlined the experimental sequence, obtained informed consent, and emphasized the subjects' privacy and anonymity safeguards.

They were then introduced to the dot estimation task with instructions similar to those used by Gerard and Hoyt (1974):

> Today you will be participating in a rather complex series of studies relating to how people make quantitative judgments. Past studies have shown that, given the task of estimating how many objects they have seen, different people tend to consistently overestimate or underestimate the correct number. The numbers of overestimators and underestimators in the population seem to be about even. While psychologists do not place any value judgment on whether it is better to be an overestimator or an underestimator, past research has shown that whether one is an overestimator or an underestimator does tend to reveal something fundamental about the psychological characteristics and personality of the person.

Subjects were then asked to estimate the number of dots on each of three 40 cm by 50 cm white cards

that contained between 90 and 350 dots and were exposed for 3 sec. After their estimates were written down and collected they were told that their estimates would be scored while they worked on a self-disclosure task. They were given 20 minutes to work on this task while the experimenter ostentatiously "scored" their dot estimates. After 20 minutes they were informed whether they were overestimators or underestimators (according to a predetermined counterbalanced sequence that assured that approximately half were assigned each label in each experimental session).

In the next stage of the experiment, subjects were told that they were to act as judges, providing the experimenters with their conception of "what overestimators and underestimators are like." They were each provided with the stimulus card decks described earlier (48 statements, 1 per card and 24 favorable and 24 unfavorable statements per deck) and were asked to sort them into two decks, one for overestimators and one for underestimators. Once a card had been attributed to one of the groups, subjects were not allowed to alter their judgment.

Finally, upon completion of the card sort, subjects were told, "Give your impressions of the two groups as a whole." These impressions were reported separately for each group on a bipolar adjective scale that was constructed with eight pairs of adjectives, each arranged on a 7-point equal-interval line. Adjective pairs used in this task were friendly/hostile, helpful/disruptive, stupid/intelligent, passive/forceful, very likable/difficult to like, independent/conforming, cooperative/uncooperative, and peaceful/aggressive. Subjects were also asked, "Which group would you prefer to have as your friends?"

Because the experimental paradigm used in Experiment 1 might have lead subjects to intuit the purpose of our research and given us the in-group bias they thought we expected, a thorough attempt was made to discern subjects' perceptions of the goals of the research. Before the subjects were told anything about the intent of the experiment, but after they had been told that the experiment was ended and had been paid for participating, each subject was asked to speculate, on paper, as to what the intent of the experiment had been. The actual instructions were as follows:

> Now, please take the blank sheet of paper in front of you and write down your ideas about the intent of this experiment. What, exactly, did you think we were looking for? If you have any comments on the experiments or your thoughts during the experiments, please write them down, too. Thanks for your help.

After the participants turned in their written comments, they were asked, "Now, does anyone think they have figured out the *real* purpose of the experiment?" If any of the respondents indicated that they had an idea, they were asked to explain their thoughts. In every experimental session, at least one student volunteered to share his or her idea, yet none of them even approximated the notion that we were interested in their own differential treatment of the two groups. Rather, in both the written and the verbal comments, they accepted our explanations of the experimental intent as stated in the introduction to the experiment, or they believed that we were attempting to assess whether overestimators or underestimators were better at remembering the statements. Thus, there was a very strong indication that subjects had, in fact, accepted the group distinctions as real and that their hypothesis-generating mechanisms were directed at our intent to find differences in the way under- and overestimators operated in the experiment. After subjects described their perceptions of the goals of the research, subjects were thoroughly debriefed as to the actual purpose of the research.

Results

All data were first analyzed for differences between responses of subjects labeled overestimators versus those labeled underestimators. Using analysis of variance, no main or interaction effects were significant ($p > .05$). The number of positive items assigned to the in-group ($M = 13.85$) was significantly higher than the number of negative items ($M = 9.80$) so assigned, $t(19) = 2.98$, $p < .05$.

Evaluation ratings were also analyzed, using the t test for related samples, and were found to be significantly more favorable for the in-group ($M = 15.7$) than for the out-group ($M = 11.5$), $t(19) = 2.66$, $p < .05$, and subjects were found to prefer their own group as friends, $\chi^2(1) = 7.56$, $p < .01$.

Experiment 2

Experiment 1 provides support for the hypothesis that social categorization has the effect of inducing more favorable expectancies for the in-group than for the out-group and indicates clear evaluative preferences as well as behavioral expectancies about in-group and out-group.

Since there is evidence that stereotypic expectancies can bias memory in favor of confirming instances (Rothbart et al., 1979), we predicted that when subjects were presented with favorable and unfavorable information about the behavior of in-group and out-group members, their memory for such behaviors would reflect the superior evaluation of the in-group; that is, subjects should remember more favorable and/or less un-

favorable behaviors associated with the in-group than with the out-group. If such an effect can be found, it will be important both from the perspective of demonstrating the power of expectancies induced by social categorization and for understanding the manner in which selective memory may be implicated in intergroup perception and conflict.

Method

Overview. Subjects were categorized into two groups, overestimators and underestimators, as in Experiment 1. Subjects were then presented with two decks of cards. They were told that one deck contained behavior statements from self-disclosures that had been made by the overestimators in previous experiments, whereas the other contained statements similarly provided by underestimators. Each deck contained 48 positive and 24 negative statements. After reading each complete deck, subjects wrote "personality summaries" of the group's characteristics. Following a 10-minute interpolated reading task, subjects were presented with all of the statements they had read in the two behavior decks, plus new statements (distractors), and were instructed to identify each statement according to whether it had originally been presented as an overestimator behavior, had originally been presented as an underestimator behavior, or had not been a part of the original two decks. Following this memory task, subjects completed the bipolar adjective rating scale used in Experiment 1 and indicated which group they would prefer to have as friends.

Table 1
Mean Frequencies of Subject Responses by Stimulus Valence and Presentation Category in Experiment 2

Statement	Stimulus presentation category		
	In-group	Out-group	Distractor[a]
Favorable			
Total presented	16	16	16
Number assigned to			
In-group	10.41	3.75	.34
Out-group	3.69	10.95	.66
Not previously seen	1.90	1.30	15.00
Unfavorable			
Total presented	8	8	8
Number assigned to			
In-group	4.58	.94	.21
Out-group	2.72	6.56	.21
Not previously seen	.70	.50	.58

[a] Not presented.

Subjects. Subjects were 18 college men and 12 college women recruited through advertisements in the University of Oregon's student newspaper and paid for their participation. They participated in same-sex groups of 6 persons. One male subject failed to complete the experimental materials, and his incomplete data set was excluded from the analysis.

Stimulus materials. Two sets of number estimation stimuli were constructed. The first was identical to that used in Experiment 1. The second set was constructed of three more white cards of the same size as the first set, each containing randomly placed clusters of mixed geometric forms (triangles, circles, rectangles, etc.) of approximately the same sizes as the dots used in the first set. All subjects received both sets in the course of the experiment.

The original set of 48 behavior statements (used in Experiment 1) was increased by the addition of 24 similarly constructed favorable statements (taken from the same pilot data), yielding 48 favorable and 24 unfavorable statements. Each statement was printed on an index card. The statements were then randomly divided into three sets of 16 positive and 8 negative statements each. The cards were arranged in six stimulus decks, each stimulus deck containing 2 of the 3 sets of statements. Each set of statements was rotated twice through a sequence of three possible labels (overestimators, underestimators, and distractors), completely counterbalancing for any effects idiosyncratic to the individual sets. Distractor statements were not presented to subjects until the recognition task and were included in an attempt to measure response biases, so that the effects of response bias could be taken into account in assessing the strength of recognition memory. Since Experiment 1 showed a bias toward placing more favorable (and less unfavorable) behaviors with their in-group, we expected that this same tendency would be apparent in their (false) placement of distractor items and that this bias could be "subtracted" from the recognition memory score by using either a d' or correction-for-guessing procedure. For example, if subjects were biased toward placing unfavorable behaviors with the out-group and favorable behaviors with the in-group (as was the case in Experiment 1), this should be apparent in their placement of distractor items.

Procedure. The procedure for this experiment was identical to that of Experiment 1 up to and including the collection of the self-disclosure information. Subjects were then told that they were to serve as judges in writing "personality summaries" of the two groups. Subjects were given the two stimulus card decks, labeled *overestimators* and *underestimators,* and were told to read one of the decks and then write their summary impression. They were allowed 10 minutes for this task and were then asked to do the same for the other deck. The order of presentation of the decks was counterbalanced across experimental sessions. In any one session, one-half of the subjects read about their own group first and one half read about the out-group first. After the summary impressions were collected, subjects

were told that we were going to pretest a measure we might use in later experiments "involving the overestimator/underestimator distinction." They were then shown the second set of estimation cards, using the same procedure as in the first dot estimation task.

Next, subjects were given an interpolated reading task in which they read an excerpt from *The Foundation Directory;* they were told that they should "read for meaning and not concentrate on trying to remember specific figures or statistics." After 10 minutes, the reading materials were collected, and subjects received a "response list" that listed all 72 behavior statements in a quasi-random order. Subjects were instructed to try to recall whether each statement had been identified with an overestimator, with an underestimator, or with neither. The three alternatives were rotated through the three positions on the answer sheet so that across subjects each alternative appeared in each of the three positions with equal frequency.

After completing the memory task, subjects rated each group on the bipolar adjective scale described previously and indicated which group they would prefer to have as friends; they were asked for their perceptions of the research and were debriefed as in Experiment 1.

Results

Data were compiled separately for each subject in a 3 × 3 matrix (Stimulus Category × Subject Responses) for favorable and unfavorable statements. Mean frequencies of response by valence and category are presented in Table 1.

All data were analyzed for differences between male and female subjects' responses and between subjects labeled overestimators and those labeled underestimators. No main or interaction effects of these factors were significant.

Overall recognition data (i.e., the proportion of statements in each category recognized as having been seen before, as indicated by their assignment to either the in-group or the out-group pile in the sort task, irrespective of accuracy of group assignment) were analyzed in a 2 × 2 analysis of variance for repeated measures; these data are presented in Figure 1(a).

A weak main effect for group category was present, with out-group statements recognized slightly but significantly more often than in-group statements, $F(1, 28) = 4.32$, $p < .05$. No other significant effects were found in the recognition data.

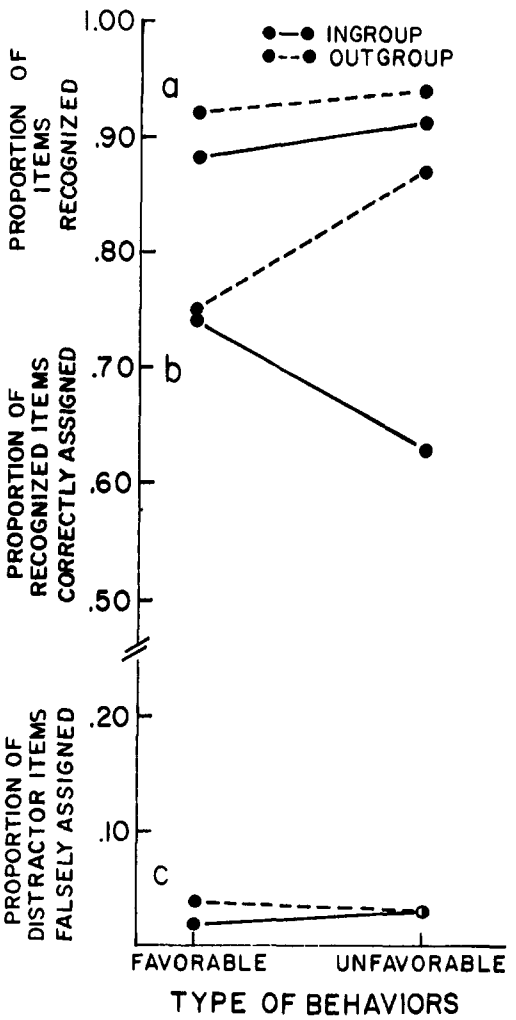

Figure 1. Recognition rate, accuracy of assignment to group, and false recognition rate for distractor items, as a function of in-group–out-group status and favorableness of behavior (Experiment 2).

Accuracy in identifying behaviors as pertaining to the in-group or the out-group was computed for each subject separately by computing the conditional probability that an item was correctly assigned, given that it was recognized as having been presented originally. These data are presented in Figure 1b. Analysis of these probabilities as a function of group membership and behavior type indicated a main effect for group category, with subjects more accurate in recognizing statements associated with the out-group than in

Table 2
Mean Frequencies of Subject Responses by Stimulus Valence and Presentation Category in Experiment 3

Statement	Stimulus presentation category		
	In-group	Out-group	Distractor[a]
Favorable			
Total presented	16	16	16
Number assigned to			
In-group	10.04	5.07	.36
Out-group	4.59	9.59	.12
Not previously seen	1.37	1.34	15.52
Unfavorable			
Total presented	8	8	8
Number assigned to			
In-group	5.32	2.14	.42
Out-group	2.25	5.34	.12
Not previously seen	.43	.43	7.46

[a] Not presented.

recognizing those associated with the in-group, $F(1, 28) = 12.33$, $p < .002$. However, there was also a significant interaction between group category and favorableness of behavior, with subjects more accurate in recognizing unfavorable behaviors associated with the out-group than in recognizing those associated with the in-group, and virtually no difference in their accuracy of recognizing favorable behaviors associated with the in-group and out-group, $F(1, 28) = 13.68$, $p < .001$. Mean level of accuracy was .74.

Analysis of the distractor data yielded no significant main effects and, contrary to prediction, no significant interactions. The mean proportion of distractors falsely identified as having been included in the presentation set was extremely low (.03). These data are presented in Figure 1(c).

Evaluative judgments, analyzed as in Experiment 1, again showed a significant tendency to favor the in-group, $t(27) = 2.11$, $p < .025$, and choice of friends again also favored the in-group, $\chi^2(1) = 7.04$, $p < .01$.

Experiment 3

Although Experiments 1 and 2, taken together, appear to offer support for our hypotheses that social categorization produces expectancies of in-group superiority and that these expectancies structure either learning of or memory for specific behavioral information about the two groups, several important questions remain unanswered. It is entirely possible, for example, that the lack of interaction effects in the distractor data of Experiment 2 (which were expected to resemble the bias shown in Experiment 1) is due to a ceiling effect, since the subjects made very few recognition errors on the distractors. Essentially, the low frequency of falsely recognizing the distractors renders the distractor data uninterpretable. Our subjects' memories for whether or not they had seen these complex stimulus sentences were excellent, although the memories for the source of the sentence (under- or overestimator) were somewhat less good. Without usable distractor data, we cannot eliminate the possibility that the effects demonstrated in Experiments 1 and 2 are simply a response or guessing bias.

To determine whether the accuracy data in Experiment 2 reflect differential learning, memory for confirming information, or simply an indiscriminate bias to pair unfavorable behaviors with the out-group and favorable behaviors with the in-group (although such a bias would presumably show differences in favorable as well as in unfavorable behaviors), a third experiment was designed.

If the differential association of unfavorable behaviors with the out-group was solely attributable to a response bias, then we should obtain the same results if subjects learn of their own category membership (underestimator or overestimator) after they have been exposed to the behaviors associated with the two groups. If there is no differential association of favorable and unfavorable behaviors with in-group and out-group in the *after* condition (where social categorization occurs after exposure to the behavioral items), we can infer that the effects in Experiment 2 are not solely attributable to a response bias.

Method

All procedures and stimulus materials were identical to those in Experiment 2, except that subjects were not informed as to which

group (over or underestimators) they were in until after the second dot estimation task; that is, they were labeled after the behavioral information was presented. Adjective rating scales and choice-of-friends data were not collected.

Subjects. Subjects were 41 college-age men and women, recruited in the same manner as before. They participated in same-sex groups of 4 or more persons.

Results

Data were compiled and analyzed as in Experiment 2. Mean frequencies of response are presented in Table 2. As in Experiment 2, no main or interaction effects of subject gender or subject group label were significant.

Overall recognition data are presented in Figure 2(a). Though these data are very similar to the recognition data in Experiment 2, a main effect for valence was found, with unfavorable statements recognized more often than favorable ones, $F(1, 32) = 8.55$, $p < .01$.

Analysis of accuracy data (conditioned on recognition, as before), which are presented in Figure 2(b), showed that unfavorable statements were assigned more accurately than were favorable statements, $F(1, 31) = 5.25$, $p < .05$, but that this difference was not related to group membership, $F(1, 31) = 1.58$, $p > .05$. Mean level of accuracy was .68.

Distractor data also yielded a mean effect for valence, with unfavorable items less likely to be identified as having been presented in the original stimulus set, $F(1, 31) = 12.83$, $p < .001$. These data are presented in Figgure 2(c).

Since the analyses of variance reported here did not test the differences (or lack of differences) between effects in Experiments 2 and 3, the data were combined into a single, three-way analysis of variance (Time of Categorization × Group Category × Valence). For the recognition data, there were no significant interactions between time of categorization and the two other factors. For the accuracy data, the three-way interaction among time of categorization, group category, and valence was significant, $F(1, 60) = 4.16$, $p < .05$. Thus, the two-way interaction observed between group category and valence in Experiment 2 was not replicated in Experiment 3.

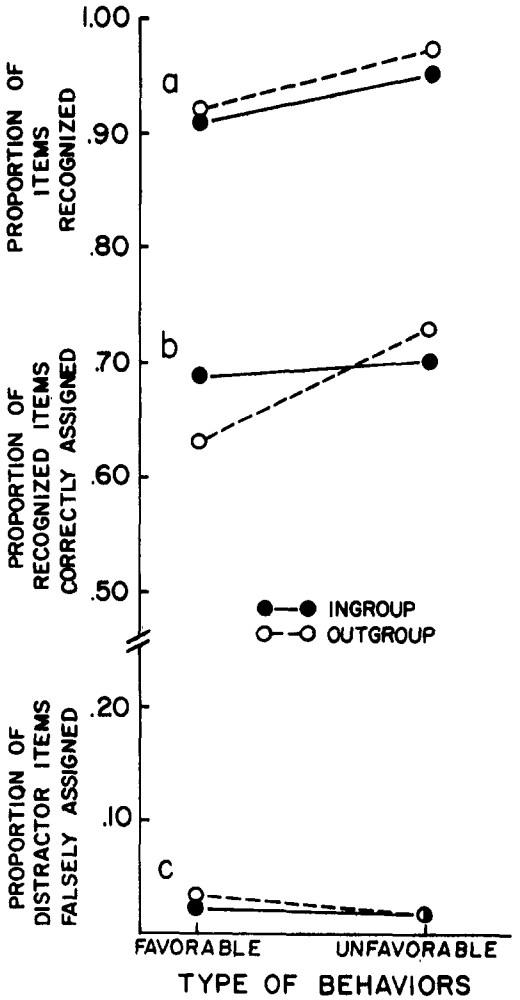

Figure 2. Recognition rate, accuracy of assignment to group, and false recognition rate for distractor items, as a function of in-group–out-group status and favorableness of behavior (Experiment 3).

Discussion

The major findings of Experiment 3 indicate that subjects categorized after presentation of the behavioral items did not differentially associate more unfavorable behaviors with the out-group than with the in-group.

If the greater recognition of unfavorable behaviors in the out-group reported in

Experiment 2 were the result of a response or guessing bias, or if the effects were attributable to some process occurring after study of the behavioral information (i.e., due solely to retrieval effects), we would expect to find the same pattern of findings in Experiment 3. That the Valence × Group Category interaction was eliminated by providing subjects with the social categorization after presentation of the behaviors argues that the effect was based in the initial learning or encoding phase of memory.

Greater recognition of and accuracy for memory of unfavorable behaviors in Experiments 2 and 3 might be attributed to the fact that those items were less frequent than were favorable items (Hastie & Kumar, 1979) or to the fact that negative information is more salient, unusual, or informative than is positive information (Kanouse & Hanson, 1971).

To summarize the major conclusions of the three experiments, it is clear that by placing subjects into seemingly arbitrary, mutually exclusive categories, expectancies are generated that favor the in-group over the out-group. These expectancies act to structure either the learning or the memory of behaviors associated with the in-group and out-group in a way that is consistent with prior expectancies: Subjects show better memory for unfavorable behaviors when they are associated with the out-group than when they are associated with the in-group. Moreover, these memory effects cannot solely be attributed to a response or retrieval bias. Although the failure to find an interaction between group category and desirability of the behaviors eliminates a response bias interpretation of Experiment 3, the failure to find any interaction appears discrepant with the clear bias found in Experiment 1. We do not know the reason for this discrepancy, although we suspect it may be due to the nature of the tasks given to subjects in these two experiments. In Experiment 1 subjects were given no information about which behaviors the groups had engaged in and were asked to guess which behaviors went with each group. In Experiment 3 behaviors had been paired with the two groups, and the task was to accurately recall which group was the source of the behavior. It is possible that the demands of attempting to accurately retrieve the behaviors associated with each of two groups overshadowed the kind of bias that appeared in Experiment 1, where subjects' guesses were solely influenced by their implicit expectancies about the two groups.

It remains unclear from the present experiments whether the differential memory for in- and out-group behaviors can be attributed to the amount of attention allocated to various items during the presentation phase (since amount of time subjects could spend on each item was not controlled) or to other processes during or after encoding. Although the lack of an interaction between group category and valence in the recognition of presented items argues against the first hypothesis, it cannot be stated with any degree of certainty that the locus of the effect is in learning rather than in memory.

In-Group Favoritism, Categorization, and Similarity

It may be argued that our experiments have not demonstrated that group membership or social categorization per se generated the reported effects and that perceived similarity to self is instead the causal agent. Although there have been attempts to unconfound categorization and similarity in the laboratory (e.g., Allen & Wilder, 1975; Billig & Tajfel, 1973), for naturally existing groups it is virtually impossible to have social categories in which there is no perceived similarity along one or more attributes or types of experience. Before further discussing the interrelationships among in-group favoritism, categorization, and similarity, it would be useful to first examine possible explanations for in-group favoritism.

Explanations for in-group favoritism, particularly as generated in the minimal group situation, appear to fall into two general categories: (a) those in which subjects infer in-group characteristics from their own, presumably favorable, attributes and (b) those in which subjects favorably differentiate the out-group from the in-group in order to enhance their own sense of self-worth or "positive valued identity" (Turner, 1975).

The first explanation has several different forms, but contains two basic assumptions: (a) the image of the self is favorable, and (b) individuals perceived as similar to self are assumed to be more favorable than individuals perceived as dissimilar. Basing their argument on the Tajfel and Wilkes (1963) experiments, which demonstrated a tendency to accentuate intercategory differences, Doise and Dann (1976) argued that social categorization effects can be explained as a simple accentuation of group boundaries along a set of affective, cognitive, and behavioral divisions. If we add the assumption that the self is perceived as favorable, then individuals belonging to a category different from the self must be less favorable.

To assess whether perceived similarity is an essential component of social categorization, Billig and Tajfel (1973) attempted to create group categorization without perceived similarity by categorizing subjects as belonging to either a Group W or a Group X, in which assignment to group was randomly determined. Although they concluded from this research that similarity did not appear to be a necessary condition for in-group favoritism, it is possible that subjects labeled as members of Group X or Group W inferred that those group labels reflected an earlier, more meaningful categorization in the experiment, in which they were classified as preferring Klee or Kandinsky.

Allen and Wilder (1975) categorized subjects using the Tajfel procedure and additionally varied degree of attitudinal similarity between self and other independently of in-group–out-group status. Although similarity enhanced favoritism for in-group members, similarity did not affect the allocation of rewards to out-group members. This experiment, rather than creating categorization in the absence of similarity, can be thought of as pitting two kinds of similarity against one another: (a) aesthetic preferences (Klee vs. Kandinsky) versus (b) degree of perceived attitude similarity.

Rabbie and Horwitz (1969), attempting to assess the minimal conditions for in-group favoritism, found that purely random assignment to a group (subjects categorized as being on one side of a table vs. the other) did not lead to higher evaluations of in-group members but that a randomly determined common fate (subjects on one side of the table winning and subjects on the other losing an award of transistor radios) did cause subjects to rate in-group members' personality attributes more favorably than those of out-group members. Inasmuch as Rabbie and Horwitz failed to find in-group favoritism on the basis of purely random categorization, and given the interpretative difficulties associated with the other experiments, the argument that some kind of similarity is unnecessary for in-group favoritism is not yet compelling.

Although our methods for affecting group categorization relied on a technique that allowed persons to be judged as having similar or dissimilar personalities, it would be possible for future experiments to determine whether perceived similarity along an attribute dimension or along some other dimension of experience is a necessary condition for inducing expectancies favorable to the in-group. It should be noted, however, that in our judgment a group cannot be defined without some degree of similarity. Even in the case of random assignment to a Group X or a Group W, there is similarity by virtue of being assigned to the same condition. The question, then, is not whether similarity is necessary, but what kinds of similarity are necessary for the establishment of in- and out-groups and the creation of in-group favoritism.

Intergroup Perception and Conflict

The present findings have several clear implications for the study of intergroup perception and conflict. First, the findings bolster previous research on social categorization in the minimal group situation by clarifying some of the cognitive concomitants of classifying people into mutually exclusive categories. Second, the research suggests that implicit biases aroused by social categorization can transform information indicating equality between in-group and out-group into a psychological data base in which unfavorable behaviors are disproportionately represented in the out-group. Inasmuch as people's

attitudes, beliefs, and behaviors toward a group are influenced by memory for salient behavioral instances associated with that group, the possibilities for generating unfavorable and erroneous beliefs about out-groups become apparent. Moreover, when we draw on memory for evidence of group characteristics, we draw on behavioral instances that, although individually accurate, are collectively unrepresentative of the behaviors that actually occurred. Even though people may be vaguely aware that their memory may be biased, the impressions that are formed may reflect the relative power of "concrete, vivid, and salient" (to use Nisbett & Borgida's, 1975, term) behavioral instances when contrasted with the "abstract, pallid, and remote" awareness of the unrepresentativeness of their mnemonic search processes.

The evidence that implicit biases aroused by seemingly arbitrary social categorization can be translated into a mnemonic data base disproportionately weighted with unfavorable out-group behaviors may be significant in accounting for both the intensity and the prevalence of intergroup hostility. Students of intergroup conflict are all too aware of the complex feedback systems implicated in the development of intergroup hostility, in which mild aversion becomes translated into avoidance which in turn allows for the establishment of real group differences, which are then interpreted as justifications for the initial hostility. The present data indicate that evidence for group differences may be generated even when such differences have no basis in reality.

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