Differential Contributions of Majority and Minority Influence

Charlan Jeanne Nemeth
University of California, Berkeley

In most studies comparing majority and minority influence, there is an emphasis on influence in the sense of "prevailing." Within this context, evidence exists that majorities exert more public influence, and that minority influence, when it occurs, tends to operate primarily at the latent level. In the present formulation, it is proposed that the differences between majority and minority influence are in fact more extensive once influence is considered in a broader context. In particular, it is proposed that exposure to persistent minority views fosters greater thought about the issue. Furthermore, this thought tends to be divergent rather than convergent, and as a result, people tend to be better decision makers because they attend to more aspects of the situation and reexamine premises. By contrast, it is proposed that exposure to persistent majority views fosters convergent thinking and leads to an unreflective acceptance of the majority position. Three experimental studies are reported that directly test some of the propositions, and the formulation is linked to available knowledge in the areas of social cognition, creativity, and problem solving both at the individual and group levels. Finally, some practical implications of this formulation for small group decision making and for society at large are offered.

During the 1950s and 1960s, the study of influence processes was primarily focused on the phenomenon of conformity. Literally hundreds of studies demonstrated and sought to explain the reasons why individuals would change their judgment, opinion, or belief in the direction of the position proposed by the majority (see Allen, 1965; and Kiesler & Kiesler, 1969, for reviews). As of the late 1960s, a number of researchers began to focus on the reciprocal process, that is, influence exerted by the individual or the minority of individuals on the majority's views (see Maass & Clark, 1984, for a review). A natural consequence of two such lines of research has been to understand if, why, and how the two forms of influence processes differ.

In general, those who have focused primarily on public movement to the proposed position have argued for similarities between the two processes and have assumed that the two forms of influence differ only in degree (see Latane & Wolf, 1981; Tanford & Penrod, 1984). Those who have focused on private influence have noticed an asymmetry between public and private movement to the proposed position as a result of the majority versus minority status of the source. Thus, these researchers have noted and theorized about the differential nature of these two forms of influence (Maass & Clark, 1984; Moscovici, 1976; Mugny, 1980; Nemeth, 1976).

The contention of the present article is that the differences between influence processes exerted by majorities and those exerted by minorities are in fact more extensive once the conception of influence is broadened from "prevailing" (whether this be public or private) to issues of attention, thought, and "novel" judgments or decisions. The formulation presented here argues that majorities foster convergence of attention, thought, and the number of alternatives considered. Minority viewpoints are important, not because they tend to prevail but because they stimulate divergent attention and thought. As a result, even when they are wrong they contribute to the detection of novel solutions and decisions that, on balance, are qualitatively better. The implications of this are considerable for creativity, problem solving, and decision making, both at the individual and group levels. First, the available literature on the issues involved in opposing views emanating from a majority versus a minority is reviewed.

Majority Versus Minority Influence

If one takes the perspective of direct public movement to the position proposed, numerous studies have documented the fact that majorities exert more influence than do minorities (see Tanford & Penrod, 1984, for a review). To illustrate the power of majorities relative to minorities for prevailing, a study of 225 juries showed that the majority position on the first ballot (i.e., held by 7-11 persons) was the final verdict in over 85% of the cases (Kalven & Zeisel, 1966). The process by which majorities and minorities exercise their influence, however, appears to be somewhat different.

From a theoretical point of view, movement to the majority position is due to two assumptions. One is that the judgments give information about reality; majority judgments are therefore likely to be correct. This has generally been termed *informational* influence. The other is that individuals want to be accepted and therefore wish to avoid the disapproval that emanates from maintaining a minority viewpoint. This is often termed *normative* influence (Deutsch & Gerard, 1955). Movement to the minority position is assumed to depend on the behavioral style of the minority, that is, the orchestration and patterning of the minor-

ity's verbal and nonverbal cues used in presenting its arguments. In particular, emphasis has been placed on the consistency of position over time and the confidence with which it is held (Moscovici & Faucheux, 1972; Moscovici & Nemeth, 1974).

Such behavioral styles clearly would not be irrelevant to the process of majority influence as well. However, the issue has been one of emphasis because majorities start with positive judgments and expectations (e.g., they are correct; their approval is important). Minorities are viewed negatively, sometimes with downright derision (Nemeth & Wachtler, 1983). As a result, the experimental evidence shows movement to the majority position on early trials of judgments or in early minutes of a discussion. Movement to the minority position occurs on later trials or later in the discussion (Nemeth, Swedlund, & Kanki, 1974). The assumption is that majority judgments are seriously considered from the beginning. Minority viewpoints need time because it is the consistency and confidence with which the minority positions are argued that leads one to seriously consider the position.

A second and potentially very important distinction between influence processes exerted by a majority and a minority is that majorities exercise influence primarily at the manifest level whereas minorities show their impact at a latent level. Numerous studies show compliance without private or latent change to majority views (Allen, 1965; Moscovici & Lage, 1976). Movement to the minority view is often detected at the latent level even when manifest movement is not found. For example, Moscovici, Lage, and Naffrechoux (1969) had a minority of confederates judge blue slides to be green. Although little public movement to green was observed (9%), over 35% of the subjects showed a modification of their judgments of blue and green in a subsequent task. Nemeth and Wachtler (1974) found no public movement to a minority view of low compensation on a personal injury case but found significant private movement on the deliberated case as well as on other personal injury cases. Mugny (1980) found that minorities had more impact on items indirectly related to the stated judgments than on those directly addressed by the minority. Using the blue slide procedure, Moscovici and Lage (1976) found manifest influence for the majority and latent influence for the minority. Thus, the evidence points to a differential relation between manifest and latent influence when the source constitutes a numerical majority rather than a minority.

Theorists have differed in their understanding of majority versus minority influence in part because of the definitions that they use and the specific findings that they emphasize. Latane and Wolf (1981), for example, posit that the processes by which majorities and minorities exert their influence are similar. Majorities, however, have more impact; they exert more influence by virtue of their greater numbers. Available research comparing the influence of majorities and minorities in terms of movement toward, or adoption of, the proposed position at a direct public level corroborates this hypothesis. Using this definition and set of findings, majorities tend to exert considerably more influence than do minorities (see Tanford & Penrod, 1984, for a review).

Other researchers have focused on the asymmetry between public and private influence and, as such, have argued that the processes of influence exerted by the majority in comparison with the minority are quite different. Moscovici (1980), for example, argues that majorities induce compliance behavior whereas minorities induce conversion behavior. The former tends

to be at the public level; the latter tends to be at the priva· Moscovici basically argues that both majorities and mi exert influence, that both forms of influence pose a ¢ however, the conflict is resolved in different ways. First sumes that majorities induce a "comparison process" w individuals focus on what the majority is saying. Minor duce a "validation process" whereby individuals focus relation between the position and the object itself. Thus should be more private change with the latter. Second, he a that there are motivational considerations. In particular. want to publicly comply with the majority (e.g., for their ap and are reluctant to publicly agree with a minority (e.g., of appearing deviant). Thus, the conflict induced by the sition is resolved along the path of least resistance, which that individuals resolve the conflict publicly in the major uation and privately in the minority situation.

Mugny (1980) offers another refinement on the motiv. aspect involved in avoiding public agreement with the m by a consideration of "psychosocial identity." This refer· fact that people attribute to themselves stereotypical ai. of the group who influences them. Thus, insofar as m membership has negative connotations, movement to tl nority viewpoint has negative implications for oneself. Thu: is resistance to resolving the conflict by direct public mov·

What becomes important as a consequence of such ι lations is that there is a recognition that public and private of influence exist and that majorities tend to exert their infl on the public domain whereas minorities tend to have their at the private level. As such, the impact of minorities ter be underestimated by comparisons that rely on the pub mension of influence. Furthermore, the influence exerted ι norities may be deeper and more lasting, even though it m: be as immediately apparent.

Such theory and findings emphasize the differences be majority and minority influence, but they tend to view th· ferences in terms of conflict resolution. Furthermore, all formulations tend to define influence in terms of prev. Whereas Latane and Wolf (1981) and Tanford and Penrod (have focused on direct prevailing, or adoption of the positi a function of the majority or minority, Moscovici (1980). M (1980), Maass and Clark (1984), and others have focus· direct versus indirect prevailing, that is, public versus p· acceptance of the proposed position. Thus, research on majority and minority influence has tended to define infl. in terms of prevailing. The operational definition is mov. to the position proposed. In this context, even the distin· between public and private, manifest and latent, tend to be · in their conceptualization.

A Proposed Reconceptualization

The present proposition is that majority and minority attε at influence stimulate differential thought processes and them differential problem solving and decision making. the question is not simply whether or not individuals move t· (or away from) the position proposed or whether they d· publicly or privately but rather how they think about the and the consequences of such thought processes for the q· of the solutions they find and the decisions they make.

Though the present reformulation profits from the previously described theory and research, the origins of the present set of propositions precede most of this theory and research and stem from a study reported in 1976 (Nemeth, 1976). These results will be detailed later in this article. Briefly, however, it was recognized that influence processes emanating from a majority and a minority differ not only in degree or in the public versus private nature of the person's movement but also in the ways these processes affect attention and problem solving. Majorities induce a concentration on the position they propose; minorities stimulate a greater consideration of other alternatives, ones that were not proposed but would not have been considered without the influence of the minority. As such, it became clear that the differences between majority and minority influence were more extensive once influence was considered in a broader context.

Specifically, it is proposed that persons exposed to opposing minority views exert more cognitive effort. More importantly, it is hypothesized that the nature of that thought is quite different from that of persons exposed to opposing majority views. Those exposed to minority views are stimulated to attend to more aspects of the situation, they think in more divergent ways, and they are more likely to detect novel solutions or come to new decisions. Importantly, it is assumed that, on balance, these solutions and decisions will be "better" or more "correct." Persons exposed to opposing majority views, by contrast, focus on the aspects of the stimuli pertinent to the position of the majority, they think in convergent ways, and they tend toward adoption of the proposed solution to the neglect of novel solutions or decisions. The efficacy of their solutions and decisions will thus be tied to the correctness or usefulness of the position proposed.

The present reconceptualization thus argues that exposure to opposing views has very different consequences for attention, for thought, and for decision making and problem solving as functions of whether the source of that opposition is a majority or a minority. It further argues that there are creative contributions made by a dissenting minority, even when it is wrong. Its value lies not so much in the correctness of its position but rather in the attention and thought processes it induces. The implications for creativity and decision making, both at the individual and group levels, become considerable. First, the rationale behind such propositions will be examined and then the empirical support to date for the assumptions will be demonstrated.

In attempts to provide a rationale for the hypotheses that are being proposed, the elements that persistently differentiate between majority and minority influence will be considered. A number of these, considered in the light of available knowledge, undoubtedly contribute to the overall tendencies for differential attention, thought processes, and decision making. However, no single element appears to fully account for the differences proposed and found. Multiple psychological processes appear to be responsible.

One persistent difference between exposure to majority opposing views and exposure to minority opposing views is that subjects report being under much more stress in the former situation than in the latter one. The early studies of Asch (1956) documented the considerable stress evidenced by subjects exposed to a majority who differed from them in judgments of length of lines. Presumably, subjects assumed that they themselves might be wrong; moreover, they feared the disapproval of the

majority if they persisted with their minority, or deviant, judgments. Studies of minority influence tend not to find evidence of much stress on the part of subjects; in fact, subjects tend to report derision of the minority and their opposing views (see Maass & Clark, 1984, for a review). Furthermore, a study comparing majority and minority influence in the same experimental setting found that subjects exposed to a differing majority view reported significantly more stress than those exposed to the differing minority view (Nemeth, 1976; Nemeth & Wachtler, 1983).

Evidence is considerable that arousal leads to a focus of attention (Easterbrook, 1959). More attention is allocated to the central task and less to the peripheral ones (Bahrick, Fitts, & Rankin, 1952). Thus, the arousal (stress) induced by the majority would be expected to narrow the focus of attention and increase the probability of the strongest or most dominant response and decrease the probability of competing responses. Zajonc (1965) has used such a formulation to explain the effects of presence of others, a drive state that presumably fosters the dominant response. This aids performance in simple tasks and hinders performance in complex tasks. Such a formulation is consistent with the well-known Yerkes-Dodson law (Yerkes & Dodson, 1908) that shows that the quality of performance is an inverted U-shaped function of arousal.

Pertinent to the present formulation, the high degree of stress reported by persons exposed to the opposing majority view may well cause a narrowing of attention and poorer performance on complex tasks whereas the moderate stress of those exposed to the opposing minority view may well be optimal for problem solving. This is quite likely a component of the differential processes hypothesized. However, it is further assumed that in the case of the opposing majority view, the attention is narrowed to the position proposed by the majority. Subjects, it is believed, are motivated to consider the truth or falsity of that position and attention is allocated to that position rather than to other possibilities. By contrast, it is believed that those exposed to the minority viewpoint are not only less focused but also that they are actually stimulated to consider more aspects of the situation and more possible conclusions. Part of the reason for these more specific hypotheses regarding focus of attention and thought comes from the differences in assumptions and motivations that separately characterize majority and minority influence.

A second aspect concerns these cognitive and motivational factors. When the influencing agent is a majority, individuals start with the assumption that the majority is correct (even when it is not) and that they themselves are in error (Asch, 1956). By contrast, they assume that the differing minority is incorrect and, in fact, manifest outright derision toward them (Maass & Clark, 1984; Nemeth & Wachtler, 1983). Furthermore, individuals are motivated to accept the majority position and to not accept the minority position. They fear the disapproval that results from maintaining or joining a minority view (Asch, 1956; Deutsch & Gerard, 1955). Thus, when individuals accept the minority view, they tend to do so at the private or latent level (Maass & Clark, 1984).

Because individuals assume and are motivated to assume that the majority is correct, they tend to publicly adopt the majority position. Here, it is assumed that the person is primarily concerned about the truth or falseness of the majority position. The world of alternatives is reduced to two: that proposed and that

originally held by the subject. Thus, attention and thought processes should be centered around the majority position.

When the influence source is a minority, the assumption that the minority is incorrect and the disinclination to publicly adopt its position lead to an initial dismissal of the minority viewpoint. However, with consistency and confidence on the minority's part over time, people are stimulated to understand such alternative views (e.g., "How can they be so wrong and yet so sure of themselves?"). As a result, they are stimulated to reappraise the entire situation, which involves a consideration of numerous alternatives, one of which is the position proposed by the minority. As such, the thought processes are marked by divergence and, hence, the potential for detecting novel solutions or decisions.

A third important aspect is the role of conflict. In both the majority and minority situations, people are exposed to an opposing or alternative viewpoint that persists over time. This, in and of itself, demands effort to resolve the conflict, and in Kahneman's (1973) terms, such effort extends the capacity for attention. In addition to greater attention, it is assumed that exposure to persistent opposing views will also be a catalyst to greater cognitive effort. People will think more. Although this consideration might, at first glance, seem to argue that those exposed to the majority position might expend more effort because they report greater conflict, the reverse is hypothesized: namely, that those exposed to the opposing minority position will exert more effort at both the attentional and cognitive levels. The reason is that the conflict is generally resolved earlier for those in the majority condition. Thus, although they may expend a great deal of effort in judging the proposed position to be true or false, subjects exposed to the majority viewpoint decide relatively quickly to adopt that viewpoint or to resist it.

The available evidence shows that individuals often adopt the majority position on early trials or in early minutes of discussion (Asch, 1956). By contrast, individuals exposed to opposing minority views rarely adopt the proposed position quickly. Adoption, when it occurs, tends to be manifested on later trials or later in the discussion (Nemeth et al., 1974; Nemeth & Wachtler, 1974, 1983). The assumption is that those exposed to the majority view exert a good deal of effort prior to the decision to adopt the majority view, but after this decision they engage in relatively effortless and superficial information processing. Whether they have moved for informational reasons (an assumption that the majority is correct) or for normative reasons (to incur approval and avoid disapproval), the decision, once made, tends not to be strongly reconsidered. Separate from the issue of amount of cognitive work, it is clearly presumed that the effort is differentially focused as a result of the majority or minority status of the source. When the source is a majority, attention and cognitions are focused on the position proposed. When the source is a minority, attention and thought processes are widened to include additional information and alternative positions.

The assumptions about the amount of cognitive work bear some similarity to Moscovici's (1980) contention that majorities produce compliance whereas minorities produce conversion in that there is more active or "central" (Petty & Cacioppo, 1981) thought processing when the influencing agent is a minority. However, the Moscovici formulation concentrates on thought relevant to the object under discussion and to message-relevant thought. This is used to account for private adoption of the mi-

nority position. Moscovici hypothesizes that people think [about the minority's position and, thus, adopt it privately]. present formulation actually predicts the reverse, namely, message-relevant thought appropriate to the proposed pos is more characteristic of reactions to majorities. The a thought processing stimulated by opposing minority viewp is more *issue* relevant. People think divergently; they con more viewpoints than simply the one proposed. The consequi of this is that the quality of the decision (whichever is selec tends to be better because more alternatives are considered. thermore, novel correct solutions are capable of being dete From this perspective, dissenting minority views take on portance both in terms of individual and small group deci making as well as in terms of the functioning of society at l These issues will be explored after a review of the studies dir testing some of the proposed distinctions.

Research: Direct Tests of the Theory

To date, three studies that directly test the assumptions o theory have been conducted.

Study 1

In the first study (Nemeth, 1976; Nemeth & Wachtler, 1S subjects in groups of 6 were shown a series of eight slides a standard on the left and a series of six comparison figure: the right (see Figure 1 for an example). They were asked to n: all of the comparison figures that contained the standard. (comparison figure was very easy; nearly every subject could de: the standard embedded in the comparison figure (U in Fif 1). The other five were very difficult. Depending on the exp mental condition, 2 of the 6 people (the minority) or 4 of tt. people (the majority) were paid confederates who said the fig was embedded in both the easy figure (e.g., U) and in one ot figure (e.g., E). Again, depending on the condition, this judgm was either correct or incorrect; that is, the difficult figure nai by the confederates either did or did not contain the stand: In the example given (Figure 1), E is correct. Results undersco the importance of the source of influence as a highly signific variable; whether or not they were correct proved to be of I importance. Most importantly, the form of the influence exer by a majority in comparison with a minority was quite differe

With respect to direct following (i.e., adoption of the propo: position), majorities exerted more influence than did minoril If the confederates said the standard was embedded in comr ison figures E and U, subjects were more likely to also stai and U in the majority condition than in the minority conditi However, subjects in the minority condition were more likel find novel correct solutions than those in the majority conditi Subjects exposed to the minority view detected the standar comparison figures not proposed by the minority. Furthermi they were correct. Thus, they might find the figure embedi in the comparison figures I or R in the example, both of wh are correct. Moreover, this was not due to guessing. There v no condition differences for novel incorrect solutions (A or '

A secondary finding of some theoretical importance is marginally significant interaction between source of influe and correctness, $F(1, 32) = 3.99, p < .06$. Subjects exposed

STANDARD   COMPARISON

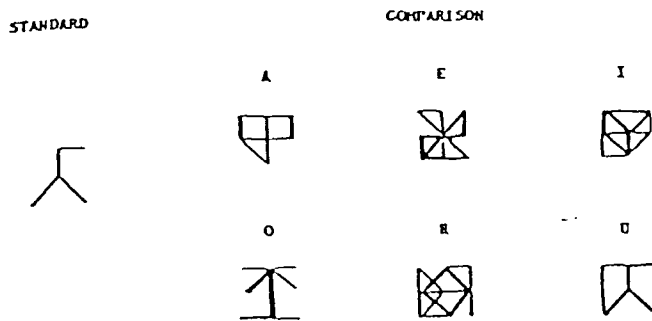A   E   I

O   R   U

Figure 1. Stimulus used in Study 1.

the minority viewpoint found more correct novel solutions whether the minority was correct or incorrect. Those exposed to the majority viewpoint found fewer correct novel solutions in general, but they were more likely to find them when the majority was incorrect rather than correct. Finally, subjects in the minority condition reported being under less stress than those in the majority condition. The minority source was also seen as less correct than the majority source.

The results corroborate other research showing that majorities exercise more influence in the sense of prevailing (Maass & Clark, 1984; Tanford & Penrod, 1984). Subjects are more likely to follow or adopt the exact position proposed by a majority than a minority of individuals. What the minority appears to stimulate, however, is a more active reexamination of the stimulus array. Individuals are finding solutions not proposed by the minority and solutions that they would not find by themselves, and their solutions are correct. Thus, it appears that the nature of the influence process is different when the source is a majority from when it is a minority. Majorities generate adoption of the proposed position but do not induce novel problem solving. Minorities are less able to get their specific position accepted but, in the process, appear to force a reexamination of the stimulus array so that correct and novel solutions are detected. This suggests that the minority may provide a creative contribution to problem solving whether or not their view is correct.

The interaction between influence source and correctness of the position provides some additional confirmation for differential processes induced by majority versus minority influence. The minority stimulates novel problem solving regardless of the correctness of its own position. The majority does not in general enhance such novel problem solving, but it is more likely to do so when its own position is incorrect. Thus, the possibility exists that breaking the assumption that the majority is correct may be a stimulant for more novel problem solving. People then search and find more correct solutions.

Study 2

Further evidence for the proposition that majority views confine problem solving to the position proposed whereas minority views stimulate both novel and better problem solving comes from a recent study of Nemeth and Kwan (1985b). In that study, subjects in groups of 4 viewed a series of slides, each consisting of a string of five letters with the middle three letters in capitals.

An example would be *tDOGe*. They were asked to name the first three-letter word they saw. With exposure times of 1 s, all subjects saw *dog*. After five such slides, subjects were given feedback on the responses of the 4 subjects. In the majority condition, they were repeatedly told that 3 of the 4 saw the word formed by the backward sequencing of the capital letters (*god*) and 1 saw the word formed by the forward sequencing of the capital letters (*dog*). In the minority condition, they were told the reverse, that is, 1 saw *god* and 3 saw *dog*. They were then shown a series of 10 such letter strings and asked to form all the words they could from these letters. They were given 15 s for each letter string.

Subjects in the minority condition found more correct words. They achieved this overall performance by using all possible strategies—forward sequencing, backward sequencing, and mixed sequencing of letters. Subjects in the majority condition used the proposed strategy; that is, they found more words using a backward sequencing of letters. However, this was at the expense of finding words in the usual fashion, that is, forward sequencing. Thus, their overall performance was comparable to the control. In summary, those in the majority condition followed the strategy adopted by the majority but to the detriment of other possible strategies. Those in the minority condition adopted all possible strategies and used them to their advantage in finding more overall solutions.

Study 3

A third study (Nemeth & Kwan, 1985a) provides still more evidence for the hypothesized differences between majority and minority influence processes. The results also demonstrate the impact on thought processes even after the interaction with the majority or minority has ceased. In this study, a subject was placed in a cubicle with another person who was a confederate of the experiment. They were asked to judge 20 slides for color and perceived brightness. In fact, all of the slides were blue in color. Subjects, however, were told prior to their judgments that previous research found that approximately 80% of people judge these colors to be blue and 20% judge them to be green, or they were told the reverse. Thus, a judgment of *green* would be seen as either a minority or a majority judgment.

The confederate judged the color to be green on all 20 trials. Following this judgment session, subjects were asked for word associations to the words *green* and *blue*. Each word was repeated seven times. Using established norms for associations to these words, it was found that subjects exposed to the opposing minority judgment of *green* gave more original associations to both *green* and *blue*. They gave associations that were statistically less frequent. In contrast, those exposed to the opposing majority judgment of *green* gave more conventional responses, even more conventional than the control. Thus, those in the majority condition might give the statistically frequent responses of *sky* or *green* to the word *blue* whereas those in the minority condition might give the more original associations of *jazz* or *jeans*.

Results from these three studies provide evidence that majority and minority influence processes differ primarily in the form that the influence takes. In particular, majorities exert more influence in the sense of prevailing. People are much more likely to adopt the position they propose. However, in the process, subjects narrow the range of considerations primarily to that pro-

posed and do not detect other solutions or "truths." Those exposed to minority viewpoints, although they are less likely to adopt the proposed viewpoints, are in fact stimulated to think in more divergent ways. They are more original, they use a greater variety of strategies, they detect novel solutions, and importantly, they detect correct solutions. Furthermore, this beneficial impact occurs even when the minority viewpoints are wrong.

Relevance to Other Literatures

In the present formulation, differences in attention, thought processing, originality, and quality of decisions are hypothesized as a result of majority versus minority influence. A review of the existing literatures on these topics should extend the range of the formulation as well as add specificity and refinement to the present considerations.

One of the basic premises here is that individuals exposed to persistent minority views are actually better decision makers in that they attend to more aspects of the situation and they examine and reexamine premises. They manifest divergent rather than convergent thinking. By contrast, those exposed to persistent majority views tend toward convergence of thinking and to an unreflective acceptance of the majority position. As such, distinctions are made between relatively deep and superficial information processing and between relatively more complex and more biased search of the information. Such distinctions find their counterparts in a good deal of the social psychological literature.

Research on Attribution Processes and Social Cognition

One example of a distinction between complete and biased information processing can be found in attribution theories. Early work in that area emphasized the human being as a rational information processor. Kelley's (1967) analysis of variance model, for example, portrays the individual as an "intuitive scientist" attempting to attain "cognitive mastery of the causal structure of the environment" (p. 193). The individual's limits in these endeavors, however, soon became apparent. He or she is often unable or unwilling to use basic logic or statistics and may rely on heuristics such as availability and representativeness (Nisbett & Ross, 1980; Tversky & Kahneman, 1974) or may be affected by motivational considerations such as self-esteem or self-presentation (see generally Bradley, 1978; Zuckerman, 1979). Thus, attributions can depend on careful search motivated by cognitive mastering or they can be biased either by inability or by social and psychological consequences of particular attributions (see generally Tetlock & Levi, 1982).

Such a distinction is also apparent in recent theorizing distinguishing between central and peripheral information processing (Petty & Cacioppo, 1981). Central processing refers to active issue-relevant thinking, a type of thinking that leads to relatively enduring change; peripheral processing is a reaction to persuasion cues in the situation and tends to be characterized by a more temporary attitude shift. Conceptually similar to this is the distinction between systematic and heuristic information processing (Chaiken, 1980). Systematic processing is characterized by more effort and by active attempts to comprehend the arguments of a

message. Heuristic thinking is characterized by a usage of simpl schemas (e.g., experts are usually correct; the longer a messa: the more valid its arguments). People use the script instead actively processing the information. Such distinctions can a be found in Langer, Blank, and Chanowitz's (1978) work "mindlessness" or Taylor's (1980) work on cognitive misery. some situations, people are lazy cognitive processors in that th do not actively process the information that is available or, could be added, fully consider the alternative ways of und standing such information.

The suggestions for counteracting this inadequate processi of information have taken various forms. Petty, Cacioppo, a their colleagues, for example, have pointed to the usefulness making the issue more personally relevant, or of increasing p sonal responsibility (Petty & Cacioppo, 1981). Nisbett and R (1980) have provided evidence for the utility of statistical trainin Moro's (1984) findings emphasize the importance of instructio to reflect. In most of these studies, the focus is on the individu: and attempts to make him or her a more active and thorou information processor tend to take the forms of experiment induced training, manipulations of role, or manipulations of th issue itself. All recognize the importance of motivation in info mation processing.

The present formulation can be viewed as relevant to the di. tinctions in that alternative minority views appear to stimula more central or systematic processing whereas majority influen might be construed more in terms of peripheral or heuristi processing. Some consequences of this should be that individua exposed to opposing minority views should be more likely t consider the quality of the message and be less bound by heuristic: (e.g., length of the message). Those exposed to opposing majorit views should be more affected by persuasion cues or by schema such as "the majority is most likely to be correct" and manifes. temporary attitude shifts. This would coincide with the persisten findings that those in the majority condition show public com pliance without private change whereas those in the minorit condition show more private or latent than public or manifes influence. The present formulation differs from those researcl traditions in that there is an emphasis on influence and inter action. In particular it is exposure to differing views emanatin; from a minority that can stimulate more central processing.

Convergent/Divergent Thinking and Problem Solving

Perhaps the most relevant literature for the present purpos is that literature studying divergent versus convergent thinkin and their relation to creativity and problem solving. Guilfor. (1956) defined divergent thinking as both more ideas (fluenc) and more classes of ideas (flexibility). To illustrate, people ca be asked to generate "uses for a brick." Within the classificatioi of building, one could suggest building a home, a patio, or monument. These are separate ideas but not separate classes o ideas. One could also use a brick as a missile. One could throw it through a window to make a point. This would constitute different class of use. In his theory on cognitive structures, Zajon (1955, 1960) makes a conceptually similar point with his term differentiation (i.e., the number of attributes used to describe : social object) and complexity (i.e., the usage of different classi fications of an object).

One of the important consequences of divergent thinking is that it appears to aid both problem solving and creativity. Many researchers recognize that the dominant response is often not the correct or best one (Moro, 1984). Thus, it is only with a careful search of alternatives that one can select the best solution or decision. In considering the notion of dominant versus subordinate solutions, many theorists have been influenced by Berlyne (1965), who argued that responses are hierarchically arranged. A given stimulus can evoke a number of responses, and the behavior chains between stimulus and response are not equally likely. Berlyne argues that the probability of elicitation is a function of reinforcement. Maier (1970) uses a similar notion in pointing to a hierarchy of possible solutions in many problem-solving settings. Maier argues that "tricky" problems are misleading in that they cause people to place low probabilities on the correct answer.

Another way of viewing the creation of inappropriate dominant responses comes from research on "set." Solutions that have been previously useful become dominant; they are used when they are no longer useful or best. The classic work by Luchins (1942) is illustrative of this phenomenon. People were given a series of water jar problems. For example, they were asked to find 100 gallons by using containers holding 21, 127, and 3 gallons, respectively. The formula $B - A - 2C$ (i.e., $127 - 21 - 6$) proved to be the solution over a series of problems. When then confronted with the problem of finding 20 gallons from 23-, 49-, and 3-gallon containers, individuals tended to use the dominant but no longer best formula of $B - A - 2C$ (i.e., $49 - 23 - 6$). The best formula is $A - C$ (i.e., $23 - 3$), a solution that is relatively easy if one has not been exposed to the previous problems. Within this context, it is beneficial for individuals to diverge their thinking, to consider more alternatives, to refrain from adopting the dominant solution or the first solution that comes to mind.

Creativity

The previously described research is also directly related to creativity because the notions of both divergent thinking and originality (statistical infrequency) are presumed to be essential elements of creativity. Watson (1928) refers to "shifting about until a new pattern is hit upon" (p. 198) in his description of creativity. Newell, Shaw, and Simon (1962) point to novelty, unconventionality, persistence, and difficulty in problem formulation. Ghiselin (1963) emphasizes the "quality of uniqueness, recognizable and definable" (p. 37), which involves seeing new relations among old ideas and thinking of alternative solutions. Most emphasize the importance of flexibility of search among ideas and associations (Guilford, 1956; Mednick, 1962).

The research on this issue has tended to concentrate on individual differences. Who is creative, how are these people detected, and what form does their creativity take? As such, creativity has often been construed as a skill. More recently, Amabile (1983) has emphasized the motivational aspects in her demonstrations. In particular, variables that undermine intrinsic motivation appear to reduce creativity. Thus, evaluation, time pressures, and reward can, under some circumstances, undermine creativity, presumably because some of the individual attention is diverted from the task itself and from the nonobvious aspects that might be used in achieving a creative solution (Amabile,

1983). Thus, greater attention and cognitive work, particularly aimed at the novel as well as the obvious elements of the stimulus or problem situation, should enhance creativity.

The proposed framework and research findings support such contentions and point to the importance of influence processes on creativity. In particular, minority views can stimulate considerations of the nonobvious. Subjects detected novel solutions (Nemeth & Wachtler, 1983), used more varied strategies (Nemeth & Kwan, 1985b), and thought in more original ways (Nemeth & Kwan, 1985a). Thus, like Amabile (1983), the importance of motivation for creativity is recognized, but the consideration of the more social aspects of the process would be expanded from situational constraints and properties of the task to interaction. It is the contention here that interaction with persistent minority views is a mechanism for stimulating the kinds of thought processes that can be characterized as creative.

Group Creativity and Decision Making

Creativity at the group level has been studied in quite a different way because it, by definition, involves interaction. On this point, the bulk of the literature finds that the group is less than the sum of its individuals. McGrath (1984) summarizes this research: "Individuals working separately generate many more and more creative (as rated by judges) ideas than do groups . . . the difference is large, robust and general" (p. 131). The culprit appears to be a tendency for uniformity. People are reluctant to voice novel or deviant views for fear they will be ridiculed. Thus, the diversity of viewpoints is unexpressed in most groups, and therefore there is a reduced likelihood of finding creative solutions. Most attempts at enhancing group creativity have attempted to remove this culprit by instructions. People are encouraged to give as many judgments as come to mind and to refrain from evaluating those judgments. Brainstorming instructions, for example, operate on these principles (Osborn, 1953). The success of such instructions, however, has been limited, presumably because people still fear that such evaluation is, in fact, taking place (Taylor, Berry, & Block, 1959).

Research under the rubric of group decision making has been frustrated by similar concerns. Research often shows that "the pooled output of noninteracting individuals is better than that of an interacting group" (Hackman & Morris, 1975, p. 46). Again, the mechanism by which resources can be harnessed to better productivity is assumed to be in the interaction process. Hackman and Morris (1975) have pointed to the importance of effort brought to bear on the task by the members, the performance strategies, and the knowledge and skills of the members. Hoffman (1959, 1965), Hoffman and Maier (1961), and others have recognized that pressures for uniformity are an impediment to good problem solving. They have stressed the value of heterogeneity, assuming that persons differing in category (e.g., age, skill, personality) will provide diverse approaches to problems and therefore performance will be improved. By and large, the research supports such assumptions though the question remains. "On what dimensions should group members be heterogeneous" (Hoffman, 1959, p. 113).

The recognition that majority views and strains to uniformity can be impediments to good group decision making is also apparent in Janis's (1972) work on political "fiascoes." There, the

problem is that cabinet-level decisions are often made by groups that are highly cohesive and insulated. This fact promotes "groupthink," evidenced by a tendency to inadequately survey alternatives and objectives. As a result, poor decisions can result. To counter this tendency, Janis makes several suggestions, such as having a person play devil's advocate, calling in outside experts, having the leader refrain from taking a position, and so forth, all of which should promote diversity of expressed views.

It is undoubtedly apparent that there is a compatibility of thought between the present formulation and these research literatures in that diversity of views is seen as an aid to creativity and group decision making. The emphasis, however, is somewhat different. The present formulation emphasizes the role of conflict, of exposure to differing views over time. Whether the fact of differing views (i.e., a plurality of opinion) is sufficient to invoke a reappraisal of the situation and a consideration of alternative viewpoints is questioned. Furthermore, it is assumed that instructions or role playing creates good intentions but that an active consideration of alternatives is more likely to come from confrontation with persons honestly differing in viewpoint and persisting in that difference.

Complications, Reflections, and Practical Consequences

In a good deal of the referenced research, there is a concern about the fact that people often take the path of least effort. They do not carefully scrutinize the issues or the arguments given. They do not fully reflect on alternatives. They are reluctant to voice novel ideas. As a result, both individuals and groups can be poor at problem solving and decision making. Correctives for this state of affairs can be considered on many levels, but the present formulation argues that dissenting minority views, even when wrong, stimulate reappraisal and a consideration of more alternatives. As a result, minority views provide a creative contribution to problem solving and decision making.

In this context, it is important to underscore the fact that it is not being argued that opposition or conflict between opinions per se is what stimulates such productive thought processes. Opposing views emanating from a majority have the reverse effect, leading to a convergence of thought, a tendency to focus on the position proposed to the neglect of other considerations. Thus, it becomes important to recognize that opposing views have different effects depending on whether their source is a numerical majority or minority.

When they are an initial minority, they stimulate the divergent thought processes; when they are an initial majority, they foster convergent thinking.

The functional consequences of these two forms of influence are complex. Under some circumstances, the influence exerted by the majority can be beneficial. It is almost always efficient if the majority is correct, because individuals and the group are more likely to accept that correct position. However, even under these circumstances, one would register caution because the agreement appears to be a consequence of unreflective submission rather than independent thought. Furthermore, it is assumed that the finding of truth or correct solutions is a more likely consequence of the divergent thinking characterized by persons exposed to dissenting minority views.

The creative contributions of minority views are argued both the individual and the group levels in the present artic. The presence of minority views, much like the literature on h. erogeneity, aids the consideration of more alternatives becau different alternatives are represented by different individuals. this sense, groups can be divergent even if the individuals a not. The presence of dissenting minority views and the expressic of those views thus aid the consideration of alternatives at a grou level. In addition, the process of confrontation of viewpoin makes each individual a better problem solver or decision mak by stimulating him or her to examine and reexamine premis

Some Applications

If one takes seriously the importance of minority views i the stimulation of productive thought processes that aid probl solving and decision making, several practical consequences f low. For example, efforts to underrepresent minority views suppress their active expression are seen as undermining t quality of decision making. An illustration can be taken fro the area of law. There has long been a tension between wanti community representation on juries and feeling that not all p sons are capable of the onerous duties of jury service. Original this took the form of qualifications for service by which cert: categories of people were excluded from service by statute. Mc recently, it has taken a subtler form because there are few r strictions by category, yet juries in the United States, Great Br. ain, and France consistently underrepresent certain categori of persons (Nemeth, 1980, 1984). By and large, juries are "mal· middle aged, middle minded and middle class" (Lord Devli quoted in Pope, 1961, footnote 10). Added to this underrepr sentation of certain categories (and we assume certain view points), there have been efforts to suppress the effective expressic of dissent. One example is the Supreme Court rulings allowin for nonunanimity of verdict (*Apodaca, Cooper, & Madder: Oregon,* 1972; *Johnson v. Louisiana,* 1972). If unanimity is n· required, the conflict in the deliberation appears to be less robu: the number of comments giving information and opinions fewer, the functional deliberation time is shortened, and juro believe that justice has been less well administered (Nemeth 1977). In perhaps an exaggerated version of such effecti\ suppression of dissent, France has three judges deliberate wit nine jurors on both culpability and punishment, eight votes · which are needed for a decision (Nemeth, 1984). From the pc spective of this framework, such practices and rulings actual undermine the aims of justice by rendering the jurors less like to consider all the facts, examine premises, consider multip: interpretations, and so on, and perhaps less likely to render just decision.

At the level of society, the principle becomes even more ir portant. As John Stuart Mill (1859/1979) argued, the protecti of minority views from the potential tyranny of the majority important as a democratic principle. However, he also argu· that there are functional consequences to the allowance of, a\ confrontation with, dissenting viewpoints. Diversity and co· frontation provide the impetus for detecting truths primari because they stimulate thought (Nemeth, 1985). From this pc

rective, robust dissent is not only a manifestation of a democratic principle, but it is the mechanism by which better solutions are found and better decisions are made.

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These changes are part of continuing efforts to keep the costs of producing the APA journals down, to offset the escalating costs of paper and mailing, and to minimize as much as possible increases in the prices of subscriptions to the APA journals.