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Generalizing the Illusory Correlation Effect

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We used two experiments to examine the influence of one's own attitude on the perception of group attitudes. In the first experiment, subjects viewed opinion statements, supposedly made by residents of two towns, on the issue of building a local nuclear power station. One town was large and had frequently occurring statements and the other was small with infrequently occurring statements; there was an equal proportion of pro and anti statements in both towns. The prediction that subjects would perceive an illusory correlation between attitude positions similar to their own (self-relevance) and the infrequently cited (distinctive) town was supported for anti subjects only. Subsequent investigation indicated that this was due to the confounding effect of a prior expectation associating small towns with more antinuclear attitudes. Experiment 2 eliminated the variable of town size by informing subjects that towns of equal size had been more heavily or lightly sampled. Consistent with the hypotheses, both pro and anti subjects perceived an illusory correlation between their own attitude and the town providing the smaller sample, this effect increasing with attitude extremity. The consequences of these findings for the generalizability of illusory correlation explanations of stereotyping are discussed.

In an important study of cognitive processes involved in stereotype formation, Hamilton and Gifford (1976) demonstrated a tendency for people to overattribute infrequent behaviors to a minority group. Following Chapman (1967), they referred to this bias as *illusory correlation* and suggested that distinctive co-occurrences are overestimated because they receive more attention, are better encoded, and are therefore more available in memory than other events.

In a study by Spears, van der Pligt, and Eiser (1985), attitude statements were substituted for the behavioral instances used by Hamilton and Gifford (1976) to introduce involvement, a factor missing from Hamilton and Gifford's paradigm and from the cognitive approach to stereotyping in general. Specifically, it was predicted that attitude positions congruent with one's own attitude would appear more salient than other positions because of their self-relevance[1] and thus receive enhanced attention and encoding. This prediction is based on substantial literature indicating that self-relevant information receives enriched encoding and is relatively available in memory (e.g., Rogers, 1981; Rogers, Kuiper, & Kirker, 1977). Evidence suggests that the self can operate like cognitive schemata or prototypes (e.g., Kuiper, 1981; Kuiper & Derry, 1981; Markus, 1977; Markus & Smith, 1981) and implicates evaluative and affective processes (e.g., Ferguson, Rule, & Carlson, 1983; Keenan & Baillet, 1980; Lewicki, 1984; Rogers, 1981)—two factors that have been shown to enhance the encoding and accessibility of information. Moreover, these findings are related to the robust false-consensus effect (Ross, Greene, & House, 1977), namely people's tendency to overestimate the extent to which others share their own characteristics (cf. Markus & Smith, 1981). Again, this effect may have informational (e.g., Ross, 1977) and motivational determinants (e.g., Goethals & Darley, 1977; van der Pligt, 1984). Overall, the contention that self-relevant material appears salient and is cognitively overrepresented is supported by a variety of research findings. There is also specific evidence that attitude-congruent material appears salient and is preferentially recalled (e.g., Malpass, 1969).

In sum, we maintain that self-relevant stimuli should appear salient or distinctive and therefore have an impact similar to that of infrequency on the encoding of information. (Salience and distinctiveness are similar in terms of their consequences for information processing; however, in the stereotyping and illusory correlation literatures, distinctiveness has typically corresponded to infrequency, and salience refers to any stimuli receiving enhanced attention and processing.) In terms of the illusory correlation paradigm, therefore, it was argued that co-occurrences that were self-relevant and infrequent would be optimally encoded. Insofar as illusory correlations may result

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[1] Self-relevance is used here to refer to characteristics used by a person to describe him- or herself. This is important because it may be that alternative characteristics that are attributed to the self on a certain dimension (by others, for example) may also appear highly salient despite or perhaps because of their discrepancy with one's own self-perception. However, such circumstances do not arise in this research; it is assumed that the self is implicated by attitudes congruent with one's own, rather than attitude-incongruent stimuli, in the same way that self-schemata may be implicated by schema-consistent material.

from the enhanced encoding of salient or distinctive stimuli (Hamilton & Gifford, 1976),[2] this leads to the prediction of increased illusory correlations for minority-congruent attitude holders but not for majority-congruent subjects. The findings of Spears et al. (1985) confirm this prediction.

The purpose of this study is to define the boundary conditions governing the influence of self-relevance as a mediator of illusory correlations. In the study by Spears et al., given that illusory correlations occurred overall only for the group whose attitudes were congruent with the minority positions, it is possible that distinctiveness due to infrequency is a necessary precondition for illusory correlation. Indeed, some research defines infrequency as intrinsic to the salience or distinctiveness of self-relevant information (e.g., McGuire, McGuire, Child, & Fujioka, 1978; McGuire & Padawer-Singer, 1976; Mullen, 1983). Given such findings, it is theoretically important to establish whether distinctiveness or salience defined as self-relevance can operate independently of distinctiveness due to infrequency. The first experiment was designed to investigate the effect of self-relevance on illusory correlation, independent of the (in)frequency manipulation.

A further prediction concerns the effect of attitude extremity on illusory correlation. We propose that salience due to self-relevance should increase as a function of attitude extremity. This is because the attitude's importance or centrality to the self increases with involvement on an issue (Judd & Krosnick, 1982), and involvement increases with attitude extremity (e.g., Cantril, 1946). Spears et al. (1985) predicted and found that illusory correlation increases as a function of attitude extremity for minority-congruent attitude holders, but not for majority-congruent subjects (where self-relevance and infrequency are opposed). In our study, the lack of an infrequency manipulation on the attitude dimension leads to the simple prediction of increased illusory correlation as a function of attitude extremity.

To summarize, the first experiment in this study replicates that of Spears et al. (1985), except that in this case there were equal proportions of pro- and antinuclear attitude positions for both groups (towns), eliminating distinctiveness due to infrequency on the attribute dimension. The main prediction is that co-occurrences that combine self-relevance on one dimension (attitude-congruent positions) and infrequency on the other (small town) will receive the most attention and enhanced encoding and thus produce an illusory correlation. Moreover, as in Spears et al. (1985), the degree of illusory correlation produced should be a positive function of attitude extremity.

Experiment 1

Method

Subjects

Subjects were students at the University of Exeter, United Kingdom ($N = 86$). They were run in groups of up to 7 persons and were randomly assigned to experimental conditions.

Stimulus Materials

A subsample of opinion statements on nuclear power used in Spears et al. (1985) functioned as stimuli. Specifically, 18 pro- and 18 antinuclear statements were selected to represent a wide range of attitudes (1.37 to 10.73 on an 11-point scale); the range of standard deviations obtained from pretest ratings was 0.63 to 1.14. Two stimulus sets were constructed, each consisting of a series of 36 exposures of opinion statements on videotape. In the stimulus sets twice as many statements were attributed to Town A, but there was an equal proportion of pro and anti statements for both towns. Specifically, the distribution of items was as follows, making 36 items in all: Town A, pro = 12, anti = 12; Town B, pro = 6, anti = 6. Thus, Town B is more distinctive because it occurs less frequently than Town A, although both attitude positions are equally distinctive in terms of frequency. Extremity and the content of the items were balanced as much as possible across towns. The stimulus sets were also counterbalanced so that items attributed to Town A in one set alternated with those attributed to Town B in the other.

Procedure

The procedure was identical to that followed in Spears et al. (1985). To summarize, subjects were told that the experiment was about people's attitudes to nuclear power; after rating some attitude statements, they read a written introduction to the study. This described the experiment as an investigation of "how people perceive and retain other people's views on a certain subject" and stated that they would be presented with a series of slides concerning people's opinions toward the building of a new nuclear power station in their area. The people were described as residents of two towns, A and B, Town A being bigger than Town B. Subjects were told, "In collecting opinions on this issue, we drew random samples that were representative of each town. However, because Town A is bigger than Town B, opinions of people from Town B occur less frequently as you will see." Subjects then viewed items in this form: "Mrs. Jones, a resident of *Town A*, is generally in favor of nuclear power because. . . 'I think nuclear power will mean cheaper electricity bills.' " After watching the video, subjects filled out a questionnaire containing the dependent measures.

Independent and Dependent Measures

Attitude measure. Prior to the experiment, subjects rated eight attitude statements concerning the issue of nuclear power on Likert-type scales ranging from *very strongly disagree* (1) to *very strongly agree* (7).

Attribution of statements to town. This section asked the subject to attribute each opinion statement to Town A or Town B. All the opinions were listed without names, and subjects were asked to fill in a letter for each, corresponding to the resident's town.

Percentage estimates of positions. On this measure subjects indicated what percentages of pro- and antinuclear residents they estimated there were in each town. (The pro and anti categories were actually further subdivided into moderate and extreme residents, although this division will not concern us here).[3]

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[2] Following Hamilton and Gifford (1976), the specific mechanism of illusory correlation is assumed to be the preferential encoding and consequent availability of distinctive or salient stimuli in memory. This interpretation is consistent with findings in the literature on self-schemata. Nevertheless, there has been some debate in the illusory correlation literature concerned with novel or infrequent stimuli as to whether illusory correlations occur during the registration of information (e.g., Fiedler, Hemmeter, & Hofmann, 1984; McArthur, 1980) rather than during memory (Crocker, 1981; Hamilton, Dugan, & Trolier, 1985). However, the precise level of mechanism is not our main concern; the concepts of distinctiveness and salience are applicable at both these stages. Our main interest here is the consequence of such effects in terms of psychological products; other research is more concerned with the impact of self-relevance on information processing in terms of specific mechanisms.

[3] Subjects also made trait ratings of the two towns (cf. Spears, van der Pligt, & Eiser, 1985), but due to space limitations these data are not

Table 1
Experiment 1: Overall Attribution of Statements to Town

Town	Same attitude		Opposite attitude		Total
	Number of statements	Proportion	Number of statements	Proportion	
Town A					
M	10.15	.56 (.67)	11.40	.64 (.67)	21.55
SD	3.23		3.08		
Town B					
M	7.85	.44 (.33)	6.60	.36 (.33)	14.45
SD	3.23		3.08		
Total	18.00	(1.00)	18.00	(1.00)	36.00

Note. $n = 72$. Correct proportions are in parentheses.

Single scale attitude measure. Subjects indicated their own attitudes to nuclear power on a single 7-point scale (*extremely opposed, moderately opposed, slightly opposed, neutral/don't know,* to *extremely in favor*).

As in Hamilton and Gifford (1976) and Spears et al. (1985), the basic distinctiveness manipulation requires that residents in Town B are perceived to occur less frequently than those in Town A. Following the procedure of these two studies, data where Town B entries were in a majority on the attribution measure were eliminated from the following analyses. Nine subjects were thereby excluded, leaving 77 in all.

Results

Independent Variables and Manipulations

A reliability check on the eight-statement attitude scale yielded a Cronbach's alpha of .87 ($n = 77$), $p < .0001$. Scores on this scale were highly correlated with responses on the single 7-point measure of attitude toward nuclear power (Pearson's $r = .91$, $p < .0001$). This suggests that the single measure may be used as a general indicator of attitude on this issue. Because the predictions concerning illusory correlation involve a relation between the distinctive town and self-relevant attitude positions, the 5 subjects describing themselves as neutral on the 7-point attitude scale were eliminated. This left 72 subjects in all.

Test for Overall Illusory Correlation Effect

Attribution of statements to town. A 2 × 2 contingency table was computed for each subject, representing the number of pro or anti statements attributed to the two towns. Table 1, which presents the attribution-of-statements means across all subjects, suggests a trend toward illusory correlation in the predicted direction. That is, the ratio of attributed to actual occurrences of statements is greatest in the small town/same attitude cell (0.44, compared with an actual probability of 0.33).

To test for illusory correlation, a phi coefficient was computed from each subject's 2 × 2 contingency table, and these data were transformed following Winer (1971).[4] Comparing the mean transformed phi score with zero resulted in a difference just short of significance: $M = 0.217$, $t(71) = 1.60$, $p < .06$ (one-tailed).

Percentage estimates of attitude positions within towns. Again, a 2 × 2 contingency table was computed for each subject, representing the percentage of pro- and antinuclear residents attributed to each town. Table 2 presents these mean scores. These data suggest a trend toward illusory correlation in the predicted direction; the ratio of estimated to actual percentages is greatest in the small town/same attitude cell (54.86%, compared with 50%). Comparing subjects' mean transformed phi score with zero resulted in a significant difference: $M = 0.293$, $t(71) = 2.65$, $p < .01$ (one-tailed).

To summarize, these findings suggest that illusory correlation does occur on both indices, although the effect is stronger on the percentage estimates measure.

Effect of Attitude

In this experiment, differences in illusory correlation between pro and anti subjects were not anticipated. However, one-way analyses of variance comparing the degree of illusory correlation produced by the two attitude groups on respective indices of illusory correlation (statement attribution measure, percentage estimates measure) revealed a significant difference; antinuclear subjects displayed greater illusory correlation than did pronuclear subjects. Specifically, on the statement attribution measure the mean of transformed phi scores for anti subjects was 0.796, compared with −0.246 for pro subjects. This difference was highly significant: $F(1, 70) = 18.08$, $p < .0001$. Similarly, on the percentage estimates measure, the mean transformed phi score for anti subjects ($M = 0.654$) significantly exceeded the value for pro subjects ($M = 0.004$), $F(1, 70) = 9.53$, $p < .005$.

These unpredicted differences are confirmed by inspecting the breakdown of data for the two attitude groups. On the statement attribution measure, antinuclear subjects considerably overestimated the proportion for the small town/same attitude cell (.53, compared with an actual value of .33), whereas the pronuclear subjects were much closer to the actual value (.36). Moreover, the mean of transformed phi scores significantly exceeded zero for the anti subjects, $t(31) = 4.52$, $p < .001$, but did not for pro subjects, $t(39) = -1.46$, *ns*. Similarly, on the percentage estimates measure, anti subjects relatively overestimated the small town/same attitude cell (61.44%, compared with an actual value of 50%), although the corresponding estimate for the pros was only 49.60%. Again, the mean transformed phi value significantly exceeded zero for the anti subjects, $t(31) = 4.29$, $p < .001$, but did not for the pros, $t(39) = 0.03$, *ns*.

To summarize, it appears that the predicted illusory correlation effect is confined to the antinuclear subjects on both measures. It follows that they account largely for the overall effect.

reported here. However, in the following studies, in line with Spears et al.'s predictions, evaluative differences that occurred on this measure were always in line with illusory correlation effects. That is, subjects tended to evaluate relatively more positively the town with which they associated their own attitude. (Significant main effects were obtained in both studies reported here.)

[4] Transformed phi = 2 arcsine $\sqrt{\text{phi}}$. All analyses reported here were also performed on the raw phi coefficients and phi scores transformed to Fisher's *Z* scores. These analyses produced equivalent results in terms of significance to those described in the text.

Table 2
Experiment 1: Overall Percentage Estimates

	Same attitude		Opposite attitude		
Town	Perceived %	Actual %	Perceived %	Actual %	Total
Town A					
M	47.53	50.00	52.47	50.00	100.00
SD	16.41		16.41		
Town B					
M	54.86	50.00	45.14	50.00	
SD	14.87		14.87		100.00
Total	102.39		97.61		200.00

Note. $n = 72$.

Effects of Attitude Extremity

Attitude extremity (slight, moderate, extreme) was defined by responses on the 7-point attitude measure. Examining attitude extremity effects separately for pro and anti subjects revealed no significant trends in illusory correlation for either group.

Discussion

Clearly, the findings of this experiment only partially support our hypotheses. Although there was a significant overall illusory correlation effect in the predicted direction, this was accounted for by the responses of antinuclear subjects only—pro subjects showed no illusory correlation effect. Two explanations suggest themselves:

1. There is a difference between anti and pro attitude holders that makes the former more susceptible to illusory correlations in this context. However, Spears et al. (1985) found no significant differences in illusory correlation between pro and anti subjects.

2. Subjects may share a prior expectation that the small town will be relatively more antinuclear than the large town. (This post hoc explanation occurred to us in the course of a study of community attitudes to proposals for new nuclear power stations in southwest England: Eiser, Spears, & van der Pligt, 1985.) It is well known that prior expectations may bias covariation estimates in the expected direction (e.g., see Alloy & Tabachnik, 1984; Crocker, 1981). If so, this would work to exacerbate illusory correlations for anti subjects, but counteract them for pro subjects. That is, the tendency to overassociate attitude-congruent positions with the small and distinctive town would be enhanced for the antis and diminished for the pros. Although no such effect was observed by Spears et al. (1985), the distinctiveness manipulation in that experiment may have been so strong as to dwarf any effects due to prior expectation.

Two further studies provided strong support for the second hypothesis (see Spears, 1985). First, it was shown that subjects (Exeter University students, $N = 294$) have a strong prior expectation associating antinuclear attitudes with increasingly smaller towns, and pro and neutral attitudes with increasingly larger towns. The second study (recruiting a subsample of the first; $n = 37$) applied this finding to the illusory correlation paradigm by demonstrating that subjects would perceive an illusory correlation consistent with their expectation in the absence of the infrequency (and self-relevance) manipulation. Specifically, subjects were presented with slides as before, but, whereas Town A was again described as larger than Town B, there were equal numbers of statements from both towns (Town B was supposedly more heavily sampled) and equal numbers of pro- and antinuclear attitude positions. In this study, relatively large transformed phi values were obtained (Ms = 0.741 and 0.704 for attribution and percentage estimates measures, respectively), indicating a strong illusory correlation effect (see Spears, 1985, for complete details). Overall, the effect of prior expectation in producing illusory correlations is consistent with a series of other studies (e.g., Chapman & Chapman, 1967; Hamilton & Rose, 1980).

Although differences between pros and antis were not predicted, we had predicted an effect of attitude extremity. It is not immediately obvious why we failed to find such an effect. However, this too may be due to the interference of prior expectations. The following experiment tests the original hypotheses of Experiment 1 in a context where town size and self-relevance are unconfounded and hence where the effect of prior expectation is eliminated.

Experiment 2

Method

Subjects

Subjects were students at the University of Exeter ($N = 105$) who were randomly selected and paid £1 for taking part.

Procedure

The stimulus materials used were identical to those in Experiment 1, the one important difference being that subjects were now told that Town A and Town B were of equal size. Specifically, the new part of the introduction read: "In fact Town A and Town B are of *equal size*, and in collecting opinions we drew random samples that were representative of each town. However, we drew a larger sample from Town A than from Town B so that the opinions of people from Town B occur *less* frequently in the slides that you will see, even though the two towns are really the same size."

Independent and Dependent Measures

These were identical to those used in Experiment 1. As in Experiment 1, subjects who reported more *B*s than *A*s in the statement attribution measure were excluded because these subjects could not have perceived Town B as being more distinctive. Seven subjects were thereby excluded, leaving 98 in all.

Results

Independent Variables and Manipulations

A reliability check on the eight-statement attitude scale yielded a Cronbach's alpha of .87 ($n = 98$), $p < .0001$. Scores on this scale were highly correlated with responses on the single 7-point measure of attitude toward nuclear power ($r = .90$, $p < .0001$). Seven neutral subjects, as defined on the single attitude measure, were excluded from analyses, as attitudinal position (pro/anti) was used to make predictions concerning illusory

Table 3
Experiment 2: Overall Attribution of Statements to Town

Town	Same attitude: Number of statements	Same attitude: Proportion	Opposite attitude: Number of statements	Opposite attitude: Proportion	Total
Town A					
M	10.20	.57 (.67)	11.62	.65 (.67)	21.82
SD	3.05		2.93		
Town B					
M	7.80	.43 (.33)	6.38	.35 (.33)	14.18
SD	3.05		2.93		
Total	18.00	(1.00)	18.00	(1.00)	36.00

Note. $n = 91$. Correct proportions are in parentheses.

correlation. This left 91 subjects; of these, 2 were excluded on the percentage estimates measure because estimates did not sum to 100 ($n = 89$ for this measure).

Test for Overall Illusory Correlation Effect

As before, a 2 × 2 contingency table was computed for each subject on both measures of illusory correlation. As in Experiment 1, positive illusory correlation was defined as an overassociation of one's own preferred attitude position with the distinctive town (Town B).

Attribution of statements to town. Table 3 presents the mean number of statements attributed to the towns. These data suggest a trend toward illusory correlation in the predicted direction; the proportion of statements attributed to the distinctive town/same position cell (.43) is somewhat larger than its distinctive town/opposite position counterpart (.35). The overall mean transformed phi value derived from these data (M = 0.279) is significantly greater than zero; $t(90) = 2.52$, $p < .01$ (one-tailed).

Percentage estimates of attitude position within towns. Table 4 presents a breakdown of the percentage estimates means. Again, these data indicate a trend toward the predicted effect: The estimate for the distinctive town/same position cell (55.95%) is higher than the actual value (50%), which in turn is higher than the mean of distinctive town/opposite position estimates (44.05%). By comparison, the mean percentage estimates for the nondistinctive town (Town A) serve only to augment this pattern of illusory correlation (47.45% and 52.55% for same and opposite positions, respectively). As on the previous measure, subjects' mean transformed phi score (0.316) significantly exceeded zero: $t(88) = 3.31$, $p < .001$ (one-tailed).

To summarize, data on both these measures provide clear support for an overall illusory correlation effect in the predicted direction.

Effect of Attitude

A critical finding of Experiment 1 was that, overall, anti attitude subjects displayed illusory correlation whereas pro subjects did not. Therefore, it is important to check for any such differences in this study.

One-way ANOVAs were performed comparing the levels of illusory correlation between anti and pro subjects for the two dependent measures. Neither produced a significant difference. Specifically, on the statement attribution measure, the mean transformed phi values were 0.253 ($n = 53$) and 0.317 ($n = 38$) for anti and pro subjects, respectively: $F(1, 89) < 1$, *ns*. On the percentage estimates measure, the analogous means were 0.343 and 0.277 ($n = 36$), respectively: $F(1, 87) < 1$, *ns*.

Effect of Attitude Extremity

As before, attitude extremity was defined according to the single attitude measure (slight, moderate, extreme). We predicted a positive relation between attitude extremity and degree of illusory correlation. Figure 1 depicts illusory correlation as a function of attitude extremity for the two indices. A clear trend supporting our prediction can be seen on both statement attribution and percentage estimates measures. On the statement attribution measure, mean transformed phi scores of 0.025 ($n = 28$, $SD = 1.05$), 0.222 ($n = 42$, $SD = 1.06$), and 0.733 ($n = 21$, $SD = 0.95$) associated with slight-, moderate-, and extreme-attitude holders, respectively, resulted in a significant trend, $F_{linear}(1, 88) = 5.35$, $p < .05$, as did analogous values on the percentage estimates measure (0.150, 0.227, and 0.704; ns = 27, 41, and 21; SDs = 0.94, 0.91, and 0.70, respectively), $F_{linear}(1, 86) = 4.27$, $p < .05$.

To summarize, these data support the prediction that subjects will perceive greater illusory correlations the more extreme their own attitude.

Discussion

The original hypothesis was that the self-relevance of attitude positions congruent with one's own would render these positions more salient, such that they are elaborately encoded and represented in memory. Positions coming from Town B also receive enhanced encoding due to their infrequency. Combining these two factors, it follows that attitude-congruent positions coming from Town B should be represented best of all (self-relevance plus infrequency). The results of this experiment are wholly consistent with this interpretation. As predicted, there was a significant illusory correlation effect, and this increased with attitude extremity.

In summary, the findings of these studies clarify and extend the findings of a previous experiment (cf. Spears et al., 1985).

Table 4
Experiment 2: Overall Percentage Estimates

Town	Same attitude: Perceived %	Same attitude: Actual %	Opposite attitude: Perceived %	Opposite attitude: Actual %	Total
Town A					
M	47.45	50.00	52.55	50.00	100.00
SD	16.44		16.44		
Town B					
M	55.95	50.00	44.05	50.00	
SD	15.40		15.40		100.00
Total	103.40		96.60		200.00

Note. $n = 89$.

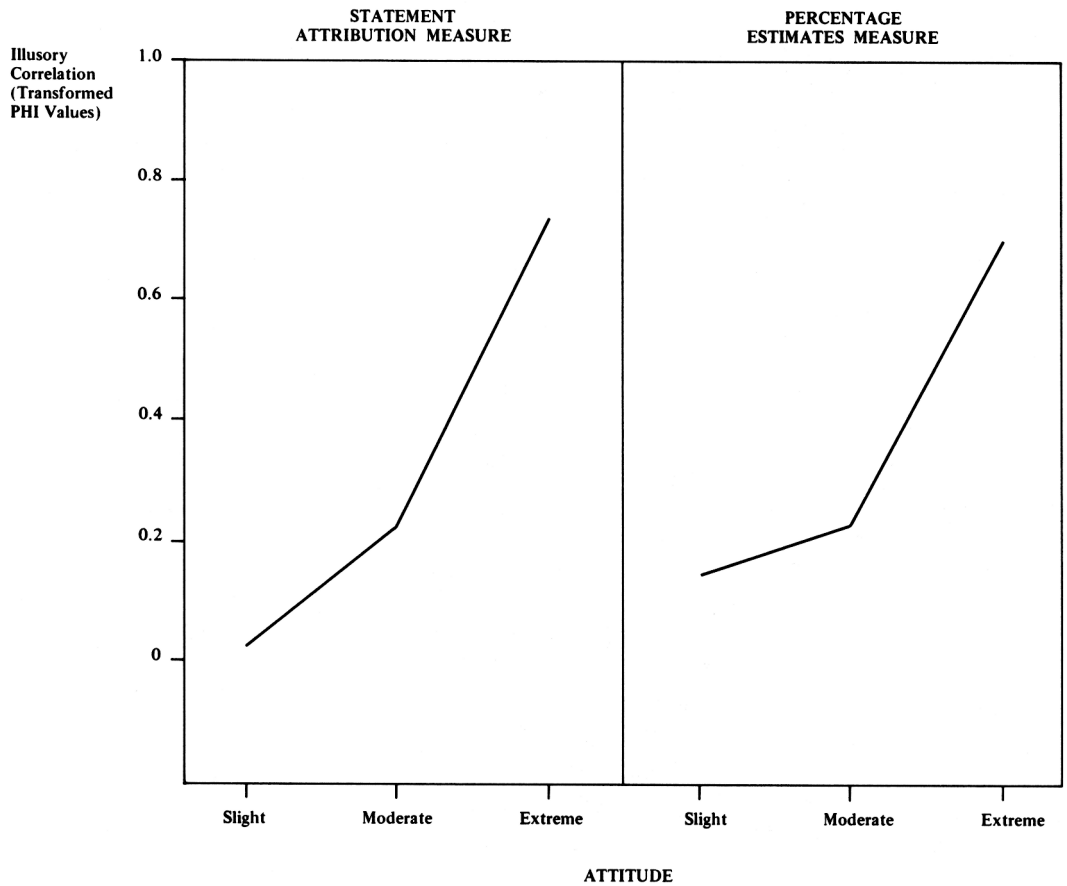

Figure 1. Illusory correlation as a function of attitude extremity. (Illusory correlation corresponds to mean transformed phi values.)

In that study it was shown that involvement and self-relevance could systematically influence the level of illusory correlation produced in the shared-infrequency paradigm developed by Hamilton and Gifford (1976). The aim of the first experiment here was to test whether self-relevance could mediate illusory correlations in the absence of distinctiveness due to the infrequency of attitudes. In short, this formed a test of whether such involvement factors were sufficient to mediate illusory correlations when pro and anti attitudes did not differ in their frequency. Although results provided only partial support for these predictions, subsequent investigations revealed this to be due to the confounding factor of prior expectations concerning the relation between town size and attitude.

In Experiment 2, the confounding variable of town size was eliminated and support was obtained for the original predictions. That is, people tended to associate personally acceptable attitude positions with the less frequently occurring (and therefore more distinctive) town. Moreover, as predicted, the strength of this effect was a function of attitude extremity. This finding supports the conclusion that salience due to self-relevance can mediate illusory correlations in the absence of infrequency on that dimension.

In terms of theoretical generalizations, this study provides an important advance on Spears et al. (1985). In the earlier study, overall, only people whose attitude was congruent with a minority position perceived an illusory correlation. The present study demonstrates that attitude holders may perceive an illusory correlation between a distinctive (infrequent) group and their attitude position, independent of the majority/minority manipulation on this dimension.

Although we are concerned primarily with social stereotyping phenomena, it is perhaps important first to consider these findings in terms of at least two other relevant areas of social cognition touched on by this research. An immediate comparison concerns the false-consensus literature (e.g., Ross, 1977). In contradistinction to the false-consensus effect, our findings suggest a differentiation in prevalence estimates of own/opposite attitude positions across different target groups. This could be due to two important differences between our studies and the typical false-consensus study. First, false-consensus effects typically derive from free-response, self-generated percentages (Mullen et al., 1985). Our studies are founded on sample-based estimates prompted by recall instructions. Second, the focus on intergroup differences makes it rather difficult to interpret the findings in terms of the false-consensus effect. In sum, the consensus estimates described here do not conform to criteria laid down for the measurement of the false-consensus effect (Mullen et al., 1985), and it is difficult even to see what an approximate indicator would be. Having said this, it seems likely that the mechanisms that may play a role in producing the false-consen-

sus effect (e.g., availability, salience) contribute to the illusory correlation mechanism discussed here.

A second issue concerns the current debate within the schema literature over the differential processing of incongruent versus congruent stimuli. Because this study implicates the notion of congruence—relating one's own attitude to similar positions—the relevance of this issue should be addressed.

There is evidence for the enhanced recall both of schema-incongruent information (e.g., Hastie & Kumar, 1979) and schema-congruent information (e.g., Rothbart, Evans, & Fulero, 1979). Stern, Marrs, Millar, and Cole (1984) have attempted to reconcile this contradiction by demonstrating the importance of whether schemata refer to groups or individuals. Whereas schema-incongruent information concerning the person may be better recalled than schema-congruent information, the opposite may be true when information relates to group members. However, it is not clear what kind of schema, if any, would be operating in our experiments. On the one hand, subjects may form schemata of the two towns; on the other hand, people's own attitudes may operate as some sort of schema.

Another major difference between schema studies and covariation assessment studies such as this relates to the kind of information that can be defined as congruent or incongruent with an established schema or hypothesis. Where incongruence is interpreted as infrequency, and the distribution of a 2 × 2 contingency table follows that of Hamilton and Gifford (1976), the fullest and smallest cells can be defined as congruent and incongruent, respectively. However, in terms of illusory correlations, the overestimation of either of these cells will lead to similar results (cf. Hamilton, Dugan, & Trolier, 1985; Rothbart, 1981). Studies that manipulate cell size have shown that both of these types of bias do occur (e.g., Arkes & Harkness, 1983).

To summarize, then, in the present study there is no necessary contradiction between the enhanced processing of infrequent stimuli and attitude-congruent information. Rather, this demonstrates the variety of factors that may impinge on information processing and social cognition. Second, covariation tasks differ from schema studies in ways that make direct comparisons difficult.

It is now important to extrapolate our findings to real-life social stereotyping contexts. In particular, it is possible that the present bias is especially functional where it occurs among members of distinctive minority groups (for whom group membership is most salient in any case, cf. Mullen, 1983). That is, minority group members may prefer to perceive their views as relatively representative of their group because this may provide consensual support and increase the perceived solidarity or cohesiveness of the group (cf. Spears et al., 1985). Thus, the mechanism described here may have wider social and functional implications than the mere description of biased perception.

At a more general level, this cognitive bias need not be confined to the realm of attitude perception. If self-relevance is a critical determinant of salience, this account should apply to any self-relevant characteristics (e.g., traits, behaviors, and so on). Moreover, this phenomenon provides the beginnings of a data-driven explanation of intergroup polarization processes. That is, this cognitive mechanism defines a process whereby people tend to perceive erroneous differences between two groups. Self-relevant attributes are relatively overrepresented in a distinctive group, with the result that groups are perceptually differentiated in the absence of any actual underlying differences. It can be seen that this account holds an advantage over the dominant categorization explanation of stereotyping. Such explanations are premised on an accentuation principle whereby intergroup differences and intragroup similarities are exaggerated (cf. Tajfel, 1969; Taylor, 1981). This account would seem to require some perceived kernel-of-truth differences or similarities in the first place for it to operate (Brigham, 1971). In common with Hamilton and Gifford (1976), the illusory correlation mechanism described here does not.

A final step in extending this line of research would be the explicit manipulation of subjects' identification with either group. The factor of self-relevance is likely to enhance the processing of group-based information also (Kanungo & Das, 1960). Indeed, insofar as attitude positions define social categories (pro and anti attitude groups) as well as psychological attributes, our studies provide some support for this idea. The prediction then would be that perceivers should tend to overassociate self-relevant attributes with self-relevant groups (the ingroup). Moreover, this need not be due to any egocentric bias but could be explicable purely in terms of the data-driven cognitive mechanism described above. To the extent that illusory correlations can underpin differential evaluation of groups (Hamilton & Gifford, 1976; Hamilton et al., 1985; Spears et al., 1985), such mechanisms may also help to explain ethnocentrism. Our research therefore argues for one cognitive reinterpretation of the relation between involvement, stereotyping, and prejudice, without necessarily having recourse to global motivational dynamics.

To summarize the conclusions broadly, these studies reveal further evidence for the impact of involvement factors on the illusory correlation bias in addition to those due to prior expectation or shared infrequency. Furthermore, whereas distinctiveness due to infrequency is contingent on a specific social context, involvement factors are likely to be relatively stable and pervasive features of such contexts. For such reasons, our findings help to emphasize the relevance of the illusory correlation concept to the broader literature on social attitudes and intergroup relations.

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