

Studies in Social Influence

V. Minority Influence and Conversion Behavior in a Perceptual Task

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The effects of influence attempts by a majority and by a minority were examined on both a manifest response level and a latent perceptual level. Female subjects were exposed to a series of blue slides that were consistently labeled as green by a female confederate. The confederate was presented as a member of either a majority or a minority. On each trial, subjects were required to indicate the color of the slide presented and the color of the afterimage perceived on a white screen following removal of the slide. It was predicted that (a) the subject's judgment of the chromatic afterimage would be modified when the influence agent represented a minority, and (b) this modification will be more pronounced when the source of influence is absent than when it is present. The results supported the prediction in both the main study and its replication.

In a previous study, Moscovici, Lage, and Naffrechoux (1969) showed that if a minority consistently affirmed that it saw as green a series of slides that were objectively blue, it influenced both the public and private responses of a majority. Moreover, individuals who did not change their responses during the social interaction were even more likely than those who did conform to the minority's position to change their responses in a

This experiment is the result of criticisms addressed to us by L. Festinger and J. Lanzetta. It follows from a suggestion made to us by R. Zajonc several years ago. It was piloted with K. Bradley at the New School for Social Research. Marie Personnaz served as the experimenter in the final study. This article, as a whole, has benefited very much from the scientific help and criticisms of Sharon Wolf. We thank her for her patience and work with us. Requests for reprints may be addressed to Serge Moscovici, Maison des Sciences de l'homme, 54, Bld Raspail, 75006 Paris, France.

color discrimination task following the interaction. These results indicate "conversion" behavior, a subtle process of perceptual or cognitive modification by which a person gives up his/her usual response in order to adopt another view or response, without necessarily being aware of the change or forced to make it. In Mead's words, "there is, then, a process by means of which the individual in interaction with others inevitably becomes like them in doing the same thing, without that process appearing in what we term consciousness: we become conscious of the process when we definitely take the attitude of the others, and this situation must be distinguished from the previous one" (Mead, 1970, p. 193).

Why do minorities produce such a conversion? In our opinion, there are two reasons. On one hand, the consistency of judgments by a minority shows that it has a clear view of reality, is committed to its view, and is unwilling to yield or compromise with respect to its position. This behavioral style creates a conflict both between the source and the target of influence and within the target him/herself, when he/she has to consider seriously an alternative to his/her own judgment or response. This conflict is intensified when there is no easy way to reject the source's judgement by attributing it to the source's malevolent intentions, a physical handicap, etc. On the other hand, the development of the conflict is not the same when deviant information is presented by a majority. In this case, the responses of the source appear to be legitimate and common, and to be providing accepted ("true") information about reality. When there is a divergence, an unexpected judgement, each individual *compares* his/her own judgment with that proposed to him/her by the majority, without necessarily reconsidering the object (slide, text, etc.) to which that judgment refers.

In previous experiments (Moscovici & Lage, 1976; Personnaz, Note 1), we have observed that individuals, in the presence of others who call a blue slide "green" are primarily concerned with why they do not see the colored stimulus slides like the others. They attempt to resolve this problem by concentrating on what they say and on what the group says, without turning their attention to the stimulus itself. Once the social interaction is over and they are required to judge a similar stimulus privately, their subjective judgments remain undisturbed because what was said during the interaction was only loosely connected to what was seen. This method of resolving a divergence of judgment was described a long time ago in Asch's (1956) classic monograph.

In contrast, the response of a minority is immediately considered as illegitimate, wrong, or contrary to common sense or reality. Each individual is probably inclined, at first, to doubt its value. After a while, if the minority persists and appears committed and sure of its responses, members of the majority start a *validation* process by considering that the deviant response may contain some truth and by confronting the response

with the corresponding object. It may be difficult, even forbidden, for the individual to agree with the minority, and he/she must have good reasons for doing so, after a careful examination of arguments or data. It follows that a conflict of responses with the minority triggers an intense intellectual or perceptual effort in order to assess the relation of the minority's judgment to reality and in order to see or think what the minority saw or thought. The consequences of this validation process are the following. During the social interaction, members of the majority avoid adopting the minority's response, bearing in mind that to do so would be to become consciously and openly deviant. Subsequently, in a private situation, when the majority individuals are in a position to evaluate the stimulus, object or event on their own, they judge or perceive it differently from before, because during the interaction, they had tried to verify or falsify what was said. In other words, as a result of trying to see or understand what the minority saw or understood, the majority begins to see and understand as the minority would. These are the main reasons why, in our opinion, minorities generally have a greater influence on the private than on the public response.

But have our previous experiments really demonstrated a genuine perceptual change? In order to ascertain this, recall how we proceeded. As described elsewhere (Moscovici et al., 1969), groups composed of four naive subjects and two experimental confederates were asked to make a series of color perception judgments. All of the stimulus slides were blue. Subjects were asked to describe them as being either blue or green and to estimate their light intensity. Of course, on all of the trials, the confederates said that the slides were green.

Upon completing the procedure described above, subjects were asked to take part in a second, ostensibly unrelated, experiment concerning the effect of training upon vision. The subjects, who were tested, individually, were exposed to a number of disks in the blue-green zone of the Farnsworth perception test. For each disk, subjects were asked to indicate the name of the simple color they saw. The results of this second study indicated that the perceptual threshold of subjects who had previously been exposed to the consistent minority shifted. They saw as green disks which are usually perceived as being closer to blue. Furthermore, the subjects who did not change their response during the social interaction phase were more likely than those who did change their response to call the disks green.

These results might indicate a genuine change of the majority's perception, not only of its verbal response. But it must be admitted that they are not entirely convincing. It is possible that in this instance, it was not a genuine modification of color perception that occurred, but rather a generalization of a verbal response. Subjects who had heard the strange and novel response "green" on several occasions during the first experi-

ment may have simply employed it as their own in the second experiment, without their perception of the color being altered in the slightest. In other words, these results may be evidence of a reinforcement effect on one of the verbal responses in the individual's repertory.

Given the theoretical importance of the problem, we intended to alleviate further doubt by means of a more direct experimental procedure. The subjects were again shown blue slides that a confederate described as green. However, instead of using a color test to measure modification of the perceptual scheme, we took advantage of the chromatic complementary afterimage. By this we mean that after having looked at a colored slide for a relatively short time, the subjects were requested to indicate the color they saw on a white screen. As we know, the color perceived immediately after exposure to a colored stimulus is the complementary color of that stimulus. In our case, this would be yellow-orange for a blue slide and red-purple for a green slide. If subjects merely modified their verbal responses but not their perceptual scheme, the reported complementary color would be in the yellow-orange range of the spectrum. If, on the contrary, there were a change in the perceptual scheme, with or without a related change in verbal response, subjects looking at the white screen would indicate a complementary color that is closer to red-purple.

Certainly no experiment can be free from all shortcomings, and ours is no exception. But given our objectives, one can agree that it deals rather directly with the perceptual level, since afterimages appear to have their origin in the retina (Padgham & Saunders, 1975, p. 152). At the same time, we excluded any risk of generalization of verbal responses, since the subjects knew nothing about the afterimage and had to name colors that were different from those named by the confederate. The changes observed, then, are very likely genuine.

From this analysis and previous results, we derived and tested the following hypotheses: (a) influence exerted by a consistent minority modifies the perceptual scheme of individuals, while influence exerted by a consistent majority does not necessarily have such an effect; (b) modification of the perceptual scheme is greater when the influence source is absent than when he/she is present. This second hypothesis is based upon the conjecture that once a conflict of responses has begun, the presence of the source prevents the subject from adopting the suggested response, either because the subject wants to avoid becoming openly deviant or because the source arouses reactance (Brehm, 1966). This was observed in an earlier experiment (Moscovici & Nève, 1971), and we expected to observe it here as well.

Confirmation of these hypotheses would increase our confidence in the proposition that conformity and innovation (i.e., majority and minority influence) involve two different processes, each reflecting a different way of handling the conflict of responses. At the same time, the possibility that

a consistent minority can bring about a change in the perception of a majority will start to gain credence. The broad implications of this possibility lead us to consider it carefully despite the caution with which we still have to regard it. Briefly stated, the phenomenon we describe here is more suggestive than it is firmly established.

EXPERIMENT 1

Method

The experiment was presented to subjects as a study of color perception. The study was comprised of several phases, each lasting for approximately 30 min, and took place in a dark room.

Subjects

The subjects were 46 female students at the University of Paris. They had no specialized training in psychology and all of them were unaware of the complementary chromatic image effect. No data were discarded.

Materials

The stimulus consisted of a Kodak-Wratten No. 45 slide corresponding to a dominant wavelength of 486.8 nm, with a spectral transmission from 430 to 540 nm of cyanic color. The intensity of illumination was held constant across trials and conformed to the international standards of the C.I.E. (Commission Internationale de l'Eclairage). The slide was projected onto a ripple screen for 10-sec intervals. The chromatic afterimage was produced by stopping the projection for 20 sec in order to enable subjects to "perceive" a color on the screen, which (although they did not realize it) was the complement of the color perceived on the slide.

Procedure

The experiment was comprised of four phases. The first three phases were separated from one another by 30-sec intervals, and from the fourth phase by 1 min.

Phase 1. The first phase consisted of five trials: the answers were private. The subject and the female confederate wrote down their judgments of (a) the color of the slide, and (b) the color of the afterimage, on special answer sheets.

Next, the female experimenter collected the answer sheets and informed the subjects that she possessed some results, with respect to the color of the slides, that were obtained in previous studies in which a large number of people had participated. She then handed the subjects a sheet on which the percentages of people reputedly having judged the slides as blue or as green were indicated:

- (a) Majority Source condition:
 - 18.2% saw the color indicated by the naive subject (blue),
 - 81.8% saw the color indicated by the confederate (green).
- (b) Minority Source condition:
 - 81.8% saw the color indicated by the naive subject (blue),
 - 18.2% saw the color indicated by the confederate (green).

Phase 2. The social interaction phase was made up of 15 trials. The responses were public and related uniquely to the color of the slide. The confederate gave her responses orally and was the first to do so on each trial. Her judgment remained consistent in that she always responded "green." This response was different from the one proposed by the subject in Phase 1 of the experiment.

Phase 3. The third phase, which was similar to the first, consisted of 15 trials on which the subject and confederate noted their judgments in private with respect to (a) the color of the slide, and (b) the color of the afterimage, on special answer sheets. At the end of this phase, the confederate said she had an urgent appointment and left the room.

Phase 4. Alone now, the subject repeated the procedure of Phase 3 for another five trials.

At the end of the four phases, a postexperimental questionnaire was administered. It assessed self-perception, stimulus perception, and the way in which the source of influence was perceived by the subject. The experimenter then explained the aims of the study and debriefed the subject.

Experimental Conditions

The experimental procedure was very simple. The first independent variable was manipulated by presenting the confederate's responses as similar to those of a majority or a minority. A control condition in which the subject and confederate responded privately throughout was also run. Control subjects did not receive any information about the responses of previous subjects and, thus, were not exposed to any external influence. The second independent variable was introduced by the departure of the confederate. A manipulation of the presence/absence of the influence source has always appeared fundamental to us in discerning the effects of the conflict of responses in relation to another person and to the stimulus itself.

Dependent Measures

Manifest influence. The confederate's influence was assessed on a manifest level by the change in responses to the color of the stimulus.

Latent influence. The confederate's influence was assessed on a latent level by the reported color of the afterimage. Subjects rated the color of the afterimage on a 9-point scale, with the following values: yellow, yellow-orange, orange, orange-red, red, red-pink, pink, pink-purple, purple. Responses were scored according to the average rating of the trials for each phase. A change in the average score across phases indicated a shift in the perceptual scheme.

Postexperimental measures. The postexperimental questionnaire contained questions like: "How have you perceived your partner?" "To what extent have you complied with her judgments?" and "To what extent has she complied with your judgments?" Each item on the questionnaire was rated on a 6-point scale, e.g.:

How have you perceived your partner:

Not compe- tent at all	Little competent	Just competent	Rather competent	Competent	Very competent
I	I	I	I	I	I

Results

Manifest Influence

During the first phase, subjects in all conditions unanimously judged the slide as blue. This indicates that at the outset, a strong consensus existed within the population and that if a different response were given during the interaction, it would provoke a particularly intense conflict. In the second phases, the number of "green" responses given by the subjects in the experimental conditions tended to increase by 5%. These responses

were given by a small number of subjects, five approximately, and there was no significant difference between the conditions.

Latent Influence

Let us now turn to an examination of the results obtained on the afterimage test (see Table 1), which no longer represent a change in the labeling of the stimulus but rather presumably, a true modification of the subjects' perceptual scheme. This perceptual modification is measured by the change in subjects' judgments of the complementary color perceived on the white screen immediately after removal of the slide.

The subjects' afterimage judgments were indicated on 9-point scales, ranging from yellow (1) to purple (9). In order to take into account the fact that the phases were comprised of different numbers of trials, individuals' afterimage scores were standardized across conditions, separately for each phase, prior to analysis. It may be noted that the movement toward a higher score indicates a shift toward the complementary color of green (red-purple), while movement toward a lower score indicates a shift toward the complementary color of blue (yellow-orange).

The data were analyzed by means of a 3 (conditions) \times 3 (phases) unweighted means analysis of variance, with repeated measures on the Phases factor. Although no main effects were found, the analysis did yield a significant conditions \times phases interaction, $F(4, 86) = 2.58, p < .05$. Inspection of the means indicates that the judgments of subjects in the minority influence condition shifted toward the complement of green from the pre- to the postinfluence situations. A series of a priori comparisons revealed that this shift was marginally significant from the first to the third phase, $t(86) = 2.18, p < 0.05$, and that this shift became significant when the source of influence was absent (from the first to the fourth phase),

TABLE 1
MEAN AFTERIMAGE SCORES: EXPERIMENT 1

Experimental condition		Phase 1	Phase 3	Phase 4
		Preinfluence, presence of source	Postinfluence, presence of source	Postinfluence, absence of source
Minority source (<i>n</i> =18)	Mean	-.203	+.269	+.338
	<i>SD</i>	1.085	.948	.722
Majority source (<i>n</i> =18)	Mean	+.199	-.143	-.180
	<i>SD</i>	.927	1.146	1.083
Control (<i>n</i> =10)	Mean	+.009	-.236	-.290
	<i>SD</i>	.990	.774	1.190

Note. These data are based on subjects' normal standard scores. A higher score represents a judgment closer to the complement of green (red-purple).

$t(86) = 2.49, p < .02$. No such effect was obtained in the majority influence or the control conditions.

Taken together, these results confirm our hypotheses. The consistent minority tended to produce a change in perceptual responses, and this change was reliable when the minority was no longer present. The consistent majority, in comparison, produced some change only in verbal responses. Thus, conversion behavior occurred in the minority influence condition and not in the majority influence condition.

Postexperimental Measures

This study has two aims: (a) to evaluate influence on behavioral and perceptual levels in the different experimental conditions, and (b) to examine the way in which the subject perceived herself, the stimulus, and the source of influence. With regard to the latter, the postexperimental questionnaire provided us with a certain amount of useful information.

To begin with, it is interesting to note that no subject in any of the experimental conditions admitted to having been influenced. To the question "To what extent have you perceived the color indicated by your partner?" there is no difference between the subjects whatever the condition. Furthermore, when the subjects were asked, to what extent they had been influenced by their partner, they generally answered that they had not been influenced. Thus it seems that the color perceived was not green and, as usual, that the subjects had not been influenced by the confederate.

How was the source of influence perceived? The confederate was seen as pleasant, sure of herself, and consistent in her judgment, regardless of whether she represented a majority or a minority. On the other hand, the majority tended to be seen as more competent than the minority, $t(34) = 1.90, p < .10$, two tailed, and the minority was judged more convincing than the majority, $t(34) = 1.78, p < .10$.

The first result confirms the findings of Moscovici and Lage (1976) that competence assigned to a majority is usually denied to a minority. The second result shows that despite its perceived relation with incompetence, an active minority is viewed as more forceful and its responses are considered as more persuasive.

How did the subjects perceive themselves as targets of influence? They considered their opinions equally consistent and convincing under both experimental conditions. Paradoxically, when they were faced with a majority, they felt much "surer of themselves" than when they were faced with a minority, $t(34) = 1.91, p < .10$, two-tailed. It should be noted that it was precisely the first category of subjects that was the least influenced on the afterimage test and when the source of influence was absent. This underlines the importance of resistance in a conformity situation. That the second category of subjects judged the deviant confed-

erate as 'sure of herself' suggests that they thought that she must be very self-confident. We have seen the same thing in other experiments. Confidence in one's opinion is seen as a type of courage—the capacity to resist publicly. The results of the postexperimental questionnaire are consistent with previous results and with the interpretations offered.

EXPERIMENT 2

In order to assess the robustness of the effect obtained in the first experiment, we replicated the two experimental conditions (e.g., majority and minority influence) in a second study. The procedure was essentially the same, except that there were five trials in each phase and the experimenter was a female student. There were 14 subjects in each condition.

The results of this replication were very similar to those obtained in the first experiment. Table 2 presents the means and standard deviations for the afterimage scores. An inspection of the means shows that subjects' judgments were displaced toward the chromatic afterimage of green only in the minority influence condition.

This displacement was accentuated in the absence of the influence source. Again, although no main effects were found, the repeated measures analysis of variance did yield a significant conditions \times phases interaction, $F(2, 52) = 3.94, p < .05$. A series of a priori comparisons revealed that within the minority influence conditions, the shift in judgment from the first to the third phase was significant, $t(52) = 2.54, p < .02$, as was the shift from the first to the fourth phase, $t(52) = 3.03, p < .01$. In the fourth phase, the difference between the minority and majority influence conditions was significant, $t = 2.05$ with the critical value of t adjusted ($\alpha = .05$, two tailed). The results of this replication are in agreement with our hypotheses, and they indicate that the effects observed are stable.

TABLE 2
MEAN AFTERIMAGE SCORES: EXPERIMENT 2^a

Experimental condition		Phase 1 Preinfluence, presence of source	Phase 3 Postinfluence, presence of source	Phase 4 Postinfluence, absence of source
Minority source (<i>n</i> = 14)	Mean	5.10 ^a	6.35	6.59
	<i>SD</i>	2.16	2.07	2.26
Majority source (<i>n</i> = 14)	Mean	5.06	4.85	4.71
	<i>SD</i>	2.73	2.44	2.87

^a A higher score indicates a judgment closer to the complement of green (red–purple).

DISCUSSION

Although the results of this study support our predictions, we consider them as provisional and as only a first step in a very difficult area to explore. The afterimage is a labile phenomenon, its mechanisms are not well understood, and genuine changes of perception have rarely been obtained. Thus, caution in this domain is necessary. Despite these limitations, our observations tend to support a new line of thought concerning influence processes. However, several points need to be clarified.

The first concerns our experimental procedure. In previous studies, we always used two confederates to represent the minority. This is because the response of a single confederate to a physical stimulus could have been rejected by saying that the individual was eccentric, that he/she didn't understand the task, etc. By introducing a second confederate, we eliminated the possibility of attributing the "green" response to personal factors. If two independent people make the same response, the subject is obliged to attribute it, at least partially, to the stimulus itself. In the present experiment, we tried to reach this goal by informing subjects that other people had previously given the same response as the confederate. Of course, hearing someone call a blue slide "green" was unacceptable to them. But they could not dismiss his/her judgment easily by attributing it to personal factors. Others before him/her had reputedly given the same response. So, from the point of view of social psychological processes, the procedures are similar and the results obtained may be considered comparable.

The second point concerns the presentation of the stimulus. Traditional studies of conformity have utilized different stimuli over trials. In the present experiment, subjects were asked to judge the same stimulus 40 times. We did this for obvious reasons. On one hand, we tried to reinforce the seriousness of the experiment and of the subject's responses. This could not be achieved by only verbal instructions. On the other hand, we wanted to make subjects conscious of the deviant aspects of the confederate's responses and of his/her consistency. As our interviews have shown, consistent behavior is in itself disturbing and contrary to social expectations. In other words, the demand characteristics of conformity situations are related to recognition of external pressure, of competence, and of a reality that is supposedly common to group members. In innovation situations, the demand characteristics are rather different. It is necessary that subjects be made aware that the "level of reality" on which the interaction takes place is not the usual one. Consistent responses to the same stimulus pressure the individual to undertake an "internal" deliberation, the outcome of which appears to depend on the individual him/herself. This is probably why the confederate was judged as convincing and as making one think, but not as particularly competent (Moscovici & Lage, 1976). One could say that a minority's success depends upon the

internalization of alternative responses and of the decision-making process, which is not necessarily true for a majority.

The third point has to do with the chromatic afterimage. One may reasonably wonder whether it reflects a true perceptual change or simply a distortion of judgment, because the individual no longer believes in his response. The data show that belief in the response remains, because at least 90% of the time, the slides were correctly judged as blue. Moreover, what we know about color perception and afterimages, in general, suggests that an "unconscious" or "peripheral" mechanism is involved. We do not deny that cognitive elements may be involved and that they have an effect. But until some new theoretical development takes place in this area, we can assume that the observed modification is very likely of a perceptual nature. In discussions with subjects after the experiment, none of them expressed doubts about her response or awareness of having changed it. But subjects did express astonishment about the possibility that the slides were green. All of our observations indicate that the transformation of response takes place without awareness, beyond one's voluntary control. Furthermore, the change cannot be considered as an instance of response generalization given that: (a) the response to the stimulus and the response to the chromatic afterimage were different (green/blue in the first case, and a mark on a scale in the second); (b) only the response to the stimulus was given in public, the response to the afterimage was always private and, thus, the subject never heard the words yellow, orange, purple, etc., uttered; and (c) the subject was not aware of the relationship between a color and its complement.

Taken together, our observations tend to show that the conflict of responses on a verbal-judgment level is transposed and may be resolved on a perceptual level. It remains, of course, to separate these different factors (social, cognitive, perceptual) and to obtain more conclusive evidence about their respective roles. To do this we do not need new experimental designs so much as new experimental techniques, enabling us to understand complex, multilevel behavior.

Our results support the notion that majority and minority influence are different processes, the former producing mostly public submissiveness without private acceptance (Festinger, 1953; Kelman, 1958), and the latter producing primarily changes in private responses. These processes, called compliance and conversion, are mutually exclusive and to a certain extent, opposite (Mugny, 1976). But this raises a problem. How does a perception or judgment that has changed on a private, latent level become public or conscious? Until now, while establishing that conformity produces overt and public compliance, social psychologists have studied how attitude change becomes covert and private. In other words, by what means is a person made to accept inwardly what he/she does outwardly? Dissonance theory provides the best known answer to this question: force

a change of behavior, without much justification, and a change of mind will follow.¹ To the extent that innovation produces covert and private changes of opinion, perception, etc., we are faced with the inverse problem: By what means can a person be made to do outwardly what he accepts inwardly? This is not only a scientific problem, but also a moral and political one. Naturally, we do not propose to resolve it here. We merely wanted to present some new evidence concerning latent, or genuine, influence effects and to indicate its broader implications.

Note added in proof. In an attempt to replicate the experiment reported here, Doms and Van Avermaet (1980) confirmed our findings in the minority influence condition. In the majority influence condition they observed the same tendency, but noted a chromatic aftereffect when the confederate left. Bear in mind that in our condition we manipulated two independent variables: (a) the source of influence, and (b) the withdrawal of the confederate which has an effect on influence whatever the source might be. We have illustrated this phenomenon in a purely individual situation (Moscovici & Nève, 1971), as have Brehm and Mann (1975) in a situation where an individual faced a group. The results obtained by Doms and Van Avermaet are analogous to those obtained by Brehm and Mann. There is, thus, a difference between the majority and minority influence in their experiment as well as in ours, but the withdrawal of the confederate produces a different effect that still has to be explained. But even if their findings had completely invalidated ours, one could not say, nevertheless, that conformity and innovation are identical phenomena. There are limits to what the laboratory can say against reality.

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¹ One could try to explain our results in terms of dissonance theory. But to do so would require some ad hoc hypotheses concerning the existence of a forced compliance and a greater need of justification in the minority influence than in the majority influence condition. Further, the picture is complicated by the potential presence of reactance phenomena which would also have to be taken into account in a more general theory of minority influence. Before we have a more complete description of this type of influence and the changes it entails, we believe it would be premature to make a firm decision between alternative explanations. At this stage of the research, however, we feel that our hypotheses are most directly related to the phenomenon under investigation.

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