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Exposure to Dissent and Recall of Information

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Recent work on minority influence has led to a debate about whether majorities and minorities exercise different forms of influence. Nemeth (1986) has argued that consistent minorities induce different cognitive processes than do consistent majorities, with a resulting impact on the quality of the judgments rendered. Two experiments test this theory. In Experiment 1, Ss heard 3 tape-recorded lists of words and learned that either a minority or a majority differed in the category "first noticed." This feedback occurred either once or over 3 trials. When exposure was once, recall was not affected by the source; when it was consistent, Ss exposed to the minority view recalled more words than those exposed to the majority view. In Experiment 2, Ss were exposed to a minority view that was either consistent over time or inconsistent over time. Ss exposed to a consistent minority had better recall than control Ss. Exposure to an inconsistent minority did not improve recall. The results offer support for the Nemeth (1986) formulation.

For many years, research on social influence processes was dominated by the study of conformity. Sherif's (1935) and Asch's (1951, 1956) seminal work showed the power of the majority to induce movement toward or adoption of its position even when it was clearly incorrect. Consequently, researchers have often concentrated on when individuals conform to that majority position or when they remain independent, that is, state their own authentic views (see generally Allen, 1965). More recently, psychologists have come to recognize that individuals or a minority of individuals can do more than conform or be independent: They can attempt to persuade the majority (Moscovici & Faucheux, 1972; Moscovici & Nemeth, 1974).

In the original experimental study demonstrating the ability of the minority to persuade the majority, Moscovici, Lage, and Naffrechoux (1969) had 2 individuals in a group of 6 consistently call blue slides "green." Such behavior led to 8.42% "green" responses from the other 4 subjects, a significant difference from control subjects, who correctly identified the slides as "blue." Subsequent studies have confirmed the ability of the minority to persuade the majority of its views. This phenomenon has been studied for perceptual items (Moscovici et al., 1969; Nemeth, Swedlund, & Kanki, 1974) and for attitudinal items as diverse as air pollution (Mugny & Papastamou, 1980), feminism (Paicheler, 1976), and compensation in a personal injury case (Nemeth & Wachtler, 1974). Several important aspects of this form of influence have become apparent as a result of this research (see generally Maass & Clark, 1984).

Many studies have documented the importance of the minority's particular behavioral styles in its influence attempts. In

particular, researchers have emphasized the importance of consistency over time on the part of the minority as one very important behavioral style. In Moscovici et al.'s (1969) study, for example, consistent judgments of "green" by the 2 minority subjects led to influence, whereas when the 2 minority subjects called the blue stimuli "green" $\frac{2}{3}$ of the time and "blue" $\frac{1}{3}$ of the time, they had no influence on the majority. Subsequent studies (e.g., Nemeth et al., 1974) have moved from repetition to more subtle operational definitions of consistency (e.g., the patterning of the judgments with properties of the stimuli) but again have underscored the importance of perceived consistency on the part of minorities in order for them to exert influence. Such consistency also appears to aid the perception of confidence, which may be linked to influence (Maass, Clark, & Haberkorn, 1982; Moscovici & Lage, 1976). Independent ways of creating the appearance of confidence lend credence to that possibility. Nemeth and Wachtler (1974), for example, had the person espousing the minority position take the head seat at a rectangular table, take the side seat, or be assigned the head or the side seat. When the person chose the head seat, he was perceived to be more confident; this act of confidence significantly aided him in his influence attempts.

A second significant trend in these research findings is that minorities tend to exert their influence at a *latent*, or indirect, level rather than at a *manifest*, or direct, level. In the original study by Moscovici et al. (1969), for example, individuals may have adopted the minority position in public only 8.42% of the time, but they showed significantly more influence in a subsequent task in which they were asked to categorize "blue/green" stimuli into the categories of "blue" or "green." The discrimination threshold of most subjects shifted significantly in favor of "green." In Nemeth and Wachtler's (1974) study on injury deliberations, no minority influence was apparent at the public-manifest level. No individual lowered his compensation during the deliberation. However, private judgments and judgments on related cases showed substantial influence by the minority.

Other studies have corroborated these findings that minority

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influence is stronger in private than in public (Maass & Clark, 1983; Martin, 1987; Mugny, 1976) and that it is stronger on indirect issues than on the issue directly at hand. Aebischer, Hewstone, and Henderson (1984), for example, found that the minority's choice for new wave music led to an increased preference for contemporary music. Perez and Mugny (1986) found that the minority proabortion message led to a change in favor of birth control.

Particularly as a result of these latter findings, some debate has ensued over whether the influence exerted by minorities is the same or is different in some important ways from the influence exerted by majorities. Some researchers have concentrated on the ways in which these processes are similar, differing only in degree (Latane & Wolf, 1981; Tanford & Penrod, 1984; Wolf, 1979). Others have focused on the ways in which they differ (Moscovici, 1980; Nemeth, 1976, 1986). The latter have tended to emphasize the manifest/latent distinction referred to previously.

Although the evidence is overwhelming that people publicly adopt the majority position more than the minority position (Kalven & Zeisel, 1966; Nemeth, 1976; Tanford & Penrod, 1984), the evidence suggests that these majorities may not exert as much influence at the private or latent levels unless the majority is an important reference group (Newcomb, 1943; see Mackie, 1987, for a competing perspective). By contrast, most of the researchers who investigated minority influence found that the private or latent levels are at least as influenced as are the public levels (see generally Maass & Clark, 1984). In fact, Maass and Clark (1983) compared both forms of influence and found movement to the majority in public and movement to the minority in private. Such findings provide evidence for Moscovici's (1980) contention that there are two distinct forms of influence. People are reluctant to take the minority position in public because of fear of rejection (Schachter, 1951) or possibly because of negative stereotypes associated with minority positions (Mugny, 1982). However, Moscovici theorized that those minority views engage a validation process in which individuals more closely inspect the issue. Minority views generate arguments and counterarguments, which in many cases convince individuals of the truth of the minority position. By contrast, he hypothesized that majority views engage a comparison process. The individual compares, relatively passively, the two contrasting positions and tends to exhibit public compliance without accompanying attitude change.

A different theoretical perspective (Nemeth, 1976, 1986) also concentrated on the differences between the two influence processes but did not focus on the public/private aspect. Rather, Nemeth argued that both majorities and minorities induce active thought about the issue. However, they stimulate quite different forms of thought processes, which affect the quality of the attitudes, decisions, or judgments formed. Starting with the recognition of three differential patterns in majority and minority influence—namely, that majorities induce more stress than do minorities, that people assume that majorities are more correct than minorities, and, finally, that people are motivated to assume that majorities are correct and minorities are incorrect—Nemeth (1986) provided contrasting visions for the kinds of thought processes stimulated by dissenting majority versus minority views. Majorities, she argued, stimulate convergent

thought processes and, specifically, thought processes that take the perspective posed by the majority. Thus, individuals will actively look at the issue again but will view it from the perspective of the majority's judgments. By doing so, they attempt to discern which is correct, the majority judgment or their own judgment. The world of alternatives is reduced to two, and often they adopt the majority view. By contrast, she argued that minorities stimulate a reconsideration of the issue but, importantly, they stimulate divergent thought processes. The issue is considered from multiple perspectives, one of which is that posed by the minority. Consequently, the quality of the decisions or judgments rendered will be better, of higher quality, when there is exposure to dissenting minority views.

It is important to point out that Nemeth's (1986) formulation did not concentrate on whether the individual moves to the majority or the minority position or on whether the movement, if any, is manifest or latent, public or private. Rather, she concentrated on the thought processes that are induced as a result of the exposure to dissenting majority versus minority views. And she argued that the quality of the judgments reached, the decisions rendered, and even the performance that is manifested will be, on balance, qualitatively better. Such an approach becomes important then for research concentrating on raising the quality of individual (Kahneman & Tversky, 1972; Nisbett & Ross, 1980) and group decision making (Janis, 1982), as well as attitudes or performance.

To date, several studies corroborate such hypotheses. Trost, Maass, and Kenrick (1989) recently tested the prediction that minority dissent will stimulate more issue-relevant thoughts (multiple perspectives), whereas majority dissent will stimulate more message-specific thoughts (convergent majority perspective). They found evidence for these hypotheses by using a thought-listing technique. Nemeth and Wachtler (1983) found evidence for improved performance as a result of exposure to minority dissent rather than majority dissent. Using an embedded figures test, they found that individuals exposed to majority dissent followed that majority exactly or performed as they would alone. By contrast, those exposed to minority dissent detected correct solutions not proposed by the minority. In another study, Nemeth and Kwan (1985) found that subjects gave more original associations to words as a result of exposure to minority dissent. In fact, they found evidence for decreased originality subsequent to exposure to majority dissent. A recent study by Mucchi-Faina, Maass, and Volpato (1989) was consistent with these latter findings. Italian students in Perugia were asked to formulate the type of representation needed to promote the international image of Perugia. The presence of an original minority proposal led to increased originality on the part of the subjects. In contrast, when a majority expressed an original position or when both sources did so, individuals elaborated fewer proposals, and in general, the proposals were of a conventional type.

In a study in which convergent and divergent thought processes were more directly compared, Nemeth and Kwan (1987) showed subjects a letter string (e.g., tNOWap) and asked them to name the first three-letter word that they noticed. All named a word formed by capital letters from left to right (e.g., NOW). The dissenting viewpoint, which was believed to be held by a minority or a majority of individuals in the group, utilized a

backward sequencing of those letters (e.g., WON). When asked to form all the words they could from a sequence of letter strings, those exposed to minority dissent used all three possible strategies (forward, backward, and mixed) and, as a result, detected more words from the letter strings. Those exposed to majority dissent evidenced convergent thought and, in particular, adopted the perspective posed by the majority. They found more words by using a backward sequencing (i.e., the strategy used by the majority), but because this was at the expense of finding words by using a forward or mixed strategy, their performance was at the level of the control group, which was not exposed to dissent.

Although these studies offer evidence for relatively higher order cognitions involving strategies of problem solving and performance, Nemeth's (1986) perspective should also occur at the levels of information processing and recall. The roles of "learning and retention of new information" recently have been emphasized in the attitude change literature, perhaps because of their "implications for understanding resistance and persistence processes in social influence" (Chaiken, 1986, p. 10). Recall is also one of the more primitive or basic cognitive processes (Hastie, 1981). This study is an attempt to test the hypotheses proposed by Nemeth (1986) as they relate to the effects of majority versus minority dissent on recall of information.

In addition to testing the hypothesis that minority dissent fosters better information processing and recall of information than majority dissent, we wished to test some of the implications of previous work on minority influence that has emphasized the role of consistency over time on the part of the minority in order to exert influence. Although Nemeth's (1986) formulation focused on cognitive processes and quality of output rather than adoption of a particular position, it is possible that consistency over time is as essential for the inducement of divergent thought as it has been found to be for movement to the proposed position. It is important to point out that all of the previous researchers testing the Nemeth (1986) formulation used consistency over time as the standard procedure. Thus, majorities or minorities repeatedly gave a dissenting view (Nemeth & Wachtler, 1983) or repeatedly saw a word formed by the backward sequencing of letters (Nemeth & Kwan, 1987). Whether the findings would hold for a single exposure to majority versus minority dissent remains an empirical issue. Our specific predictions are that, with consistency over time, minority dissent will stimulate significantly better recall of the information than will majority dissent. However, when exposure occurs only once, the source of the opposing view (majority or minority) may not make any appreciable difference. Finally, we explored the possibility that such improved recall will hold not only for the information on which the dissent is based but on subsequent information as well.

Study 1

Method

Overview

The basic design was a 2×2 factorial, plus a control group with one variable that constituted the source of the opposing view (minority/

majority) and a second variable that constituted the consistency variable over time (one trial vs. three trials).

Subjects and Procedure

Subjects were 66 female undergraduates from an introductory psychology course who volunteered to participate. Of the original 72 subjects who volunteered, 4 were dropped because of not meeting the experimental requirements, 1 because English was a second language, and 1 because of her suspicion about the experimental manipulations.

Subjects were tested in groups of 4 and were told that they would hear three tape-recorded lists of 14 words each and that they were to write down the first common category of words that they noticed. Each list consisted of 4 words from the category of "fruits" and 2 words each from the categories of "birds," "furniture," "tools," "clothing," and "transportation." The words that represented "fruits" were the first 2 and the last 2 words, which made it likely that "fruits" would be the first category noticed. The experimental requirement was that the subject first notice the category of fruits on each trial. Only 4 subjects did not do this.

After hearing three such 14-word tapes and writing down the first category of words they noticed, subjects in the experimental conditions were given feedback regarding their responses. Control subjects were given no feedback. The forms of feedback were as follows:

1. Minority one time. Subjects were given feedback for List 1 only. They were told that 1 person first noticed "birds" and that 3 persons first noticed "fruits."

2. Minority three times. Subjects were given feedback three times: for Lists 1, 2, and 3. The feedback was the same as for the minority one time condition but was given for all three lists.

3. Majority one time. Subjects were given feedback for List 1 only. They were told that 3 persons first noticed "birds" and that 1 person first noticed "fruits."

4. Majority three times. Subjects were given feedback three times: for Lists 1, 2, and 3. The feedback was the same as for the majority one time condition but was given for all three lists.

After receiving such feedback (or no feedback in the control condition), subjects were told that they would hear a list of 42 words and that they should write down every word that they could remember from the list. In fact, the tape recording consisted of the 42 words previously heard as Lists 1, 2, and 3, presented in random order. Subjects then heard a tape-recorded list of 30 new words and were asked to write down every word that they could remember. This new list consisted of 5 words each from six new categories, for example, "gems" or "professions." They were then given a brief questionnaire concerning their impressions and moods, before being debriefed and dismissed.

Results

Two 5×1 analyses of variance (ANOVAS) were calculated for the five conditions (minority one time, minority three times, majority one time, majority three times, and the control) for List 1 (the original list of 42 words) and List 2 (the list of 30 new words). Because the lists consisted of a different number of words, we divided the number of words correctly recalled on List 1 by 42 and the number of words correctly recalled on List 2 by 30.

The ANOVA for List 1 revealed a significant main effect for proportion of words correctly recalled, $F(4, 65) = 7.62, p < .01$. Dunnett tests showed a significant difference between the minority three times condition and the control, $t(5, 61) = 3.1, p < .05$, and a significant difference between the majority three times condition and the control, $t(5, 61) = 2.3, p < .05$. Subjects

Table 1
Proportion of Words Correctly Recalled in Study 1

Source	Majority		Minority		Control
	1 time	3 times	1 time	3 times	
List 1	.51 _{ab}	.39 _c	.54 _{ab}	.60 _a	.48 _b
List 2	.56 _{ab}	.51 _b	.62 _a	.63 _a	.54 _b

Note. Means having the same subscript are not significantly different at $p < .05$, using a Duncan range post hoc test.

exposed to the consistent (three times) minority had significantly better recall than control subjects; those exposed to the consistent (three times) majority had significantly poorer recall than control subjects. Neither the minority one time nor the majority one time condition significantly differed from the control condition, $t(5, 61) < 2.2$, *ns*).

The 2×2 factorial for proportion of words correctly recalled on List 1 showed a significant main effect for source, $F(1, 48) = 15.4$, $p < .01$; subjects exposed to minority dissent showed significantly better recall than those exposed to majority dissent. There was no main effect for consistency over time, but there was a significant interaction between source and consistency over time, $F(1, 48) = 9.3$, $p < .01$. Duncan range post hoc tests showed that when exposure occurred once, subjects in the minority condition did not differ significantly from those in the majority condition ($p > .10$). When exposure was consistent over three trials, those exposed to minority dissent showed significantly better recall than those exposed to majority dissent ($p < .05$). Those exposed to consistent majority dissent showed significantly poorer recall than subjects in any other condition ($p < .05$). (See Table 1.)

Separate analyses were conducted for the proportion of "fruits" correctly recalled, the proportion of "birds" correctly recalled, and the proportion of the "other four" categories (i.e., "tools," "transportation," "furniture," and "clothing") correctly recalled. (See Table 2.) Both "fruits" and the "other four" revealed the same patterns that were found for the total proportion of words correctly recalled. Subjects exposed to minority dissent had significantly better recall of the "fruits" and "other four" categories than those exposed to majority dissent, $F(1, 48) = 6.2$, $p < .01$; $F(1, 48) = 14.8$, $p < .01$, respectively. There was also a significant interaction for "other four," $F(1, 48) = 7.5$, $p < .01$, showing the same pattern that was found for proportion of total correct words. When exposure occurred once, majority and minority sources did not differ ($p < .01$). When dissent was consistently repeated, subjects exposed to minority dissent recalled more words in the "other four" categories than did subjects exposed to majority dissent ($p < .05$). Dunnett's *t* tests revealed that such consistent minority dissent led to better recall than did the control condition, $t(5, 61) = 3.1$, $p < .05$, but that recall in the consistent majority dissent conditions did not differ from the control condition ($t < 2$, *ns*).

For the recall of "birds," which was the category favored by the dissenter(s), there was no main effect for source or consistency. Only the interaction between source and consistency was significant, $F(1, 48) = 7.9$, $p < .01$. When exposure occurred once, majority and minority sources did not differ. When expo-

sure was consistent over three trials, subjects exposed to the minority had significantly better recall than those exposed to the majority ($p < .05$). In addition, subjects in the minority three times condition had significantly better recall than did subjects in the minority one time condition ($p < .05$). Dunnett's *t* tests showed that the subjects exposed to the consistent minority (three times) had significantly better recall of "birds" than did control subjects, $t(5, 61) = 2.3$, $p < .05$. None of the other experimental conditions significantly differed from the control.

Finally, we attempted to understand the organizational processes of memory in these different conditions by noting order effects in recall. Specifically, do subjects differ in their tendency to cluster words by category? Because many clustering measures vary with the number of categories recalled, the distribution of total items, or the total number of items recalled, we chose the adjusted ratio clustering (ARC) measure developed by Roenker, Thompson, and Brown (1971). This measure was recommended by Ostrom, Pryor, and Simpson (1981) because it does not vary with irrelevant characteristics of recall. The measure is computed as follows:

$$ARC = \frac{R - E(R)}{N - K - E(R)},$$

where *R* is the observed number of repetitions, *E*(*R*) is the expected number of repetitions, *N* is the total number of all items recalled, and *K* is the number of conceptual categories represented in the presentation list.

The 5×1 ANOVA on the clustering index for List 1 revealed a significant effect for condition, $F(4, 65) = 2.6$, $p < .05$. Dunnett tests revealed that subjects in the majority three times ($M = .20$) condition showed significantly less clustering than subjects in the control ($M = .45$) condition, $t(5, 61) = 2.2$, $p < .05$. A Source \times Consistency factorial ANOVA on clustering revealed a marginally significant main effect for source, $F(1, 48) = 3.0$, $p < .09$. Subjects exposed to minority dissent showed marginally greater clustering of recall than those exposed to majority dissent. There was also a significant Source \times Consistency interaction, $F(1, 48) = 5.2$, $p < .03$. Duncan post hoc tests revealed that when exposure occurred once, majority ($M = .45$) and minority ($M = .41$) sources did not differ. When exposure was consistent over three trials, those exposed to minority dissent ($M = .54$) showed significantly greater clustering than did those exposed to majority dissent ($M = .20$). Those exposed to the consistent majority (three times) showed significantly less clus-

Table 2
Proportion of Words Correctly Recalled by Category in Study 1 (List 1 Only)

Category	Majority		Minority		Control
	1 time	3 times	1 time	3 times	
Fruits	.58 _{ab}	.54 _b	.65 _a	.67 _a	.59 _{ab}
Birds	.56 _{ab}	.41 _b	.43 _b	.63 _a	.43 _b
Other 4	.48 _{ab}	.31 _c	.52 _a	.56 _a	.41 _{bc}

Note. Means having the same subscript are not significantly different at $p < .05$, using a Duncan range post hoc test.

tering than those who were only exposed to the majority once ($p < .05$).

For List 2 (i.e., the list of 30 new words), the results are even less complicated. The 5×1 ANOVA for proportion of total words correctly recalled revealed a significant effect for condition, $F(4, 65) = 4.2, p < .01$. The Dunnett test revealed that subjects exposed to the minority once and those exposed to the minority three times had significantly better recall than did control subjects, $t(5, 61) = 2.6$ and $t(5, 61) = 2.3, ps < .05$, respectively. Neither majority condition significantly differed from the control. The 2×2 (Source \times Consistency) factorial ANOVA revealed a main effect for source, $F(1, 48) = 12.1, p < .01$. Subjects exposed to minority dissent had better recall than those exposed to majority dissent. There was no main effect for consistency, nor was there a significant Source \times Consistency interaction, $F(1, 48) = 1.6, ns$. Analyses on the clustering measure did not reveal any significant differences between conditions for List 2.

Questionnaire items on reported moods revealed that subjects were more challenged in the majority conditions than in the minority conditions, $F(1, 48) = 7.2, p < .01$. They also had fairly veridical perceptions about their own performance. When subjects were asked to guess whether the number of words they recalled was less than others or more than others, there was a marginal main effect for source, $F(1, 48) = 3.21, p < .08$; a marginal main effect for consistency, $F(1, 48) = 3.20, p < .08$; and a significant interaction, $F(1, 48) = 6.27, p < .02$, between source and consistency. Subjects believed their recall to be poorer when they were exposed to a majority rather than a minority and poorer when they were exposed to dissent three times rather than one time. When they were exposed to the majority judgment three times, they reported having the poorest recall ($p < .05$). By and large, they were correct in that report.

Discussion

The findings offer considerable support for the contention that exposure to consistent minority dissent stimulates better recall of information. Subjects exposed to consistent (three times) minority dissent had better recall than subjects in the control condition. They also had significantly better recall than subjects exposed to consistent (three times) majority dissent. Subjects in the latter condition even evidenced poorer recall than did control subjects. When exposure to dissent occurred on only one trial, however, such differences disappeared. Majority and minority conditions did not differ from one another, nor did they differ from the control. These findings are even more compelling when one considers the recall on the totally new list (List 2), which did not include any of the words or categories on which dissent occurred. On this list, subjects exposed to the minority dissent (either one or three times) had better recall than those exposed to the majority dissent (either one or three times).

These findings appear to be quite general because they basically hold for all six categories of words. Subjects exposed to minority dissent had better recall in the categories of "fruits" and "other four" (i.e., "clothing," "tools," "furniture," and "transportation"). For both "birds" and "other four," the

Source \times Consistency interaction showed that these differences occur primarily when exposure is consistent over time.

There are two basic points to be made. First, differing views that emanate from a consistent minority aid recall of information. Those same views from a consistent majority do not have such beneficial consequences. Although Nemeth (1986) concentrated on the benefits that accrue from minority views in terms of performance and the quality of problem solving and decision making, support is apparent for the hypotheses with regard to information processing and recall of information. Individuals who were exposed to minority dissent recalled more words from a list than did either the control group or individuals who were exposed to majority dissent. Such improved recall occurred even for a subsequent list that was not the source of disagreement. Thus, the findings lend credence to the notion that dissenting minority views aid information processing and that, in particular, individuals recall more items of the information that is presented.

Such general findings, however, may have one major provision. Although consistency has been the standard procedure in previous studies, it appears to be an important factor underlying the differences between exposure to majority and minority dissent. On List 1, consistent minority dissent stimulated better recall than that of the control subjects, and consistent majority dissent led to poorer recall than that of the control subjects. However, when exposure occurred only on one trial, such differences disappeared. Minority and majority dissent did not differ from one another, nor did either differ from the control. Thus, much like the previous literature in which researchers investigated how minorities influence others to adopt their position, it appears in this study that consistency is a necessary factor for the stimulation of better recall of information as a result of exposure to minority views.

A second point (one that is more speculative but perhaps worthy of further study) is that individuals who are exposed to consistent minority dissent may use better strategies for recall than do individuals who are exposed to consistent majority dissent. The former organized the words recalled by clustering and categorizing them—devices that have been found to aid recall (Bower, Clark, Lesgold, & Winzenz, 1969; Cohen, 1963; Tulving & Pearlstone, 1966). In fact, the evidence suggests that subjects who are exposed to consistent majority dissent may underutilize such devices and generally show the poorest performance. These findings must be considered speculative because they were not predicted and because they were found for List 1 but were not found for List 2.

Study 2

A plausible alternative explanation for the fact that minority dissent stimulates better recall of information than does majority dissent is that individuals who are exposed to the minority are themselves in the majority, whereas those who are exposed to the majority are themselves in the minority. For example, in Study 1 individuals in the majority received confirmation of their own views by 2 other people and received disagreement from 1 person, whereas individuals in the minority received confirmation from no one. Thus, one might argue that those in the majority who are exposed to minority dissent are more

confident, are in a better mood, and are motivated to work well at the task—all of which might improve recall. Our approach, however, has been the reverse. We have argued that it is the exposure to minority dissent that stimulates such recall. It is not the fact of agreement by other members of the majority by means of intervening processes such as mood or bolstered confidence.

In order to test this potential alternative explanation, which involves agreement with one's views, we collected data on two types of control groups. In the first control group, we gave subjects no feedback regarding the judgments of the individuals in the group (the same as in Study 1). In the second control group, we gave subjects feedback that all individuals were in agreement. Thus, each person received full agreement with her own judgment, a situation that the previously described alternative explanation would favor for producing better recall. In fact, that explanation would favor the control group that was given complete agreement over those exposed to minority dissent (who are given partial agreement from other members of the majority).

Our predictions would be the reverse. Because it is exposure to consistent minority dissent rather than agreement by others that is the vehicle for enhanced recall, we would predict that the control group that was given complete agreement would show poorer recall than those exposed to minority dissent. We would tend not to make predictions of any sizable differences between the two control groups, because neither involves exposure to dissent, but we would not predict that feedback of agreement would be superior to no feedback. In fact, the reverse might be more likely, because agreement can foster unreflection.

Perhaps more important, in this second study we further explored the issue of consistency. In Study 1 we demonstrated the importance of consistency over time to differentiate between exposure to minority versus majority dissent. However, a lack of consistency was defined in terms of a single exposure rather than inconsistency over time. The latter has been the basis for most studies in which researchers investigate consistency and minority influence. Moscovici et al. (1969), for example, defined consistency over time in terms of repeated judgments of "green" regarding blue slides. Inconsistency was defined as some judgments of "green" and some judgments of "blue" to these blue slides. Nemeth et al. (1974) defined consistency in terms of the patterning of the judgments regarding a property of the stimulus, whereas they defined inconsistency in terms of a random relationship. Both studies showed increased influence by minorities who manifested a consistent pattern of dissent, but consistency was studied in relation to some form of inconsistency over time.

In this second study, we attempted to extend our knowledge of the role of consistency by using the same paradigm as that of Study 1, except with comparisons between consistency over time and inconsistency over time on the part of the minority. Two forms of inconsistency were tested. One form, as suggested by the previous studies, has the minority revert to the judgment held by the majority. Thus, the naive subjects' judgment is corroborated by the minority on some of the trials. Another form of inconsistency has the minority source vary his or her position without corroborating the position of the majority. In the latter condition, the minority is inconsistent in its judgment but consistent in its dissent. Our hypotheses were that the positive con-

tributions of exposure to minority dissent for recall would again be demonstrated when the minority is consistent over time. We would not predict that inconsistency by the minority would promote recall, but this remains an empirical question. We predicted that it is dissent—in particular, consistent dissent—that would promote the divergent cognitive effort that results in better recall of information.

Method

Overview

The method used in this study was identical to that used for Study 1 with the exception of the feedback that was given the subjects regarding the first category noticed. Three experimental conditions were run. The first represented consistent dissent over time and was a replication of the minority three times condition of Study 1. The other two experimental conditions represented inconsistent dissent: One reverted back to the majority; the other did not. Two control conditions were also used: One involved no feedback to the subjects, the other involved feedback of complete agreement by the subjects.

Subjects and Procedure

Subjects were 91 female undergraduates from an introductory psychology course who volunteered to participate. Of the original 98 who volunteered, 7 were dropped because they did not meet the experimental requirements.

As in Study 1, subjects were tested in groups of 4 and were asked to write down the first category they noticed on hearing a tape-recorded list of 14 words. Three such lists were presented; these were the same lists that were used in Study 1. The experimental requirement was that subjects first notice the category "fruits," which was the category first and last heard, as well as the category representing most of the words.

After hearing three such lists, subjects were given feedback as described in the following paragraphs:

Consistent dissent. Subjects were given feedback three times (i.e., for Lists 1, 2, and 3). They were repeatedly told that 1 person first noticed "birds" and that 3 persons first noticed "fruits." The feedback was "birds, fruits, fruits, fruits" for each list.

Inconsistent dissent "tools." Subjects were given feedback three times (i.e., for Lists 1, 2, and 3). They were told that 1 person consistently dissented from the others but that her position changed from one list to the next: On List 1 she first noticed "birds," on List 2 she first noticed "tools," and on List 3 she first noticed "birds." The feedback was "birds, fruits, fruits, fruits" for Lists 1 and 3 and "tools, fruits, fruits, fruits" for List 2.

Inconsistent dissent "fruits" (reverting to the majority). Subjects were given feedback three times (i.e., for Lists 1, 2, and 3). They were told that 1 person inconsistently dissented from the others: On List 1 she first noticed "birds," on List 2 she first noticed "fruits" (agreeing with the majority), and on List 3 she first noticed "birds." The feedback was "birds, fruits, fruits, fruits" for Lists 1 and 3 and "fruits, fruits, fruits, fruits" for List 2.

Control (no feedback). Subjects were given no feedback regarding the first category noticed on any of the lists.

Control (complete agreement). Subjects were given feedback three times (i.e., for Lists 1, 2, and 3). They were repeatedly told that everyone was in complete agreement: Everyone first noticed "fruits." Thus, the feedback was "fruits, fruits, fruits, fruits" on all three lists.

After receiving such feedback (or not receiving it), subjects listened to a tape-recorded list of all 42 words in a random order (the same order that was used in Study 1) and wrote down all the words they could recall. They then listened to a completely new list of words (the same list used

Table 3
*Proportion of Words Correctly Recalled
by Control Groups in Study 2*

Source	No feedback	Complete agreement
List 1	.46 _a	.41 _a
List 2	.51 _b	.49 _b
<i>M</i>	.48	.45

Note. Means having the same subscript are not significantly different at $p < .05$, using a Duncan range post hoc test.

in Study 1) and again wrote down every word they could recall. With the exception of the feedback, the procedure was identical to that in Study 1.

Results

In order to test the feasibility of the alternative explanation, we compared the control condition in which subjects were given no feedback regarding the first category of words noticed by the members of their group (no feedback condition) with the control condition in which subjects were given feedback that all members, themselves included, first noticed the category of "fruits" (complete agreement condition). The alternative explanation favored the complete agreement control group for stimulating recall, but our perspective predicted no differences and that if any differences emerged, complete agreement might even hinder recall. A comparison of the two control groups revealed no significant difference on proportion of correct words recalled for either List 1 ($p > .10$) or List 2 ($p > .10$). In fact, the direction of the means favored the no feedback control subjects ($M = .48$) over the complete agreement control subjects ($M = .45$). (See Table 3.)

In order to test the hypotheses regarding consistency and inconsistency on the part of the minority, data were analyzed by means of a 4×2 analysis of variance. The first variable represented the three experimental conditions and the control no feedback condition; the second variable represented the repeated measure of List 1 (the original 42 words) and List 2 (the new list of 30 words). For proportion of correct words recalled, the number of correct words for List 1 was divided by 42, and the number of correct words for List 2 was divided by 30. This analysis of variance revealed a marginally significant main effect for condition, $F(3, 70) = 2.6, p < .059$, and a significant main effect for list, $F(1, 70) = 31.2, p < .01$. Subjects recalled proportionally more correct words from List 2 than from List 1. Planned contrasts revealed that subjects in the consistent "birds" condition had significantly better recall than did the control subjects, $t(35) = 1.7, p < .05$, whereas subjects in neither of the inconsistent conditions showed significantly better recall than the control subjects, $t(35) < 1.0, ns$. (See Table 4.)

Discussion

Study 2 corroborates the finding that exposure to consistent minority dissent can stimulate better recall of information. It also underscores the importance of such consistency over time.

Whereas Study 1 showed that single exposure to minority dissent did not result in improved recall, Study 2 shows that inconsistency over time on the part of the minority also removes the stimulating effects of such exposure for recall of information.

The importance of consistency has been previously documented by researchers who have been interested in how minorities influence others to move toward their position (see generally Maass & Clark, 1984). They generally found that consistency is a necessary, if not sufficient, condition for such movement. The favored explanation has been that consistency defines a position and fosters the perception that a minority is committed to that position. Inconsistency, which tends to be operationalized in terms of reverting back to the majority position, is presumed to foster an assumption that the minority lacks a defined position and commitment to that position. Although such considerations are plausible in that people are unlikely to move to a position that is not consistently defined, it is not as immediately obvious that such consistency should be important for stimulating improved recall of information. One could have as easily predicted that some forms of inconsistency might also stimulate recall. For example, inconsistency that reverts back to the majority might have produced increased confidence and morale and thus provided stimulation. This is the alternative explanation that we briefly considered earlier.

We studied this possibility in two ways. First, we had two control groups, one that received no feedback and another that received feedback that all were in agreement. The latter condition, given the morale perspective, might have stimulated the best recall. It did not. We also found that subjects who were given partial agreement (by a minority who occasionally reverted to the majority position) showed the poorest recall.

A perspective that might have favored another form of inconsistency is one that focuses on consistency in dissent. It is conceivable that consistent dissent, even if the position is inconsistent, could stimulate improved recall. In other words, the dissenter could disagree with the majority but still not maintain the same position over time. This was our inconsistent "tools" condition. Subjects in this condition fared a little better than those in the inconsistent "fruits" condition. None of the conditions manifested the recall performance of those exposed to a consistent dissenting minority whose position remained firm. Only subjects in our consistent "birds" condition had significantly better recall than control subjects.

General Discussion

These two experiments on recall provide evidence for Nemeth's (1986) contention that exposure to a consistent minority

Table 4
Proportion of Words Correctly Recalled in Study 2

Source	Consistent	Inconsistent		Control
	"Birds"	"Birds/tools"	"Birds/fruits"	No feedback
List 1	.50	.46	.43	.46
List 2	.58	.53	.47	.51
Mean	.54 _a	.49 _{ab}	.45 _b	.48 _b

Note. Means having the same subscript are not significantly different at $p < .05$, using a Duncan range post hoc test.

position stimulates a reassessment that is broader than just a consideration of the dissenting position itself. There appears to be a reassessment of the entire issue, and in the process of such reassessment, subjects recall more facts. These studies, together with research showing that subjects exposed to consistent minority views also engage in divergent thought processes about those facts (Nemeth & Kwan, 1987) and detect novel solutions to problems (Nemeth & Wachtler, 1983), argue for the creative contributions made by dissenting minorities.

What may prove to be interesting for future research is the finding in Study 1 that individuals exposed to the minority view used better strategies for recall than did individuals exposed to a consistent majority view. They were more likely to use the device of clustering and categorizing the words (Bower et al., 1969; Tulving & Pearlstone, 1966). The latter subjects (i.e., those exposed to a consistent majority view) were particularly unable to use such devices for recall. It is intriguing to consider the possibility that individuals were stimulated to use or stimulated not to use such devices for recall. In a sense, we are suggesting that exposure to a consistent minority view may help individuals to be more aware of higher order list organization and to use it more subtly¹ but that exposure to a consistent majority view may especially hinder such awareness. This, of course, remains speculative but may be an interesting focus for future research.

This research also underscores the importance of consistency over time in order for the minority to stimulate better recall of information. The stimulating properties of minority dissent and the limiting properties of majority dissent occur only when that dissent is consistent over time. When exposure occurred once, minority and majority dissent did not differ from one another or from the control. Minority dissent also did not improve recall when it was inconsistent over time. The important point, however, is that exposure to minority views stimulates divergent cognitive processes that, on balance, serve the detection of correct solutions (Nemeth & Kwan, 1987; Nemeth & Wachtler, 1983). In the experiments discussed in this article, such exposure stimulated better recall of the information. While further research will help us to understand the richness of the cognitive processes that are involved, the implications are considerable for the role of dissent in improving the quality of information processing, problem solving, and decision making.

¹ This observation, a contribution that we gratefully acknowledge, was made by Reid Hastie.

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