

Minority Influence: A Meta-Analytic Review of Social Influence Processes

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A meta-analytic review of 97 minority influence experiments evaluated the processes by which sources advocating deviant, minority opinions exert influence. Minority impact was most marked on measures of influence that were private from the source and indirectly related to the content of the appeal and less evident on direct private influence measures and on public measures. This attenuated impact of minorities on direct private and public measures suggests that in response to normative pressures, recipients avoided aligning themselves with a deviant source. Mediator analyses revealed that minorities perceived as especially consistent in the advocacy of their views were especially influential. The relation between normative and informational pressures in the minority influence paradigm was discussed.

Under what circumstances do opinion minorities exert influence on mainstream, majority group members, and do minorities exert influence in the same way as those advocating a majority opinion? History offers many examples of social minorities advocating deviant positions later incorporated into the views of mainstream society. To take an everyday example, recycling was once an activity promoted by extremist ecology groups but is now an integral part of many municipal waste management programs. Yet there are also many examples of opinion minorities whose ideas have not been adopted to any marked extent in the broader society. The Amish's refusal to adopt new technology, especially the internal combustion engine, has had little general impact, as has the Esperanto Society's advocacy of a universal language. The present article reviews the experimental literature on minority influence to identify the conditions under which opinion minorities are most likely to exert influence and to evaluate the social influence processes underlying the effectiveness of minority versus majority sources.

Classic social psychological models of influence in groups detailed the benefits of control and regulation of those espousing minority views and tended to neglect the influence that such

minorities can exert over others (e.g., Cartwright & Zander, 1968; Festinger, 1950, 1954). Groups were thought to strive toward uniformity on issues important to group functioning. Opinion uniformity was valued because it enabled group goal attainment and provided members with social support for and validation of their views (Festinger, 1950, 1954). The foundations of this perspective are that people desire group consensus; attempt to attain consensus through, for example, communication with deviant minorities; and respond negatively to minorities who impede consensus (cf. Levine, 1989).

Moscovici and his colleagues (Moscovici & Faucheux, 1972; Moscovici & Nemeth, 1974) argued that these models of influence are limited, especially by their failure to represent the flow of influence from minority to majority group members. Majorities are not only sources of influence, but they also influence targets; deviant minorities are not simply targets refusing to conform but also sources actively challenging the validity of the majority position. In this view, minorities can exert influence if they advocate a coherent, clearly articulated social reality or perspective that differs from the majority group. Effective minorities are defined by their numerical infrequency in conjunction with an antinomic position. In addition, to differentiate opinion minorities from other, socially advantaged groups who may advocate deviant views (e.g., experts and political leaders), definitions of minorities often specify that minorities possess no special competence or status.

In Moscovici's (1980, 1985a, 1985b) conception, the reciprocal influence that flows between majorities and minorities has a common root in conflict. People are supposedly socialized to expect that there are "normal" responses to any issue, representing those with which most agree. When disagreement arises, it is experienced as undesirable, as a tension and a threat. Disagreement denotes a difference with others and instigates competition. Disagreements also lead one to doubt one's own beliefs, and they reduce confidence in oneself and in stable frames of reference. Disagreement with others and the conflict it engenders arouse two basic concerns that correspond roughly to Deutsch and Gerard's (1955) distinction between normative and informational influence: Conflict threatens one's attempts

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to appear socially consistent and acceptable to oneself and to others and threatens one's informational understanding of the physical and social environment.

The resolution of conflict between those holding majority versus minority views depends on the salient norms in the influence context (Moscovici, 1985b). When the primary norm is reduction or control of conflict and elimination of deviance, conflict is resolved through normative influence and agreement with majorities. Majorities are influential because they possess valued resources such as information, competence, and status (Moscovici, 1980). Recipients are dependent on these resources because, for example, they desire information or recognition of their own competence or status. Given that the majority view is held by a consensus of valued others, it is correct in principle (cf. Asch, 1951), and recipients do not need to critically evaluate the content of the appeal to determine its validity (but see Mackie, 1987; Nemeth, 1986). Recipients wonder why they fail "to see or think like the other members of the group" (Moscovici, 1985b, p. 394), and they change their judgments to gain the acceptance of the majority.

In general, then, agreement with majority views is thought to be the result of a *comparison* process in which recipients compare their responses with those of the majority group (Moscovici, 1985a, 1985b). Because agreement is derived from a need for consensus and not from a change in understanding of the issue under discussion, it is most likely to be manifest at a public level (Moscovici, 1980). Recipients' private responses are thought to remain resistant to majority influence because of a reactance-like desire to remain independent, because of a desire to maintain the individuality of self, or because individuals' judgments may actually deviate from the group's definition of reality or the reality appears ambiguous or little understood (Moscovici, 1980). This public agreement with majority views in the absence of private acceptance is termed *compliance*.

In contrast, in settings characterized by norms of originality, influence represents innovation, or the generation and adoption of new, unique views (Moscovici, 1985b). Instead of emphasizing the control of conflict, innovative influence is centered on the creation of conflict and on the challenge of majority norms by the innovative minority view.¹ The conflict generated by minorities emerges primarily from their interpretation of reality; the deviant minority view requires supplementary verification. If the minority is insistent and certain, then recipients undertake a *validation* process in which they critically evaluate the position advocated in the appeal and attempt to verify it through validation with reality (Moscovici, 1980, 1985b). Recipients attempt to "see what the minority saw, to understand what it understood" (Moscovici, 1980, p. 215).

Because minority influence results from an information-focused, critical evaluation of the appeal, it is likely to represent enduring change that is reflected in private judgments as well as on indirect measures that tap cognitions and perceptions related to the advocated position (cf. Kelman's, 1958, internalization). For example, Moscovici and Personnaz (1980) demonstrated that exposure to a minority advocating deviant judgments of slide color generated perceptual change for recipients that was apparent in their private judgments of the color of the afterimage generated by the slides (but see other explanations of this effect invoking conscious labeling, e.g., Sorrentino, King, &

Leo, 1980). Similarly, in a persuasion paradigm, Mugny (1982) demonstrated that minority appeals blaming industry for a pollution problem affected recipients' private judgments of a related issue, individual responsibility for pollution.

According to Moscovici (1980, 1985a), minorities' success at changing underlying judgments and perceptions apparent on indirect measures of impact will not necessarily be reflected on overt measures. Recipients may resist publicly aligning themselves in judgment with a deviant minority source. They may fail to acknowledge the shifts in perception and cognitive representation that result from exposure to minority views because they are afraid of losing face, of speaking or acting in a deviant fashion in the presence of others, and of recognizing themselves as deviant (Moscovici, 1980; Mugny, 1982). Minorities' minimal public, direct influence, coupled with the private agreement that emerges from scrutiny of the minority appeal and the issue or problem it describes, has been termed *conversion*.²

A central tenet of Moscovici's (1985a, 1985b) analysis is that minimal public and marked private agreement are conjoint responses to the conflict generated by minority appeals. Following a hydraulic-like model, the less conflict is reduced through agreement at a public level, the more it is reduced through private acceptance and wide-reaching perceptual and cognitive change. Thus, the factors that inhibit recipients' public display of agreement with a minority are also those that increase processing of the minority message and change in private attitudes. Moscovici (1985a, 1985b) contrasted this validation process underlying minority conversion with the comparison process that underlies majority compliance and proposed a *dual-process* model of influence. He claimed a privileged (although not exclusive) association between the majority versus minority status of the source and both the processes of change (comparison vs. validation) and the types of influence evoked (compliance [public but not private or indirect influence] vs. conversion [private or indirect but not public influence]).

Behavioral Style

Minorities, by definition, lack power, status, and competence; as a consequence, their ability to instigate validation processes and to exert influence depends on other factors, particularly the implicit, stylistic features of their appeals (Moscovici, 1980, 1985b). Although a number of behavioral styles plausibly affect

¹ When an anomic majority lacks clear norms and attitudes, minorities can be especially effective when they remain adamant, refuse to compromise or negotiate, and provide a clear alternative view for the majority to adopt (Moscovici, 1985a, 1985b). The impact of minority views should be especially apparent in such circumstances and may emerge at public as well as private levels.

² Moscovici (1980, 1985b) also recognized a third means of conflict resolution that occurs in the absence of any prior consensus or norm identifying one group as holding deviant views and the other as holding majority ones. In such contexts, norms emphasize normalization and avoidance of conflict, and influence takes the form of compromise and negotiation by parties with divergent views. Influence is characterized by gradual change in behavior or opinion by both of the disagreeing groups or individuals (e.g., as demonstrated in Sherif's, 1935, studies of influence in the autokinetic paradigm).

influence (see, e.g., Moscovici's, 1985b, discussion of autonomy), consistent, repeated statements of opinion have emerged as a cornerstone of minority effectiveness.³

There are several reasons why consistent styles may be especially effective for minority sources. Moscovici (1985a) argued that consistency accentuates recipients' conflict with the source. A consistent minority is apparently not disposed to yield or compromise. Thus, recipients must change their own views to meet the informational and social goals of a clear understanding of social reality and satisfactory social relations with the source (cf. Deutsch & Gerard, 1955). The more intense the conflict generated by minority consistency, the more radical the conversion to meet these goals (the less the public effect on judgments or opinions, the greater the private and indirect effect).

Consistency may also enhance influence because it conveys information about the causes of the source's position. From this attributional perspective, repeated statements of the source's position are influential because they indicate certainty, confidence, and commitment (Maass & Clark, 1984; Moscovici & Faucheux, 1972; Nemeth, Swedlund, & Kanki, 1974). However, consistency might also generate unfavorable source perceptions and attenuate influence when the repeated statements are attributed to negative source characteristics such as narrow-mindedness or dogmatism (Maass & Clark, 1984; but see Nemeth & Wachtler, 1973). An alternate attributional account of minority impact draws from the assumption that message recipients are motivated to hold valid positions (Chaiken & Stangor, 1987; Eagly, Chaiken, & Wood, 1981). In this view, the source's behavioral style is likely to be effective to the extent that it indicates that the position advocated reflects the objective truth or validity of the issue and not positive rather than negative source attributes. Indeed, Moscovici (1985b) argued that a consistent behavioral style is not sufficient for maximal influence; the source's position should also appear objective.

Finally, behavioral styles may be effective because they attract attention to the source and appeal. Small-group research indicates that the ideas and suggestions of group members accorded minimal expertise and authority typically receive limited attention and consideration from others (Ridgeway, 1982, 1984). A style of consistent, repeated statements may be required for minority sources to achieve recognition and notice. Thus, consistency may enhance influence because it does not allow others to disregard or ignore the minority position.

Past reviews of the empirical research on consistency have been hampered by the multiple operations of consistent styles and the limited use of manipulation checks to establish the success of these operations (i.e., To what extent do recipients perceive the source as consistent?). At an operational level, consistency "embraces many forms of behavior, from the persistent repetition of a phrase, through the avoidance of contradictory behavior, all the way up to the elaboration of logical proof" (Moscovici, 1976, p. 122). Furthermore, consistency is not a unitary construct (Moscovici, 1985b). Consistent repetition of the source's position can convey that the source is rigid, non-conciliatory, and extreme and, consequently, can heighten the threatening and anxiety-producing aspects of the influence attempt. Consistency can also convey that the source is fair and flexible and willing to accord validity to the opinions of others; consequently, it may generate minimal conflict and threat

(Mugny, 1982; Mugny & Perez, 1991). These complexities may explain the divergent conclusions reached in recent narrative reviews. For example, although Moscovici (1985b) claimed that "many studies confirm that consistency is one of the most powerful factors in producing a change of opinion, judgment, and perception" (p. 364), Levine and Russo (1987) noted the varying effects of this style, concluding that "consistency does not operate in a simple manner" (p. 33). Indeed, Levine's own research on attitudinal issues has suggested that "consistency is not a crucial determinant of minority influence" (Levine & Russo, 1987, p. 33).

Number of Minority and Majority Sources

According to predictive models of social influence (Latané & Wolf, 1981; Tanford & Penrod, 1984), numbers convey social impact. Greater numbers of sources are associated with greater ability to exert influence, and greater numbers of targets are associated with greater ability to resist influence. In these models, the relation between influence and number of sources and targets is not linear; instead, it represents either a negatively accelerating power function (Latané & Wolf, 1981) or an S-shaped Gompertz-type growth curve (Tanford & Penrod, 1984).

Tanford and Penrod (1984) tested these models' predictions in a meta-analytic review of social influence research. They generated impressive support for the predictive power of numbers on the predominantly public conformity measures of influence included in the review (although a linear relation between influence and number of sources and targets appeared to provide as adequate a fit to the reviewed data as the more complex nonlinear relations postulated by these models). However, only a limited selection of minority influence studies was included in the review (a total of 26), and no attempt was made to test the predictions that majority sources would have a greater public and direct than private and indirect impact and that minority sources would exert a greater private, indirect than public, direct impact. Indeed, the review was intended as a general demonstration of the potency of the predictive model rather than as a specific test of minority effectiveness.

Given that single predictive models are believed sufficient to account for both minority and majority impact (Latané & Wolf, 1981; Tanford & Penrod, 1984), these approaches appear to be in direct opposition to Moscovici's (1980, 1985b) dual-process perspective. The (by definition) lesser number of minorities than majorities (along with minorities' lesser strength in terms of expertise, power, and tangible resources, Latané & Wolf, 1981) should result in minimal minority impact relative to majority sources. However, the predictive models converge with dual-process perspectives in predicting greater influence with increasing numbers of minority sources. In the dual-process approach, lone minorities have minimal influence because the views of individuals can be discounted as reflecting an idiosyncrasy

³ Moscovici (1985b) has also suggested that consistency is critical for majority influence; in this context, however, a consistent style refers to unanimity of the majority group members in endorsing a common view, whereas a consistent minority style refers to the organization, timing, and intensity of the appeal.

cratic, biased perspective (cf. Moscovici, 1985b; see also Turner, 1991). Increasing the number of minorities makes it difficult for recipients to resist by attributing the appeal to personal idiosyncrasies of the source.

Similarity Between Minority Source and Majority Target

From a dual-process perspective (Moscovici, 1985a, 1985b), the dissimilarity between the (minority) source and the (majority) recipient does not hinder influence. In fact, out-group minorities, who differ from recipients not only in advocated position but also in social category membership, are thought to be especially effective, exerting greater latent influence than in-group minorities. Supposedly, the social and cognitive deviance of an out-group minority enables recipients to engage in validation of the minority view: to actively consider its informational content and relation to reality without concern for their social relationship with the source. These benefits of dissimilarity might be viewed as inconsistent with perspectives emphasizing the influence advantage conveyed through similarity between source and target. For example, in Festinger's (1954) social comparison theory, people evaluate their own opinions and abilities through comparison with others who are similar to themselves on relevant dimensions. Several recent analyses have considered in detail the role of similarity and dissimilarity in the minority influence paradigm.

Self-Categorization Theory

The self-categorization interpretation of minority influence assumes that similarity between source and target is the basis for all influence (David & Turner, 1992; Turner, 1991). From this perspective, minority and majority sources are influential to the extent that they are categorized by the target as similar to self on dimensions relevant to the influence topic. Similar sources are influential because they provide consensually shared, valid assessments of reality. Disagreement with similar others produces an uncertainty that can be resolved through judgment change and cognitive restructuring. Dissimilar others typically have minimal influence because they do not necessarily possess a valid view of reality.

From this perspective, a minority will be influential only when categorized as an in-group member. Targets' classification of the source as in-group or out-group varies with features of the social context, including the type of influence being assessed. During assessments of public and direct private influence, immediate conflict between majorities and minorities is salient—the majority targets are opposed to the minority source—and the targets categorize the source as a dissimilar, out-group member. Because minorities are categorized as dissimilar in this context, they have little impact. However, during indirect private and time-delayed assessments of influence, targets adopt a broader view of the positions possible on the issue—the majority targets judge the minority source as reasonably similar to self in comparison with other, even more divergent groups—and, because the minority is recast as part of the in-group, he or she exerts influence.

The idea that targets categorize sources in multiple ways has

rendered a range of influence findings consistent with self-categorization predictions (e.g., Clark & Maass, 1988; Maass & Clark, 1984; Volpato, Maass, Mucchi-Faina, & Vitti, 1990). To directly test the self-categorization explanation, David and Turner (1992) conducted a series of studies that manipulated the social context so as to vary the classification of the minority source as a similar-to-self in-group member or a dissimilar, out-group member.⁴ Before recipients received an influence appeal, they were presented with information on the supposed distribution of opinions on the target issue, suggesting either that many people agreed with the recipient and that the minority was an out-group or that many people held divergent views from both the minority and the recipient, rendering the minority an in-group member. As anticipated, minority impact on all influence measures (i.e., public, private, and delayed) was enhanced when distribution information suggested similarity between source and target and attenuated when this information suggested dissimilarity. Despite this impressive support for the theory obtained with measures of opinion, the research apparently lacked any direct measure of the critical mediating variable, social categorization. Consequently, it remains unclear whether the distribution of opinion information affected recipients' judgments by changing the in-group-out-group categorization of the minority or through other means, such as increasing or decreasing the apparent minority status of the source.

Subjective Versus Objective Judgment Tasks

The type of influence task may determine targets' responses to similar and dissimilar sources (Goethals, 1976; Gorenflo & Crano, 1989). With subjective judgment tasks, responses are largely a function of personal attitudes and preferences (e.g., Do you like ice cream?), and the views of similar others may be preferred over dissimilar others and may be more influential. The reason is that similar others provide useful information about consensual aspects of the issue (i.e., reactions that are likely to be shared), whereas dissimilar others' judgments may reflect their own unique, idiosyncratic attitudes and preferences (Crano, 1991; Goethals, 1976; Gorenflo & Crano, 1989). In contrast, with objective judgment tasks, responses reflect attributes of the issue itself (e.g., Is ice cream cold?), and the views of dissimilar others may be preferred and may be more influential than those of similar others. This is because dissimilar others can provide objective information; when dissimilar others concur with one's own judgment, then the judgment probably reflects characteristics of the object itself rather than personal biases.

Applying this reasoning to minority influence research, Crano (1991; Crano & Hannula-Bral, in press) argued that, for majority recipients on tasks involving subjective judgments (e.g., attitudes and values), similar-to-self, majority sources, who can provide consensual information about the issue, should be more influential than dissimilar, minority sources, whose judgments may reflect their own idiosyncrasies. How-

⁴ Unfortunately, this experiment could not be included in our meta-analytic integration of findings because we received it after the analyses were completed.

ever, for objective judgments of fact, dissimilar-from-self, minority sources should provide especially useful information about objective reality and should be more influential than similar-to-self, majority sources. In like manner, Moscovici (1980) proposed that minorities have a greater impact on issues of factual judgment than on issues of value preference and generate greater conversion. In his view, the public, direct but not private, indirect change emerges with factual tasks because of the considerable conflict generated when recipients' understanding of factual reality is challenged (vs. the lesser conflict with challenges of opinions and preferences).

The Present Research

The present study evaluated the empirical evidence for minority influence in the experimental literature. Recent narrative reviews of this research, although of theoretical import, have been limited by their reliance on a narrow sample of work. Some reviewers, summarizing this rather limited database, have concluded that majorities primarily affect public rather than private influence measures (e.g., Levine & Russo, 1987) and exert more direct public influence than minorities (e.g., Nemeth, 1986). Others have emphasized the range of influence outcomes associated with majorities, suggesting that, in addition to public impact, majorities sometimes affect private assessments of opinion on issues directly mentioned in the appeal and sometimes affect private judgments on measures indirectly related to the content of the appeal (Eagly & Chaiken, 1993; Kruglanski & Mackie, 1990; Maass, West, & Cialdini, 1987; Turner, 1991). In regard to minority impact, reviewers have generally concluded that minorities tend to generate private acceptance in the absence of public change (Eagly & Chaiken, 1993; Levine & Russo, 1987; Turner, 1991). Elaborating on this conversion pattern, Eagly and Chaiken (1993) concluded that minority impact is apparent on both direct and indirect private measures, and Maass et al. (1987) claimed further that minorities are more likely than majorities to induce long-lasting impact and to modify the unconscious aspects of targets' behavior.

The present review used meta-analytic techniques to aggregate the research literature. Meta-analysis is a statistical reviewing technique that provides a quantitative summary of findings across an entire body of research (Cooper & Hedges, 1994; Hedges & Olkin, 1985). The results of individual studies are converted to a standardized metric, which, in this analysis, was a standardized difference score (d). These scores are then aggregated across the sample of studies to yield an overall estimate of effect. To identify the amount of influence generated by minority sources, we compared minority source impact with no-message control conditions, represented either by subjects' judgments before exposure to the source's position or by separate subjects who did not receive a persuasive appeal. In addition, to identify the amount of minority influence relative to that achieved by majority sources, we compared the influence outcomes generated by minorities with those obtained by majorities.

From a dual-process perspective (Moscovici, 1985a), minorities should have less influence on public and direct measures than majorities, and they should have greater private and indirect impact (thus generating the interaction between type of

source and mode of influence outlined by Kruglanski & Mackie, 1990). Furthermore, this pattern of outcomes should be a function of the minority's differential impact across types of influence measures: Comparisons with controls should reveal limited public minority impact and stronger private and indirect effects. Note that this pattern of influence outcomes would support a dual-process perspective but would not discredit certain unified, single-process accounts of minority and majority influence such as self-categorization theory (David & Turner, 1992; Turner, 1991). From a self-categorization perspective, influence is maximized among in-group members because source and recipient share a consensual view of reality. The greater impact of minority sources on private than public measures would be due to minorities being categorized as out-group members for public, direct assessments of opinion and in-group members for private, indirect assessments. However, differential impact across influence measures would be inconsistent with predictive models of social influence (Latané & Wolf, 1981; Tanford & Penrod, 1984). In this framework, greater numbers of sources and fewer targets should uniformly enhance impact across all types of influence.

We further examined these theoretical accounts by evaluating whether minority impact varies with a number of hypothesized moderators. In general, there would be support for a dual-process perspective if the moderating factors that inhibit minority impact at a public and direct level (in comparison with majority impact and with no-message controls) also facilitate minority impact at a private and indirect level (in comparison with majority impact and with controls). That is, factors that generate substantial conflict and block public and direct agreement with minority sources (e.g., when the message topic involves objective facts and thus challenges subjects' understanding of reality) should also generate considerable private and indirect judgment change as recipients attempt to reach a resolution to the conflict by critically evaluating the issue referenced in the minority appeal (Moscovici, 1980, 1985a).

Specific findings for each of the moderating variables considered here might be consistent with other perspectives as well as the dual-process model. For example, a finding of greater minority influence with objective than subjective judgment tasks would be predicted from the greater informativeness of dissimilar others' judgments (i.e., minority sources for majority recipients) on objective (vs. subjective) tasks (Crano, 1991), as well as from the greater conflict generated by the deviant views of the minority with objective (vs. subjective) judgments (Moscovici, 1980).

In addition, we examined whether minority influence was dependent on various aspects of the source's identity. According to Mugny and Papastamou (1976–1977, 1980), minority influence is attenuated when recipients "psychologize" the source, or evaluate the source's psychological attributes before receiving the message, and thus attribute the message to the source's idiosyncratic attributes. We also examined whether minority impact varied with the specific method used to identify the minority source. According to the dual-process model, minority definitions that enhance conflict with recipients (e.g., when minority status is defined through membership in a deviant social group) should generate a more marked pattern of conversion than when the minority definition generates less conflict

(e.g., the minority is defined as someone who advocates a non-consensual position).

We also considered whether the identity of the study author affected study outcome. In past reviews, the originators of a research paradigm or theoretical perspective sometimes have been found to generate stronger results than other researchers (cf. Johnson & Eagly, 1989; Strube & Garcia, 1981). Research group effects may emerge from a variety of factors, including research originators' superior methodology (e.g., cleaner manipulations) and more complete conceptual understanding of the phenomenon and from design and analysis artifacts such as experimenter effects and systematic confounds in the procedure (see Eagly & Wood, 1994).

Finally, we were unable to evaluate directly whether consistent behavioral styles enhanced minority impact. Because of the wide range of operations of consistency and the absence of appropriate manipulation checks, we encountered great difficulty in differentiating consistent from inconsistent behavioral styles. We thus relied on the original subjects' ratings of the extent to which they *perceived* the source as consistent. Consistency was thus defined in terms of targets' subjective perceptions of the source, irrespective of the source's exact behavioral style. For the studies in our review that provided these data on source ratings, we evaluated the relations between influence and perceived source consistency (as well as a host of other source perceptions), expecting that minorities judged especially consistent would also be especially influential.

Method

Identification of Articles

Computerized searches were conducted of Psychlit, *Dissertation Abstracts*, and ERIC covering the published literature from 1950 to 1991; the keywords used were *minority*, *influence*, *conversion*, *deviance*, and *innovation*. The most recent 5 years of the issues of the following journals were manually searched for relevant articles: *European Journal of Social Psychology*, *Journal of Personality and Social Psychology*, *Journal of Experimental Social Psychology*, *Social Psychology Quarterly*, and *British Journal of Social Psychology*. Searches were also conducted of the reference lists of earlier reviews of minority influence research and the reference lists of the articles included in the review. In addition, copies of unpublished manuscripts were solicited from a number of active researchers in the area of minority influence.

Sample of Studies and Selection Criteria

Ninety-seven independent research reports were included in the review (see Appendix). A number of these reports included multiple studies, yielding a total of 143 reports from separate study samples. The studies were drawn from both English and French language publications.

The sample was narrowly defined and excluded several types of research that have, in the past, been included under the broad umbrella of minority influence. To be included in the review, a study was required to (a) report a measure of influence (therefore, studies of deviate rejection were not included [e.g., Schachter, 1951]); (b) expose subjects to a standard influence appeal in the form of another's judgment, a persuasive message, or a behavioral choice (therefore, studies of group decision making were not included [e.g., Moscovici & Neve, 1973; Spitzer & Davis, 1978]); (c) present an influence appeal that diverged from subjects' own positions to allow for judgment change (therefore, social sup-

port studies were not included [e.g., Allen & Levine, 1971])⁵; (d) attribute the appeal to a minority source in one of the experimental conditions (therefore, pure conformity studies [e.g., Asch, 1951] and studies in which the source did not have a clear minority identity were not included [e.g., Filter & Gross, 1975]); and (e) present the source's position as maintaining divergence from the subjects' positions (therefore, studies in which the source switched from one side of an opinion scale to another were not included [e.g., Hollander, 1960]). In addition, we excluded studies with multiple sources who simultaneously attempted to influence the subject in diverse directions because the effects of a minority could not be disentangled from the effects of the other source (i.e., simultaneous minority-majority influence studies [e.g., Clark & Maass, 1988] and simultaneous minority-slider influence studies [e.g., Emerson, 1954]). Finally, deviant but high-status or powerful individuals could not be unambiguously identified as either minority or majority sources and thus were not included (e.g., studies of idiosyncrasy credit and leadership [Hollander, 1960] and studies presenting expert sources [Perez & Mugny, 1990]).

Types of Attitude Change

Three kinds of influence were assessed in the studies included in our review: public judgment change, private change on issues directly related to the appeal, and private change on issues indirectly related to the appeal. Public assessments occurred under the surveillance of the source and referenced the same attitude object as that in the influence appeal. This measure of influence has been considered a manifest assessment and was termed compliance by Moscovici (1980, 1985b) to highlight that change on such public, overt responses is supposedly associated with minimal private, enduring acceptance. The private influence measures in the studies included in our review were administered without surveillance of the influence source, although they were typically public to the experimenter. Private responses have been considered latent indicators of change and are termed conversion (Moscovici, 1980) to reflect the minimal public acceptance that supposedly accompanies private change. Direct private responses reference the same attitude object as that in the influence appeal.

No generally accepted definition of indirect private measures exists in the literature. Researchers have labeled a variety of assessments, varying in relevance to the influence appeal, indirect conversion measures. According to Moscovici (1980), indirect influence emerges on general measures that reflect underlying core values rather than on measures that focus specifically on the issue represented in the influence attempt. However, many indirect measures do not yield a very sensitive assessment of minority impact, given that the effects of an appeal are likely to weaken with greater distance between the appeal's content and the content of the assessment measure and, furthermore, that the generalization of influence from the topic in the appeal to the topic of assessment depends on recipients' idiosyncratic cognitive representations. We wished to maximize the likelihood of detecting indirect influence; consequently, we adopted conservative criteria for inclusion of indirect measures. A measure of influence was identified as indirect when (a) the attitude object or judgment referenced in the appeal was similar in content (although not identical) to that referenced in the influence measure (therefore, we did not include measures on the topic of contraception when the influence appeal concerned abortion [e.g., Perez, Gastaldi, & Mugny, 1990]) and (b) the same dimension of judgment was represented in the influence measure and the appeal (e.g., with an ap-

⁵ Although, for ease of computation, we restricted our definition of influence to change in opinions, we recognize a variety of forms of social influence. For example, under certain circumstances, congruence between the source's and target's positions may be the most accurate measure of source impact (Levine & Russo, 1987; Nail, 1986; Willis, 1965).

peal to change one's attitude, the indirect measure must have assessed evaluation; with an appeal concerning line length, the indirect measure must have assessed magnitude judgments). This latter criterion excluded measures of cognitive activity as an indicator of indirect minority effects (e.g., Nemeth, 1986). Our indirect measures tapped change in a variety of beliefs and perceptions: For appeals on attitude topics, indirect measures assessed evaluation of aspects of the topic not directly mentioned in the appeal; for color judging tasks, they included the judged color of the afterimage; and, for other types of judgment tasks, they included new judgment problems that were similar in form to those referenced in the influence appeal. Insufficient data were available to evaluate time-delayed assessments as a form of indirect influence.

Finally, it should be noted that, for studies assessing more than one type of influence, the type of influence measure was confounded with order of assessment and with time delay between the appeal and assessment. Public change was assessed immediately after the appeal and before direct private change, and direct private change was assessed before indirect private change.

Coding of Studies

Each research report that met the selection criteria was coded for the following features: (a) number of minority sources, (b) number of majority sources, (c) number of influence targets, (d) content of the influence attempt (examples of behavior vs. statements of opinion vs. reasoned argument), (e) social pressure of the influence attempt (apparent presence vs. absence of the influence source at target response), (f) type of judgment task (opinion issue vs. color judgment task vs. other perceptual judgment task vs. other), (g) type of report (English language journal article vs. foreign language journal article vs. book chapter vs. dissertation/thesis vs. unpublished manuscript), (h) identity of research author (Moscovici and his students and colleagues, Mugny, Papastamou, Perez, B. Personnaz, and M. Personnaz vs. other researchers), (i) publication year or year of study completion, (j) number of influence attempts (number of attitude appeals or number of divergent judgment trials), (k) delivery of the influence appeal (in small-group, face-to-face discussion vs. small-group, computer-mediated interaction or note passing vs. written/audio presentation vs. other), (l) definition of minority status (the source's position was represented as statistically infrequent in the broader population or subject sample vs. the source was a member of a particular, typically deviant, social group in the broader society vs. the source diverged from the normative judgment in a small, interacting group), (m) whether or not the source was psychologized (meaning that recipients evaluated the idiosyncratic features of the source's personality before indicating their opinions), and (n), for the comparisons between exposure to a minority source and control conditions, the type of control represented (within-subjects comparisons between pre- and postappeal positions vs. between-subjects comparisons with a separate group of no-message subjects). The mean agreement between coders was 90.0% when ratings were aggregated across the coding categories. Because no consistent, interpretable effects were obtained for the following variables, they are not discussed further: content of the influence attempt, publication year, number of influence attempts, and type of control condition for the minority versus control comparisons.

French language publications were translated by means of a computerized translation program for microcomputers, by Globalink, Inc. (Fairfax, VA). Although 35 separate French publications initially met our sample criteria, a number represented redundant reports of research findings; thus, only 23 independent French language reports were included in the final sample.

Calculation of Effect Sizes

For each study that provided sufficient data, effect sizes in the form of g were computed (Hedges & Olkin, 1985). These calculations were

conducted independently by two coders; DSTAT (Johnson, 1989), a computer program for meta-analytic calculations, was used. The influence effect size (g) is the difference between the mean levels of influence for two experimental groups divided by the pooled standard deviation assumed to be common to the two groups. Effect sizes were adjusted for the bias due to small sample sizes (i.e., the tendency with small samples to overestimate population effects; Hedges & Olkin, 1985) and, in this way, were converted to ds .

Overall study outcomes. Influence effect sizes were calculated to represent the magnitude of minority influence in comparison with majority influence and no-message control conditions. Specifically, effect size comparisons estimated (a) the mean position of subjects exposed to a minority influence appeal relative to the mean position of subjects exposed to a majority and (b) the mean position of subjects exposed to a minority influence appeal relative to the control condition mean (either premessage judgments or separate no-message control subjects). These comparisons were computed for each of our three forms of influence, yielding a total of six different comparisons: (a) minority source versus majority source public change, (b) minority source versus majority source direct private change, (c) minority source versus majority source indirect private change, (d) minority source versus no-message control public change, (e) minority source versus no-message control direct private change, and (f) minority source versus no-message control indirect private change. All effect sizes were calculated so that negative numbers represent greater minority influence and positive numbers greater majority influence or, in the comparisons with controls, movement away from the minority position.

Note that these comparisons were not aggregated across differing numbers of sources and targets. When a single experiment presented varying numbers of sources or targets, effect sizes were calculated for each source-target representation.

Mediator analyses with source perceptions. A separate set of effect sizes was calculated to allow us to examine the relation between influence and perception of the minority source. This analysis included only those studies that varied the influence style or identity of the minority source and reported targets' perceptions of the source in each condition. For example, some studies manipulated the source's behavioral style (e.g., rigid vs. conciliatory message position or consistent deviation from others' views vs. movement to compromise with others), others varied the personal attributes of the source (e.g., homosexual vs. heterosexual or male vs. female), and others varied the relation between the source and target (e.g., source and target members of cohesive vs. not cohesive discussion group). Effect size estimates were calculated to represent the difference between conditions in source perceptions and then in amount of influence. Analyses estimated the relation between the perception.

Source perception effect size estimates represented the difference between the mean rating of the source in one condition (e.g., source with rigid message position) and the mean rating of the source in the other condition (e.g., source with conciliatory message) divided by the common standard deviation. The following nine categories of source perceptions were represented in the sample of studies: ratings of consistency, flexibility, competence, certainty, likability, objectivity, majority, commitment, and persuasiveness.

Influence effect size estimates represented the difference between the mean influence in one experimental condition (e.g., rigid message) and the mean influence in another condition (e.g., conciliatory message) divided by the common standard deviation. Similar to the influence measures in the overall data analysis, these source-type influence effects were categorized into public measures, direct private measures, and indirect private measures. Because the source and influence effects have an arbitrary direction, the influence effects were given a positive sign and the source perception effects were valenced to correspond with the influence estimates. Thus, for example, if the rigid source was more influential than the conciliatory one but the conciliatory source was

Table 1
*Mean Effect Sizes for Studies Providing Sufficient Information to Calculate Exact Effects:
 Impact of Minority Sources in Comparison With No-Message Controls*

Type of influence	Effect size (<i>d</i>)		95% confidence interval for weighted effects		No. of effects	Homogeneity (Q_w)
	Weighted	Unweighted	Lower	Upper		
Public	-0.24 _a	-0.46	-0.34	-0.15	36	748.94*
Direct private	-0.34 _a	-0.38	-0.40	-0.28	63	167.58*
Indirect private	-0.58 _b	-0.64	-0.70	-0.46	23	89.07*

Note. Effect sizes were calculated so that negative numbers indicate greater minority influence and positive numbers indicate movement away from the position advocated by the minority source. Weighted means were calculated with each estimate weighted by the inverse of its variance. Means without a common subscript differ significantly in post hoc tests at $p < .05$.

* Test for homogeneity of effects rejected at $p < .01$.

rated as more likable, the influence effect was assigned a positive value and the perception effect was assigned a negative value. Although we had originally intended to conduct these source perception analyses for majority as well as minority sources, insufficient data were available concerning the perception of majorities.

Results

Profile of Typical Study

As defined by the modal values of our codings of study attributes, the typical study in our sample did not specify the number of majority sources (n of outcomes with this attribute = 89) but presented one minority source ($n = 41$) to a lone target ($n = 49$). Furthermore, the typical study presented a single influence appeal ($n = 39$) consisting of a position along with supporting arguments ($n = 56$), and the appeal advocated a deviant or unusual opinion on an attitude issue ($n = 61$). It was published or completed in 1990 ($n = 14$) and appeared in the *European Journal of Social Psychology* ($n = 31$).

Impact of Minorities and Majorities Across the Types of Influence

The mean of the effect size findings was computed for each type of influence dependent measure by weighting each estimate by the inverse of its variance (Hedges & Olkin, 1985). As illustrated in Table 1, the comparisons between exposure to minority sources and no-message controls revealed a significant minority impact on each type of influence assessment. That is, the mean effect size estimates all possessed negative values and the 95% confidence interval (CI) associated with these estimates did not include zero.

Minority impact (vs. no-message controls) was greater with indirect private measures than other forms of influence. Differences among the types of influence measures can be evaluated through a comparison between classes (Q_B) analogous to testing for main effects in analysis of variance models. The estimate Q_B has an approximate chi-square distribution with $p - 1$ degrees of freedom, where p represents the number of classes (Hedges & Olkin, 1985). The influence findings varied significantly across type of dependent measure, $Q_B = 18.90$, $p < .001$, with stronger

evidence for minority impact on indirect private measures than on direct private or public measures.

The homogeneity statistic (Q_w) reveals whether the inconsistency in estimates for each dependent measure is large enough to reject the hypothesis that they are drawn from a common population (Hedges & Olkin, 1985). This estimate has an approximate chi-square distribution with $k - 1$ degrees of freedom, where k is the number of effect sizes. As would be expected given the diverse attributes of the studies within each type of influence, homogeneity of effects was rejected (see Table 1), suggesting that it may be inappropriate to interpret the mean-level effects. In meta-analysis, a predictive model can be considered appropriately specified when a classification variable (e.g., type of influence measure) is associated with significant between-groups differences and homogeneity is not rejected within groups.

Majorities have greater impact than minorities on public and direct private influence. Comparisons between minority and majority impact yielded significantly greater majority influence on measures of public change and direct private change (see Table 2). However, on indirect private measures, a slight, nonsignificant tendency was obtained for minority sources to be more influential than majorities. The influence findings varied significantly across type of dependent measure, $Q_B = 14.59$, $p < .001$, with stronger evidence for minority influence on indirect private measures than on direct private or public measures. The homogeneity tests were significant for the direct private and indirect private measures, indicating that it may be inappropriate to interpret the mean-level effects. Homogeneity was not rejected for the public measures.

Minorities have greater impact than majorities on indirect private influence in the unweighted means analyses. The procedure of weighting estimates by the inverse of their variance accords the greatest weight to those studies with largest sample sizes, and thus to estimates measured most precisely. In addition to this weighting procedure, mean effect sizes were calculated with unit weighting, allocating equal importance to all findings. For the comparisons of minority influence with controls, the weighted and unweighted analyses yielded highly comparable findings (see Table 1). Similarly, in the comparisons be-

Table 2
Mean Effect Sizes for Studies Providing Sufficient Information to Calculate Exact Effects: Minority Versus Majority Impact

Type of influence	Effect size (<i>d</i>)		95% confidence interval for weighted effects		No. of effects	Homogeneity (Q_w)
	Weighted	Unweighted	Lower	Upper		
Public	0.36 _a	0.46	0.15	0.57	8	10.21
Direct private	0.28 _a	0.20	0.18	0.37	18	42.37*
Indirect private	-0.05 _b	-0.32	-0.20	0.10	12	28.79*

Note. Effect sizes were calculated so that negative numbers indicate greater minority influence and positive numbers indicate greater majority influence. Weighted means were calculated with each estimate weighted by the inverse of its variance. Means that do not share a common subscript differ significantly in post hoc tests at $p < .05$.

* Test for homogeneity of effects rejected at $p < .01$.

tween minority and majority sources, the public and the direct private findings did not vary with method of aggregation. However, the findings for the minority versus majority comparison on indirect private measures differed importantly with the two procedures (see Table 2). Minority indirect influence was substantially greater than majority with the unweighted analyses, whereas only a nonsignificant tendency in that direction was obtained when effects were weighted by the inverse of the variance.

Stability of Effects: Establishing the Validity of Our Findings

Deleting effect size outliers. Outlier effects within each category of influence were deleted to achieve nonsignificant heterogeneity within study groupings (cf. Hedges, 1987). As indicated in Table 3, a relatively modest proportion of studies was deleted within each category to yield a nonsignificant heterogeneity test (ranging from 8% to 17% of the effects within categories). The mean-level effects did not change substantially in these analyses, with the exception of the majority versus minority comparison on indirect private influence. In this category,

deletion of a single outlier (i.e., Papastamou, 1990) resulted in significantly greater minority than majority influence.⁶

Within-studies comparisons. Our comparisons of minority impact across type of influence measure represent primarily

⁶ The outlier effect is from a study using the technique of psychologization, which supposedly attenuates influence because subjects attribute the message to the source's idiosyncratic psychological attributes (i.e., Papastamou, 1990). However, our analyses directly examining the effects of psychologization on influence generated no consistent effects. That is, the comparisons between minorities and no-message controls on indirect private influence revealed no effect for psychologization ($d = -0.62$, 95% CI = -0.86 to -0.37 , for the 3 studies with psychologized sources vs. $d = -0.56$, 95% CI = -0.70 to -0.43 , for the 20 studies with nonpsychologized sources). In contrast, as reflected in the outlier analyses on indirect private influence, the single study in the minority versus majority comparisons that psychologized the source generated less indirect private minority impact ($d = 0.49$, 95% CI = 0.18 to 0.80) than the other 11 studies ($d = -0.23$, 95% CI = -0.41 to -0.05 , $p < .05$). Thus, the experimental induction of psychologization may yield inconsistent effects, attenuating influence in this study but not others, or some other attribute of this experiment may have generated the minimal minority indirect private influence.

Table 3
Mean Effect Sizes Excluding Outlier Values

Comparison and type of influence	Weighted effect size (<i>d</i>)	95% confidence interval		No. of estimates remaining	No. of outliers deleted
		Lower	Upper		
Minority vs. control on public measures	-0.25	-0.35	-0.16	33	3
Minority vs. control on direct private measures	-0.30	-0.37	-0.23	54	9
Minority vs. control on indirect private measures	-0.55	-0.69	-0.49	19	4
Minority vs. majority on public measures	0.36	0.15	0.57	8	
Minority vs. majority on direct private measures	0.21	0.10	0.32	15	3
Minority vs. majority on indirect private measures	-0.23	-0.41	-0.05	11	1

Note. Effect sizes were calculated so that negative numbers indicate greater minority influence. Positive numbers indicate greater majority influence or, in the comparisons with control conditions, movement away from the position advocated by the minority source. Means were calculated with each estimate weighted by the inverse of its variance.

between-studies comparisons, in that the outcomes at each level of influence are drawn primarily from different sets of studies. Although this strategy has the advantage of including a maximum amount of data, interpretation may be compromised by the many unique factors that covary with individual studies (cf. Eagly & Wood, 1994). That is, the categories of effects may differ in a variety of ways in addition to type of influence assessed. To increase the certainty with which we could interpret the differences across condition as due to type of influence, we conducted the comparisons on a within-studies basis, including only those that reported multiple measures of influence. The findings provided reassuring support for the results from the full data set, with greater minority impact evident on indirect private measures than on direct private or on public measures (although the small sample sizes in this analysis did not provide sufficient power to generate statistically significant differences across measures). Specifically, for the comparisons between minority sources and control conditions, greater minority impact was apparent on indirect private influence ($d = -0.56$, 95% CI = -0.83 to -0.30 , $n = 6$) than on public influence ($d = -0.13$, 95% CI = -0.38 to 0.12 , $n = 6$). A similar pattern emerged in the 16 studies that assessed both indirect private influence ($d = -0.60$, 95% CI = -0.74 to -0.47) and direct private influence ($d = -0.23$, 95% CI = -0.36 to -0.09). For the comparisons between minority and majority sources, minority impact was again most pronounced on indirect private measures. That is, for the 3 studies that assessed indirect private and public influence, minorities did not differ from majorities on indirect measures ($d = 0.02$, 95% CI = -0.32 to 0.36) but were less influential on public measures ($d = 0.47$, 95% CI = 0.13 to 0.82). A similar pattern emerged for the 6 studies that assessed both indirect private influence ($d = 0.08$, 95% CI = -0.11 to 0.27) and direct private influence ($d = 0.36$, 95% CI = 0.17 to 0.55).

Including unreported effects. A recurring concern in interpreting meta-analytic findings is that they may overrepresent statistically significant results. Space limitations in published work and conventions concerning presentation of findings may result in authors providing sufficient information to calculate effects only for those findings achieving statistical significance. To evaluate the extent of this problem in the present data set, the analyses were recalculated including a value of zero for each study outcome for which exact effects could not be calculated. As can be seen in Table 4, the results proved reassuringly robust even with this dilution procedure, although they were of somewhat smaller magnitude than the analyses based on only the exact effect size calculations.

Examination of publication bias. We also evaluated whether our sample distorted minority effects as a result of publication biases that may favor publication of significant over nonsignificant findings. Although we attempted to minimize this problem in the present review by an extensive search to locate and include unpublished work, most of our sample represents published reports (84%). Contrary to any tendency for published work to overestimate minority impact, for indirect private measures, unpublished research and book chapters documented greater evidence of minority influence relative to no-message controls ($d = -1.07$, 95% CI = -1.28 to -0.85 , $n = 6$) than did published journal articles ($d = -0.36$, 95% CI = -0.50 to -0.22 , $n = 17$), $Q_B = 28.50$, $p < .001$. Homogeneity was

Table 4
Mean Effect Sizes Including Zero Values for Effects That Could Not Be Calculated

Comparison and type of influence	Weighted effect size (d)	95% confidence interval		N
		Lower	Upper	
Minority vs. control on public measures	-0.17 _a	-0.25	-0.09	54
Minority vs. control on direct private measures	-0.21 _a	-0.26	-0.17	100
Minority vs. control on indirect private measures	-0.29 _b	-0.37	-0.20	41
Minority vs. majority on public measures	0.21 _c	0.05	0.37	16
Minority vs. majority on direct private measures	0.15 _c	0.08	0.23	33
Minority vs. majority on indirect private measures	-0.02 _d	-0.13	0.08	22

Note. Effect sizes were calculated so that negative numbers indicate greater minority influence. Positive numbers indicate greater majority influence or, in the comparisons with control conditions, movement away from the position advocated by the minority source. Means were calculated so that each effect size is weighted by the inverse of its variance. Means without a common subscript differ significantly in post hoc tests at $p < .05$.

rejected in both categories. Publication status of the report did not affect other measures of influence.

Testing Models of Minority Influence Through Examination of Moderating Variables

Defining minorities through social group membership generated a stronger conversion pattern than other methods of defining the source. In general, studies that defined minorities through membership in a social group obtained less public and direct minority impact and greater indirect private impact than did studies using other methods of identifying minorities.⁷ Thus, comparisons between minorities and controls revealed less direct private minority influence when the source was identified through social group information ($d = 0.02$, 95% CI = -0.18 to 0.22 , $n = 5$) than for other representations of source identity ($d = -0.41$, 95% CI = -0.55 to -0.28 , $n = 18$, for distribution of opinions and $d = -0.39$, 95% CI = -0.51 to -0.28 , $n = 20$, for small-group presentations, $ps < .05$). For indirect private measures, however, providing information about the source's social group membership significantly enhanced minority impact, as compared with controls ($d = -1.11$, 95% CI = -1.46 to -0.76 , $n = 2$), over other representations of minority sources ($d = -0.27$, 95% CI = -0.53 to -0.01 , $n = 9$, for distribution of opinions and $d = -0.29$, 95% CI = -0.52 to -0.06 , $n = 6$, for small-group presentations, $ps < .05$). The comparisons between majority and minority sources similarly revealed that

⁷ A few studies identified minority sources with multiple cues (e.g., distribution of opinions and social group information). These studies were not included in the analyses on definition of minority because we could not determine the critical attributes of minority status.

social group membership minimized the direct private impact of minorities. That is, the one study that described the minorities' social group obtained minimal evidence of minority direct private influence ($d = 0.97$, 95% CI = 0.57 to 1.38) relative to that obtained with other manipulations of source identity ($d = 0.22$, 95% CI = 0.12 to 0.33, $n = 15$, for opinion distribution and $d = 0.37$, 95% CI = -0.17 to 0.92, $n = 1$, for small-group presentations, $ps < .05$). Sufficient data were not available to examine effects of minority identity for the remaining study groupings. Homogeneity tests were not significant in the following minority versus control comparisons: source defined through social group membership for direct public measures, source defined through social group membership for indirect private measures, and source defined through opinion distribution for indirect private measures.

Minorities had greater impact on direct private and indirect private measures when a physically absent source delivered a written appeal than when the source was present to deliver an appeal orally. In the studies included in our review, the method by which the persuasive message was delivered covaried almost exactly with the physical presence or absence of the source; thus, we combined these codings into a single research paradigm factor in the analysis. Minority impact, in comparison with no-message controls, was greater in studies that presented a written text of a persuasive message from a physically absent source (for public measures, $d = -0.69$, 95% CI = -1.00 to -0.38, $n = 4$; for indirect private measures, $d = -0.81$, 95% CI = -0.97 to -0.65, $n = 9$) than in small-group face-to-face discussions in which the source was physically present (for public measures, $d = -0.18$, 95% CI = -0.30 to -0.07, $n = 24$; for indirect private measures, $d = -0.22$, 95% CI = -0.40 to -0.04, $n = 13$; $ps < .05$). Homogeneity was rejected in all of these categories except written message/source absent for indirect private measures. Direct private measures did not vary with research paradigm and the comparisons between minority and majority influence were not affected by research paradigm.

Majorities had greater impact than minorities for subjective, opinion judgments across all types of influence. For measures of public change, majorities were much more influential than minorities with subjective opinion appeals ($d = 1.21$, 95% CI = 0.46 to 1.96, $n = 1$), and majorities were less influential (although still significant) for perceptual judgment tasks ($d = 0.29$, 95% CI = 0.07 to 0.51, $n = 7$), $Q_B = 5.29$, $p < .05$. The direct private measures also yielded an influence advantage for majorities (vs. minorities) with opinion tasks relative to judgment tasks, although the task comparison did not achieve significance ($d = 0.32$, 95% CI = 0.20 to 0.43, $n = 10$ for opinion issues and $d = 0.17$, 95% CI = -0.02 to 0.35, $n = 8$ for perceptual judgments). For indirect private measures, a significant majority (in comparison with minority) influence advantage was obtained with opinion appeals ($d = 0.30$, 95% CI = 0.01 to 0.59, $n = 2$) but not with appeals concerning perceptual tasks ($d = -0.19$, 95% CI = -0.37 to 0.00, $n = 10$), task comparison $Q_B = 7.69$, $p < .05$. Homogeneity tests were significant in the comparisons for opinion tasks with direct and indirect private measures ($ps < .01$). No differences were obtained for task type in the minority versus control comparisons.

Source Perceptions as Mediators of Minority Influence

To evaluate whether perceptions of the minority source as especially certain, committed, and confident enhanced influ-

ence effectiveness, targets' ratings of the minority source were correlated with the magnitude of the source's influence. As explained in the Method section, influence effect sizes were calculated within study to compare the mean influence of the source in one experimental condition (e.g., when the source adopted a conciliatory style) and the mean influence in another condition (e.g., source with a rigid style). Sufficient influence data were available to calculate these estimates only for minority sources and only for direct and indirect private measures. Perception effect sizes compared the original subjects' mean ratings of the source in one experimental condition (e.g., conciliatory source) and the mean rating in another condition (e.g., rigid source). The perception ratings included consistency, flexibility, competence, certainty, likability, objectivity, majority, commitment, and persuasiveness.

To evaluate the effects of perceived consistency on direct private measures, we conducted a regression analysis predicting influence from the source perception effects. As expected, perceived consistency was a significant predictor of direct private influence ($B = 0.32$, $z = 3.55$, $p < .001$, $n = 23$). Thus, when the minority source was judged more consistent in one experimental condition than another, the more consistent source tended to be more influential than the less consistent one. In studies in which sources were perceived to be similar in consistency between experimental conditions, they also tended to be similar in amount of direct private influence.

We also conducted these analyses using a categorical approach that provides mean-level estimates of perceptions and of influence effects. A median split was conducted on the consistency effect sizes, forming one group of studies in which the minority sources differed minimally between experimental conditions in perceived consistency (consistency $d = 0.11$, $n = 12$) and another group of studies in which the sources differed markedly in judged consistency (consistency $d = 0.52$, $n = 11$). As expected, the studies for which the sources differed minimally in judged consistency also obtained relatively small, although significant difference between the amount of direct private influence exerted by the sources (influence $d = 0.22$, 95% CI = 0.10 to 0.33, $n = 12$). In contrast, in the group of studies in which the source was perceived as much more consistent in one condition than another, the consistent source obtained substantially greater direct private change than the less consistent source (influence $d = 0.73$, 95% CI = 0.51 to 0.95, $n = 11$). The influence effects for these two groups differed significantly, $Q_B = 16.84$, $p < .001$, and the homogeneity tests were nonsignificant within the two study groupings.

Similar analyses were conducted with influence in the form of indirect private measures. Although the regression analysis did not reveal a significant relation between rated source consistency and influence effectiveness, this null result may have been due to the small number of studies available for analysis ($n = 11$). In the categorical analyses, a median split was conducted on the consistency effect sizes, yielding comparisons in which minority sources differed minimally in rated consistency between experimental conditions (consistency $d = 0.10$, $n = 6$) and comparisons in which minority sources differed markedly in rated consistency (consistency $d = 0.37$, $n = 5$). Importantly, those studies in which sources varied little in perceived consistency also obtained minimal difference in amount of indirect

private change (influence $d = 0.19$, 95% CI = 0.04 to 0.33, $n = 6$). In those studies for which the source in one condition was judged more consistent than the source in another condition, the high consistency source was more influential than the less consistent one (influence $d = 0.53$, 95% CI = 0.18 to 0.88, $n = 5$). The influence effect sizes were marginally different from each other, $Q_B = 3.19$, $p < .10$, and the homogeneity tests within study groupings were nonsignificant.

Although we had originally anticipated that favorable ratings of sources along other dimensions (e.g., commitment and certainty) would also be associated with especially high levels of influence, this proved not to be the case in our analysis. In both regression models and categorical analyses, no significant or near significant relations were obtained for any source rating other than consistency.

Numbers of Minority Sources and Targets

Regression analyses were conducted to evaluate whether influence varied with the number of minority sources and the number of targets. Least squares regressions were calculated with number of sources and number of targets as predictors and each influence effect size weighted by the reciprocal of its variance (Hedges & Olkin, 1985). Regression models yield a test of the significance of predictor variables as well as a test of model specification (Q_E), which indicates whether significant unexplained variation remains in effect sizes. The error-sum-of-squares statistic, which provides this test of model adequacy, has an approximate chi-square distribution with $k - p - 1$ degrees of freedom, where k is the number of effect sizes and p is the number of predictors. A model is adequately specified when the predictors are significant and the remaining variation in effect sizes is nonsignificant.

Separate regression models were calculated for each of the three forms of influence for the comparisons between minority influence and control conditions; insufficient data were available to conduct these analyses with the minority versus majority comparisons. When numbers of sources and numbers of targets were entered as predictors into separate regression models, a greater number of sources was associated with greater minority influence both for public measures ($B = -0.22$, $z = -1.93$, $p < .05$, $n = 31$) and for direct private measures ($B = -0.19$, $z = -2.11$, $p < .01$, $n = 33$). Although number of targets was not associated with influence for public measures, greater numbers of targets attenuated influence for direct private measures ($B = 0.07$, $z = 2.52$, $p < .01$, $n = 33$). The relation between influence and number of sources–targets was reversed for indirect private measures. On indirect private measures, minority impact was greater with smaller numbers of sources ($B = 0.78$, $z = 3.57$, $p < .001$, $n = 13$) but did not vary significantly with number of targets ($B = -0.05$, $z = -0.54$, $n = 13$, *ns*). The variance (R^2) accounted for in these models ranged from .14 for public measures to .36 for indirect private measures. Significant unexplained variability remained in all of these equations ($ps < .01$), indicating that the models were not adequately specified.

We also calculated the impact of numbers of sources and targets using the predictive formulas proposed by Latané and Wolf (1981) and Tanford and Penrod (1984).⁸ These models combine numbers of sources and targets into a single parameter

predicting influence and specify a nonlinear relation between the source/target predictor and influence. The Tanford and Penrod (1984) formula, in which this nonlinear function assumes an S-shaped growth curve, significantly predicted minority impact for all influence measures. Greater number of sources/lesser number of targets was associated with greater impact on both public measures ($B = -1.49$, $z = -2.30$, $p < .01$, $n = 31$) and direct private measures ($B = -0.44$, $z = -2.84$, $p < .01$, $n = 33$). However, for indirect private measures, greater number of sources/lesser number of targets was associated with lesser influence ($B = 3.72$, $z = 2.86$, $p < .01$, $n = 13$). The percentage of variance (R^2) accounted for in these predictive models was relatively small, ranging from .08 for public measures to .21 for indirect private measures. The Latané and Wolf model, in which influence is a negatively accelerating function of the number of sources and targets, yielded similar results, although the predictive model achieved significance only for direct private measures ($B = -0.11$, $z = -2.82$, $p < .01$, $R^2 = .11$, $n = 33$). In all of these analyses, significant unexplained variability remained in the models ($ps < .01$), indicating that the models were not adequately specified.

Results and Discussion of Study Author Effects

Studies conducted by Serge Moscovici, his student Gabriel Mugny, and their students and colleagues reported a more marked conversion pattern of minority impact than that reported by other researchers. That is, this research group reported less marked minority influence in comparison with controls for measures of public change ($d = -0.13$, 95% CI = -0.27 to 0.01 , $n = 12$) and direct private change ($d = -0.25$, 95% CI = -0.33 to -0.16 , $n = 29$) than other researchers ($d = -0.32$, 95% CI = -0.45 to -0.20 , $n = 24$ for public measures and $d = -0.44$, 95% CI = -0.52 to -0.35 , $n = 34$, for direct private measures, $ps < .05$). In contrast, on indirect private measures, Moscovici, Mugny, and colleagues obtained greater evidence of minority influence in comparison with controls ($d = -0.70$, 95% CI = -0.83 to -0.57 , $n = 18$) than did other researchers ($d = -0.08$, 95% CI = -0.34 to 0.19 , $n = 5$, $p < .05$). Homogeneity was rejected for all of these categories except the public measures reported by Moscovici, Mugny, and colleagues. Insufficient data were available to examine the effects of researcher affiliation for the comparisons between minority and majority

⁸ To directly compare our results with the earlier meta-analytic conclusions of Tanford and Penrod (1984), we reanalyzed the portion of their data examining minority impact (i.e., excluding majority source impact on minority targets). Like Tanford and Penrod, we used standard least squares procedures in these analyses. Because they did not report the number of subjects they calculated for each effect size comparison, we were unable to use the analyses appropriate for meta-analytic data (cf. Hedges & Olkin, 1985). Our results for this sample of studies ($n = 50$ effect sizes from their total sample of $n = 108$) yielded R^2 values ranging from .26 to .28 depending on whether the relation between influence and number of sources and targets was represented as linear or nonlinear. Consistent with their findings, the nonlinear parameters from the social impact model and the social influence model were both significant. However, analyses on the linear model revealed that the number of sources was a significant predictor of influence but that the number of targets was not.

influence. Interestingly, this pattern echoes the findings identified in earlier investigations of the effects of study author in which especially strong effects emerge in the research conducted by the initiators of a theory or paradigm (e.g., leadership research [Strube & Garcia, 1981] and persuasion research [Johnson & Eagly, 1989]).

We assume that researcher identity is a "proxy" variable, representing other causally relevant factors that directly generate influence. Interpretation of authorship effects is necessarily uncertain because of the difficulty in isolating the exact factors responsible for variability in findings (Eagly & Wood, 1994). For example, the research conducted by Moscovici, Mugny, and their students and colleagues may have benefited from an especially complete theoretical understanding of the nature of minority conversion and from use of methodologies especially sensitive to conversion effects or it may have suffered from experimental artifacts. In the minority influence literature, authorship effects may also reflect cultural differences, given that this research group is European (in contrast to the primarily U.S. researchers in the remainder of the sample) and that much of their research was conducted with French-speaking subjects. Unfortunately, our attempts to clarify the methodological features in our sample of studies that covaried with study author and that might account for authorship effects met with little success.

General Discussion

The present findings demonstrate clearly that minority sources exert influence over majority recipients and that this impact varies with the type of influence assessed. The comparisons between exposure to minority sources and no-message controls revealed a modest but statistically significant minority impact on public measures of influence that directly concerned the issue or task referenced in the appeal, as well as on direct measures taken privately from the source. Furthermore, minorities achieved an even greater impact on indirect private measures than on the public or private direct assessments. The indirect measures did not assess judgments on the specific issues or tasks featured in the influence appeal but tapped a variety of beliefs and perceptions associated with the target judgment. For example, for influence inductions involving color judgment of slides, an indirect measure of impact was the judged color of the afterimage (e.g., Moscovici, Lage, & Naffrechoux, 1969); for influence inductions involving risky or cautious solutions to choice dilemma problems, an indirect measure was impact on judgments of new problems (e.g., Clark, 1988).

Our review also provides clear evidence of the unique pattern of minority influence, distinct from the influence of majority sources. Minority sources generated less change than majorities on direct public measures of influence and on direct private assessments. On indirect private measures, however, minorities demonstrated equal or greater influence than majorities.

The patterning of source impact across types of influence and the other moderators we examined provides insight into the mechanisms underlying agreement with majority and minority sources and allows us to examine three central aspects of Moscovici's (1985a, 1985b) dual-process model. First, we consider whether minorities' minimal public and direct private impact

stems from the negative social identity assumed when aligning oneself in judgment with a deviant other. Second, we examine whether minorities' challenge to accepted views appears to generate an informationally based validation process. Then we consider whether these social and informational components of minority impact are conjoint reactions to the conflict generated by the minority source. Finally, using the present findings as a springboard, we construct a plausible theoretical framework to account for minority influence.

Normative Processes Underlying Majority Versus Minority Impact

Normatively based change, in which recipients comply with the source's position to gain social rewards such as others' approval, typically regulates public expressions of agreement (Deutsch & Gerard, 1955; Eagly & Chaiken, 1993). In our review, the uniformity between public and direct private measures suggests that normative mechanisms also underlie direct private change.⁹ Indeed, these two direct measures demonstrated striking consistency in all of the analyses, including the between-studies and within-studies comparisons and the moderator analyses.¹⁰

Recipients' greater public and direct private agreement with majority than minority sources is consistent with the dual-process prediction that majority sources are more likely than minorities to exert influence through normative pressures (Moscovici, 1985a, 1985b). Furthermore, the comparisons between minorities and controls who did not receive a message suggests that the effect stems from normative factors *attenuating* minority public and direct impact. According to Moscovici (1985a, 1985b), resistance to minorities on public measures stems from recipients' fear of losing face, of speaking and acting in a deviant fashion, and of recognizing themselves as deviant. However, our findings indicate that *public* recognition of deviancy is not the critical factor inhibiting minority impact. The attenuated minority influence across both public and direct private measures suggests instead that recipients' own, private recognition that they are aligned in judgment with a negatively valued other is sufficient to attenuate influence.

⁹ It might be argued that the similarity between public and direct private measures stems from a methodological artifact in which subjects tried to appear consistent across measures. Because these responses were assessed in close temporal proximity on identical scales, subjects may have tailored their direct private judgments to match their initial public judgments. To examine this possibility, we compared direct private agreement in studies that did versus did not initially assess public judgments. The absence of systematic differences between direct private measures preceded by a public assessment and those not preceded by such a measure suggests that consistency pressures do not underlie the similarity between public and private direct measures.

¹⁰ It is, of course, possible that the correspondence between public and direct private measures indicates that both are a function of informational as well as normative pressure. Indeed, the moderate but significant minority (vs. no-message controls) impact on these measures suggests an informational component to public and direct private agreement. However, the sensitivity of these measures to a wide variety of normative factors in our analyses led us to emphasize a normative interpretation.

Recipients' personal aversion to adopting a deviant minority identity was also apparent in the analyses on the definition of the minority source. That is, studies obtained lesser direct private agreement when they defined the source as a member of a minority social group and thus the social deviancy of the minority was salient (e.g., homosexual college students, Clark & Maass, 1988, or an international feminist group organizing "Take Back the Night" marches, Lortie-Lussier, Lemieux, & Godbout, 1989) than when the source was identified through other means (i.e., either the distribution of judgments in the population or the positions adopted by members of a small group). In addition, the effects for research paradigm suggested that recipients were especially loath to agree with minority sources in contexts involving face-to-face interaction, in which the minorities' identity should have been particularly salient. That is, less minority influence (compared with no-message controls) was obtained in studies with face-to-face, immediate contact between recipients and minority sources than in studies with indirect contact, in which the influence appeal was written or audiotaped. The greater minority influence in remote than immediate contact settings was obtained on both direct private and indirect private measures of influence and is reminiscent of Moscovici and Neve's (1971) conclusion that, for minorities, "those in the absent are in the right" (p. 210).

Readers familiar with the persuasion literature may find the limited immediate, direct impact of minorities reminiscent of the " sleeper effect." Minority identity could serve as a *discounting cue*, or signal to recipients to discount or disparage the message position (McGuire, 1985; Watts & Holt, 1979). Time delay between message exposure and attitude measurement can result in the negative source cue being forgotten or dissociated from the message, yielding the paradoxical sleeper effect in which persuasiveness apparently increases over time (Cook, Gruder, Hennigan, & Flay, 1979; Eagly & Chaiken, 1993). Similarly, in our review, minority influence was attenuated when the minority identity was especially salient, that is, during public and private direct measures of impact and in the settings involving immediate contact between source and recipients, whereas minorities were more impactful when recipients were less aware of the source's identity, during the indirect influence assessments and in settings of remote contact between the source and recipient. Moscovici (1980) has argued against interpretation of minority influence as a variant on the discounting cue paradigm because of an experiment suggesting that the greater influence of minorities than majorities on time-delayed measures of influence is accompanied by greater recall of the identity of the minority (vs. majority) source and of the content of the minority (vs. majority) appeal (Moscovici, Mugny, & Papastamou, cited in Moscovici, 1980). However, the congenial fit of the discounting cue explanation with the overall pattern of minority effects we obtained, along with its linkage to traditional persuasion paradigms, provide incentives for further investigation.

The Dual-Process Model and Hypothesized Conflict Underlying Minority Impact

Skeptics of the dual-process model may believe that our findings are sufficiently explained with the discussion thus far, suggesting that the normative basis for resisting minority appeals

and for accepting majority appeals generates greater majority than minority impact on public and direct private measures. However, Moscovici (1980, 1985a) has maintained that minorities' challenge to accepted views generates especially intense informational conflict, in which recipients attempt to verify the deviant, minority position by scrutinizing the appeal and the reality it describes. This informationally based validation process generates change in underlying beliefs and perceptions. Given the social barriers inhibiting direct agreement with minorities, informational influence would be expected to emerge primarily on indirect private measures, which tap change without recipients' awareness of agreement with the source.

Only mixed evidence was obtained for the prediction of greater informational impact of minority than majority sources (Moscovici, 1985a). When the findings from all of the studies in the review were aggregated by a method in which effects were weighted by the inverse of their variance (Hedges & Olkin, 1985), majority and minority sources commanded approximately the same amount of private, indirect change. However, minorities did generate substantially greater indirect private impact than majorities when the study outcomes were aggregated into a simple mean with unit weighting accorded each effect. Greater minority than majority indirect private influence also emerged in the outlier analyses on the weighted mean procedure (Hedges, 1987); deletion of a single outcome reduced the heterogeneity across effects to nonsignificance, and the remaining 11 outcomes revealed significantly greater minority than majority indirect private impact. Admittedly, then, the greater indirect private influence of minority than majority sources proved fragile and easily muted by a variety of not well-understood moderating factors. However, we believe that it emerged with sufficient strength to merit consideration of the mechanisms that may underlie this effect.¹¹

Little evidence was available supporting the dual-process explanation that factors that generate conflict with the minority not only block manifest or public and direct change by inhibiting overt agreement but also promote change through the alternate route of indirect and private agreement (Moscovici, 1980, 1985a). To test this hydraulic-like relation among types of influence, we examined whether the moderating factors likely

¹¹ Indirect private influence potentially reflects a variety of processes in addition to message scrutiny. For example, with some of the judgment tasks used in the studies in our review, indirect influence was assessed from subjects' responses to a new set of judgment problems that were similar in form to those featured in the earlier minority advocacy. Minority impact on these judgments may reflect little more than carry-over of a response set that had been established during earlier exposure to the minority. However, we did not find any greater minority indirect private impact in studies likely to be affected by response set (e.g., judgments of line length when the minority consistently advocated "long" or "short" answers to earlier problems or judgments of number of dots in an array when the minority consistently generated low or high estimates to earlier arrays) than in those unlikely to be affected by set (e.g., judgments of the afterimage color of slides when the minority had advocated that the blue slides were green or attitudes toward specific environmental proposals when the minority had advocated a proenvironmental position). Thus, minority impact was apparent on a variety of measures and did not appear limited to contexts especially susceptible to response set biases.

to generate conflict and to inhibit public and private direct minority impact jointly facilitated private indirect influence. We found only one moderator that conformed to this pattern: That is, minimal public and private direct influence, along with substantial private indirect influence, was obtained with the method of operationalizing minority identity that would be expected to elicit greatest conflict, social group membership, and not with other, plausibly less conflictual methods of identifying the minority (distribution of opinions and presentation of opinions in small groups). Other moderators that plausibly enhanced conflict did not reveal this conversion pattern. As we noted in the earlier section on the normatively based resistance to minorities, the presumably greater social conflict in research paradigms with face-to-face interaction with the minority source (than in settings with no immediate contact) attenuated direct private influence, but instead of facilitating indirect private agreement, immediate (vs. remote) contact led to less change on this measure as well. Furthermore, the opposing views of the source should have generated greater conflict on objective, perceptual tasks than on subjective, opinion issues, yielding stronger conversion effects with objective judgments. However, in our review, subjective, opinion issues yielded greater majority (vs. minority) impact than objective, judgment tasks across all measures of influence. (The effect of task type is discussed in more detail in the next section.) Thus, our moderator findings suggest a differentiated model of minority impact, in which certain attributes of the minority source and the influence setting attenuate public and direct private influence by enhancing recipients' motivation to avoid aligning themselves with the deviant source, whereas other features of the source and setting may augment private, indirect influence by enhancing processing of the minority message and thought about the issue or problem described.

Informational Bases of Minority Influence

From an information-processing perspective, scrutiny of the content of minority messages is a critical factor in informationally based influence (Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986). Although several recent studies attempting to document greater thought about minority than majority appeals have not been especially successful (e.g., Mackie, 1987; Trost, Maass, & Kenrick, 1992), recipients do appear motivated to engage in careful scrutiny of message content when minority sources advocate unexpected positions, especially consensual, mainstream views (Baker & Petty, in press). From this perspective, minority sources do not uniformly elicit message scrutiny; recipients may be more motivated to evaluate appeals in cases of inconsistent or unexpected pairings of sources and messages (i.e., minorities advocating consensual positions and majorities espousing deviant ones) than in cases of expected source-position pairings (i.e., minorities advocating deviant positions and majorities advocating consensual views).

A variety of informational processes in addition to message scrutiny might generate indirect, private change and explain minority impact on these measures. In particular, we speculate that recipients of a minority appeal may be more likely than recipients of a majority appeal to recognize that the advocated position diverges from their own. Because of the unsettling nor-

mative implications of valued majorities who advocate views that deviate from recipients' favored positions, recipients may agree with majorities on direct and public measures in part because they misperceive or misconstrue the advocated position. Distortion of a majority message could take the form of assimilation, in which recipients view the advocated position as more similar to their own than it actually is (cf. Sherif & Hovland, 1961). Recipients may thus not realize the extent to which a majority appeal counters their personally favored views. Of course, recipients may also misperceive minority positions, most likely by contrasting them from their own views and judging them more deviant than they truly are (cf. Sherif & Hovland, 1961). However, contrast effects do not minimize the integrity of a minority's counterattitudinal position; recipients remain aware of the divergence between their own and the source's position.

It is also possible that normative pressures to align with valued majorities affect recipients' interpretation of the issue in the appeal. Recipients may invoke a particular, perhaps unusual interpretation to explain the majority position and their own agreement with the appeal (Allen & Wilder, 1980; Asch, 1940; Griffin & Buehler, 1993). Given the absence of normative pressures to agree with minorities, recipients may not generate such biased interpretation of minority positions. Indeed, recent research suggests that recipients are more likely to judge that majorities rather than minorities are using uncommon, unusual interpretations of attitude issues when they deviate from subjects' views (Wood, Pool, & Purvis, 1994). Thus, when subjects were told that a valued majority group disagreed with the statement "I would not condone a friend who used drugs," the phrase "would not condone" was accorded an unusual meaning and was believed to refer to ending the friendship and reporting the drug use to authorities. However, when the position was attributed to a minority group, the phrase "would not condone" was accorded the more common interpretation of personal disapproval.

Biased perception and interpretation of the majority appeal would reduce the apparent discrepancy between recipients' views and those held by the majority, providing a (preinfluence) informational basis for agreeing with the majority (Allen & Wilder, 1980) and a (postinfluence) justification for adopting majority views (Griffin & Buehler, 1993). Biased construal of the majority position should typically be associated with agreement on public and private direct measures of influence.

We speculate that the absence of pressures to construe minority positions as congenial and the resulting recognition of minorities' counterattitudinal views is a key factor in generating indirect change to minority appeals. It seems likely that recognition of opposing views can alter recipients' cognitive representation of an attitude issue by challenging related beliefs and values. People may often subjectively represent socially important issues as two relatively independent viewpoints or categories of beliefs and attitudes (e.g., liberalism vs. conservatism and high vs. low religiosity), demonstrating considerable awareness and familiarity with their own but not opposing positions (Eagly & Chaiken, 1993; Latané & Nowak, 1992). Exposure to deviant views may increase recipients' awareness and understanding of alternate positions, forcing recognition of the full attitudinal continuum and increasing the likelihood of bipolar or dimen-

sional representation of issues. Furthermore, a minority who advocates a highly divergent viewpoint may increase the extremity of the positions that people recognize as anchoring the attitudinal continuum. For example, the hostility and violence toward White, mainstream society advocated by the young Malcolm X and the Black Panthers may have identified a newly extreme position concerning the extent to which African Americans could oppose racism. Indirect private change in judgments might then emerge as recipients try to reconcile their own views (e.g., I am a moderate) with their newly broadened understanding of possible positions on the attitude issue.

According to these speculations, then, the greater normative pressure of majority than minority sources generates public and direct agreement and results in distortion of majority positions to be congruent with recipients' own. The divergent positions of minority (compared with majority) sources may be perceived with greater veridicality to be counterattitudinal. Although it may be that deviant minority appeals are frequently discounted and dismissed, under some circumstances exposure to divergent views may generate recognition of opposing positions and the full attitudinal continuum, and indirect minority impact may result as recipients attempt to adjust their own views given their new understanding of the issue.

Although this explanation for minority influence emphasizes attitude issues, a complete account of this literature should include minority impact on group decision making and problem-solving tasks. We speculate that processes similar to those we outlined in attitude change contexts also operate in task performance contexts. Although we do not have even suggestive evidence in support of this proposition, it is worth noting that our account is not inconsistent with Nemeth's (1985, 1986) and Nemeth, Mayseless, Sherman, and Brown's (1990) research on group problem solving. In Nemeth's view, the normative pressures inherent in majority advocacy focus recipients on the proposed solution, whereas the absence of such pressures with minority advocacy allows recipients to think divergently about the problem and the solutions proposed. Minorities thus stimulate issue-relevant thinking that is more divergent, creative, original, and thorough than majorities. In our framework, one factor that may generate these different patterns of thought is recipients' recognition that divergent minority appeals challenge their own favored solutions, whereas divergent majority appeals may be misperceived as generally consistent with subjects' own views.

Consistent Behavioral Styles

Our review provides strong support for the idea that perceived source consistency is an important component of minority influence (Moscovici, 1985b). Minorities judged by targets to be especially consistent wielded greater influence than less consistent-appearing sources. This effect was significant on direct private measures and marginally significant on indirect private measures. (Insufficient data were available on public measures.) We also evaluated the relation between influence and a variety of other source ratings, including certainty, credibility, likability, and honesty, but only judged consistency proved to be a significant predictor of minority impact.

Our representation of consistency differs from the typical treatment in minority influence research. Because we could not

clearly differentiate between sources with consistent versus inconsistent behavioral styles in the studies in our review, we relied on the original subjects' ratings on source perception measures to identify consistent-appearing and less consistent-appearing sources. This procedure has the advantage of accurately representing extent of source consistency as perceived by the targets of influence. However, recipients' consistency judgments do not necessarily stem from the source's patterning and style of presentation and instead may have arisen from the source's repeated statements of opinion, from the arguments used in the appeal, or from the extremity of the advocated position.

The dual-process model has drawn on attribution analyses to explain the effectiveness of minority consistency. Supposedly, appeals from minorities who adopt consistent styles are influential because they are explained in terms of positive source attributes, such as certainty and commitment (Maass & Clark, 1984; Maass, West, & Cialdini, 1987; Moscovici, 1985b). Consistency might also indicate especially valid messages and accurate, unbiased sources (cf. Chaiken & Stangor, 1987). However, our failure to find any relation between influence and these other source attributes suggests that they are not important components of minority effectiveness and that they do not mediate the relation between perceived consistency and minority impact.

Given that the relation between influence and perceived consistency in this research is correlational, it is possible that subjects tailored their judgments of source consistency to correspond to their agreement as a way of explaining why they were or were not influenced. However, the influence-then-judged-consistency causal ordering is not especially plausible given that influence was not associated with any of the other source perceptions we examined, many of which would seem to provide a more intuitively plausible account of subjects' agreement than consistency (e.g., source competence, persuasiveness, or objectivity).

The effectiveness of perceived consistency may stem from its interpersonal consequences. Given that recipients are disposed to disregard or overlook the views advocated by minority persons and others of low status (Ridgeway, 1982, 1984; Shackelford, Wood, & Worchel, 1994), minorities may be compelled to advocate their positions consistently to attract others' attention. Thus, consistency may be related to influence through its impact on attention. In addition, consistency may convey to recipients that the source will not negotiate or compromise, placing the responsibility for resolving the disagreement with the source on recipients of the appeal (Moscovici, 1985b). In this account, recipients modify their views to consistent-appearing sources because consistency marks the intransigence of the source.

Numerical Predictors of Influence

The impact of numbers of minority sources and targets in our review does not support the predictive models that specify uniform effects across the various types of influence (Latané & Wolf, 1981; Tanford & Penrod, 1984). Although our public agreement and direct private agreement effects replicated Tan-

ford and Penrod's earlier meta-analytic findings,¹² in that minority influence generally increased with greater numbers of minority sources and lesser numbers of targets, on indirect private measures of influence our results diverged markedly from those specified by the predictive models. For this type of influence, *greater* number of sources was associated with *lesser* influence. Number of targets alone, however, was not a significant predictor. Thus, the predictive models do not provide an adequate account of the indirect private impact of minority sources.

The varying impact of number of minority sources across types of influence is in general compatible with the dual-process perspective, given that differentiation between types of influence is a hallmark of this approach. Furthermore, the influence pattern suggests that different mechanisms underlie the public and direct private effect in comparison to the indirect private effect. The impact of number on public and direct private measures plausibly stems from the greater potency of the normative pressures exerted by larger (versus smaller) groups of people. In contrast, increasing numbers of minorities attenuated private indirect influence perhaps because quantity blurred the minority identity. That is, the greater the number of sources, the less they may have appeared to be minorities, and the less they may have generated the informational processes that underlie indirect private influence. Although the overall effects of number on influence appear more consistent with a dual-process account than predictive models of impact, we caution that the particular pattern of findings we obtained was not specifically anticipated by either perspective.

Similarity Between Target and Minority Source

We obtained only partially consistent support for the self-categorization view that all influence flows from targets' categorization of the source as an in-group member, similar to self with respect to the influence topic (David & Turner, 1992; Turner, 1991). From this perspective, when targets respond to public influence measures, they focus on the differences between themselves and the deviant minority source, categorize the source as an out-group member, and resist influence. However, in our review minorities did achieve significant public and direct private impact when compared with no-message control conditions. In addition, self-categorization theory suggests that when recipients respond to private and indirect influence measures, they consider minorities in a broad context, in which the source is more similar to recipients than highly deviant others. The predicted influence of minorities categorized as similar others, who share recipients' view of reality, was supported by our finding of greater private indirect than public or private direct minority impact. However, it would be premature to accept or reject this theoretical analysis on the basis of outcome measures of influence such as those in our review, in the absence of direct measures of the categorization process.

Our findings support Crano's (1991), Crano and Hannula-Bral's (in press), and Gorenflo and Crano's (1989) social comparison prediction of the influence advantage of majority sources over minorities on subjective issues of opinion. In-group, majority sources were expected to be especially useful comparison others for (majority) recipients because subjective

judgments derive from one's value systems, which are likely to be shared with similar others. Indeed, the greater impact of majority than minority sources on subjective, opinion tasks (than objective, perceptual judgments) emerged uniformly across the types of influence in our review. The uniform effects suggest that social comparison mechanisms function relatively independently of the processes that generate majority compliance and minority conversion. We did not, however, obtain support for the social comparison prediction that for judgments on objective, perceptual tasks, dissimilar-from-self, minority sources would be especially influential. For perceptual tasks, minority sources were not significantly more influential than majorities for any type of influence measure.

Conclusion

Social psychologists' interest in minority influence has arisen in part from the paradoxical nature of minority impact. Minority appeals have the apparent magical quality of emerging with increased psychological distance from the source, as we found with influence measures and social contexts that minimize source salience. Moscovici's (1980, 1985a) explanation for minority effects struck some social psychologists as equally mystical; the notion of separate systems underlying minority versus majority impact, the emphasis on conflict as a basis for change, and the hydraulic-type relation proposed between manifest and latent influence did not fit well with the information-processing approaches to influence popular in the 1980s. The central finding of our review, that minority advocacy generates a very different pattern of influence effects than appeals from majority sources, is congruent with Moscovici's emphasis on the different determinants of minority and majority impact. However, we obtained little evidence for the prediction that different forms of conflict underlie the effects of source type.

We argued that minority and majority influence stems from a common set of normative and informational processes. Minorities' lesser public and direct influence than obtained by majorities appears to stem from normative factors, specifically recipients' aversion to aligning themselves with a deviant, minority source. The informational pressures that might generate greater minority than majority impact were somewhat less easy to identify. Following Moscovici (1985a, 1985b), we anticipated that recipients' careful scrutiny of minority appeals and change in underlying beliefs and perceptions would emerge on indirect private measures of influence, which tap change without recipients' awareness of agreement with the source. However, minor-

¹² Our analyses differed in several ways from those in Tanford and Penrod's (1984) earlier meta-analytic review. Our models did not include some additional study attributes that Tanford and Penrod found to be significant predictors in a few analyses (i.e., type of task, source consistency, and real vs. nominal groups). In addition, our data differ in a number of ways from theirs, including our more narrowly specified inclusion criteria for studies (see the Methods section); our separation of types of influence into public, direct private, and indirect private measures; our correction of a number of inconsistencies and errors in their data set; and our use of statistical procedures specifically designed for meta-analytic data (Hedges & Olkin, 1985) instead of the standard least squares regressions apparently used in their review.

ity and majority sources did not differ in their impact on indirect, private measures of change in the overall analysis, although the minority advantage on these measures did emerge under some conditions. Indirect private influence appeared especially likely in studies that defined the minority and majority identity through membership in social groups (e.g., Greenpeace vs. the Environmental Protection Agency) rather than through other means, when the source was perceived as especially consistent in advocating the minority position, and when there were few rather than many minority sources.

We speculated that informational pressures publicly and directly combine with the strong normative pressures on recipients to espouse majority positions and reject minority views. Disagreement from valued majority groups generates public and direct change in recipients' judgments and encourages distortion of the majority position to reduce its opposition and threat and to justify recipients' agreement with the majority view. For example, recipients might try to explain the majority's divergent attitudes through their unusual interpretation of the attitude issue (Wood, Pool, & Purvis, 1994). Such interpretations of majority positions might lessen the normative threat to recipients' identities and decrease the majority's challenge to recipients' own understanding of the issue.

The relatively limited normative threat posed by deviant minorities allows recipients to recognize the appeal as counterattitudinal (Wood, Pool, & Purvis, 1994). Although a veridical perception of the minority position as opposing recipients' own may not generate strong public or direct agreement, we speculated that it can increase recipients' awareness of opposing views and the full range of the attitudinal continuum. The changes in belief structure and representation of the attitude issue that can result from recipients' acknowledgment of opposing views may then indirectly change recipients' attitudes as they attempt to reconcile their attitudes with a new understanding of the issue (e.g., redefining what represents a "moderate" position).

In this account, defining minorities and majorities in terms of social groups familiar to recipients is important because everyday life identities convey strong normative pressures. With a valued, socially defined majority, recipients would be especially likely to misperceive the advocated position as generally congenial to their own and to align with the majority view. With a socially defined minority, recipients would reject the advocated position on direct measures and perhaps veridically perceive the minority as opposing their own views. In this view, consistent advocacy of the minority position is important because it ensures that recipients do not simply derogate and dismiss the message without consideration but instead recognize it as a feasible, although not personally favored, viewpoint on the broader topic. We guess that it is through such mechanisms that minority groups in real-world contexts exert informationally based influence and have the potential to instigate social change.

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