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ABSTRACT

A sensitive technique for assessing conformity on a ratio scale was designed and tested in one group of 18 naive subjects and one group of 20 volunteer subjects, 10 of whom were naive and 10 of whom were informed. All subjects were undergraduates from Thomas More College (New York). The experiment required subjects to observe a line briefly displayed on a computer screen, then draw a line of equal length. In 16 trials, each subject drew alone and in a group, with the group being experimental confederates who erred in line drawing to influence the naive subject. The duration of the model line display varied, as did the delay before the subject began drawing. Informed subjects were advised by experimental confederates that deception was involved. Naive subjects' accuracy significantly decreased in the group situation, conforming to lines drawn by experimental confederates. Informed subjects showed no comparable conformity. This technique is reasonable, highly controlled, provides quantitative data, and allows for changing such factors as degree of confederate error. (MGD)

A Ratio Scale Measurement of Conformity

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Abstract

Since the seminal work on conformity, there has been a steady stream of research attempting to isolate individual and situational variables that influence its expression. Most previous studies employed proportions of participants showing conformity or have employed Likert scales to measure changes in conformity as a function of different variables. The current presentation describes the use of a measurement of conformity on a ratio scale and several variables that are easily manipulated to assess normative and information factors involved. Two successful attempts at validating the procedure are reported.

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Since the initial reports on conformity (Asch, 1952), there has been a steady stream of research that has attempted to isolate the individual and situational variables that influence the expression of conformity (e.g., Coleman, Blake and Mouton, 1958; Snyder and Monson, 1975). Many of the studies in this realm have used count data such as the number of people in a given condition who conform to the group's response patterns. Other studies have used response measures such as Likert scales to assess the degree of conformity or change in conformity. The present report describes a different, sensitive technique for assessing conformity on a ratio scale and the results that have obtained.

This method involves presentation of computer-drawn lines with a subsequent attempt by the participants to reproduce the line using a game paddle. The overall scope of the project is consistent with many of the classical studies of conformity. That is, there is a variable number of confederates who help the experimenter and a single naive participant. According to the design of the experiment, one can manipulate the number of confederates, whether the confederates' reproductions are visible to the participant, a delay between presentation of the stimulus line and the attempt at production, etc. Because of the variability allowed in methodology, one can build into the project designs for evaluating the difference between normative and informational reasons for the presence of any conformity that occurs. Further, with computer presentation of the statistics and storage of the responses, one can assess the discrepancy between the actual line length and the length of the reproduction. This latter aspect allows for ratio scaling of the data: one is not limited to the proportion of subjects conformity, but one can know the order of magnitude of influence of confederates on the conformity of the naive subject.

THE PROGRAM

The (naive) participants engage in a line production task, in contrast to Asch's basic recognition paradigm. Their task is simply to observe the line that appears centered at the top of the screen and then to draw a line of the same length. There is a total of 16 trials with line lengths of 50, 90, 130, 170 pixels on the Apple monitor. The overshoot or undershoot by the confederates follows a preset order across trials such that each line length is represented both in overshoot and undershoot. An unobtrusive marker on the screen (a period at the end of each pre-trial instruction) signals the condition for the confederates. The possible variations in the testing conditions are as follows:

a) Baseline vs. Experimental Conditions. Here the subject either draws the lines while alone or in a group. Used as a Within-Subjects variable, this manipulation provides for an assessment of the subject's accuracy at the outset and any later departures from it.

b) Average proportional size of confederate errors. This refers to the percentage deviation from the original line length, either shorter or longer. Proportions are used to account for greater potential error for longer lines (e.g., Weber's Law).

c) Actual degree of error by confederates. In order to make the confederates' behavior look realistic, this feature actually forces each confederate to err within a given range; different confederates may draw short lines, for example, without each confederate producing lines of exactly the same length. It would be possible, using this facet of the program, to vary the degree of conformity by confederates and its affect on the naive participant.

d) Duration of stimulus line. This controls the time of presentation for original viewing (1-9 sec). It can be used to relate to the informational value of the stimulus.

e) Pre-drawing delay. This feature controls the time between stimulus presentation (a blanked screen) and the instruction by the subject to begin drawing the line (1-9 sec).

f) Data are collected and stored by the computer and saved to disk. They include all raw data (paddle values), conformity scores and

proportional conformity scores, and program values (number of confederates, size of error, etc.).

EXPERIMENTAL RESULTS

Study 1.

Method

Subjects. Eighteen naive participants each went through a baseline and an experimental session. They were all Thomas More College undergraduates.

Procedure. The participants each took part in an initial, individual session in which baseline data were obtained. They viewed lines of varying lengths that appeared on the computer monitor, then tried to reproduce the line length after the original stimulus had disappeared. The original lines were centered, while the subjects' attempts began at the left edge of the screen. Then, one or two days later, these participants returned in order to participate with other subjects who were actually confederates of the experimenter.

There were 16 stimulus lines. They included lengths of 50 units (i.e., a pixel or dot on the Apple computer's high resolution graphics screen), 90 units, 130 units and 170 units; they subtended about 2, 4, 6, and 8 deg of visual angle when seen from the approximately one meter viewing distance used in the experiment. Half of the stimuli were purposely drawn short by confederates by 20 percent of the original stimulus length, half were long by 20 percent, although the individual lines of the confederates differed from one another.

The variables that were manipulated included whether 1) the confederates' lines were present or absent when the subject drew lines (Pressure-No Pressure) and 2) the delay between offset of stimulus and beginning of reproduction (1 versus 7 sec).

Conformity was defined as the degree of difference between baseline accuracy and experimental accuracy.

Results

When the confederates' lines were present as the subjects produced theirs, there was a significant diminution in accuracy compared to baseline values, $F(1,17) = 12.205$, $p < 0.001$. The mean discrepancies (in percentages) between baseline and experimental sessions were 0.99

and 6.94 for No Pressure and Pressure conditions, respectively. This result indicates that when a naive participant is faced with the perceptions of the others in the experiment, there is more conformity than when the confederates draw their lines in full view of the subject, but then their lines are not present when the naive individual reproduces the original line.

The delay variable exerted no effect, F<1. (The mean discrepancies for the 1-Sec and 7-Sec delays were 3.94 and 4.00). It makes no difference whether the participants have to wait one or seven seconds before beginning their reproduction task. Likewise, there was no interaction between the Pressure and Delay variables, F < 1.

Study 2.

Subjects. Twenty volunteers participated in this study. They were all Thomas More College undergraduates.

Procedure. Ten individuals were placed in a Naive Group which was identical to that in Study 1. Ten others, the Informed Group, were told surreptitiously (i.e., by a confederate who was in the anteroom) that the experiment involved deception. In all other respects, these individuals were tested in conditions identical to those for the Naive Group. Data analysis involved the difference between Baseline accuracy (no confederates present) and Experimental accuracy (confederates present), as well as the Knowledge Condition (Naive vs. Informed) and the effect of line length.

Results

The Baseline Condition produced greater accuracy in line drawing than the Experimental Condition did, $F(1,18) = 17.712$, $p < 0.001$. The average differences (in percentage) were -0.34 and 4.43, respectively. Again, there was greater conformity on the part of the subjects when they could see the reproductions of the confederates when they made their attempts than when they were alone. Further, knowledge exerted a significant effect, $F(1,18) = 7.085$, $p = 0.015$. When the participants had been told that this experiment involved deception, they showed less conformity than the naive participants. The data are presented in Table 1.

Insert Table 1 About Here

There was also a significant interaction between knowledge and baseline/experimental conditions, $F(1,18) = 5.320$, $p = 0.031$. The naive group showed a significant change, a decrease in accuracy, from Baseline to Experimental conditions ($F(1,18) = 14.11$, $p < 0.005$) while there was no comparable change for the Informed Group ($F(1,18) = 2.68$, $p < 0.20$). One final analysis, however, did reveal that in the Experimental Condition, the subjects in Informed Group showed greater variability in their degree of accuracy than did the Naive Group, $F(39,39) = 4.20$, $p < 0.001$). This result suggests the possibility that some participants may have experienced something like psychological reactance (e.g., Wicklund and Brehm, 1968) or that some subjects may have tended to conform as individuals while others did not. This speculation is clearly ad hoc, but it might merit further consideration.

None of the other interactions approached significance: Knowledge by Length, $F < 1$; Baseline/Experimental by Length, $F(3,54) = 1.046$ and Knowledge by Baseline/Experimental by Length, $F(3,54) = 1.547$, both p's > 0.20.

CONCLUSIONS

The methodology described here provides a reasonable, highly controlled setting for assessing the degree of conformity. One of the most attractive features is the quantitative nature of the data. For example, on the basis of Study 2, one can note that for the Naive Group, the amount of change from the Baseline to Experimental Conditions was 7.10%. It would be a simple matter to construct different levels of allowable error by confederates in order to note any changes in accuracy level as a function of level of "disagreement" by confederates.

Another advantage of computer program used here is that it provides for changes in the degree of uncertainty induced in the naive participant (e.g., as in Study 1 in the Pressure-No Pressure conditions). Finally, it eliminates the question of knowledge as a factor in the expression of conformity (e.g., Davis, 1984). Naturally, if one is investigating the effect of knowledge on conformity, this program would be of less utility than other formats.

In general, this program allows one to investigate conformity in a more controlled situation than in many previous studies. This approach also appears to generate the same kinds of results that have been documented in a more qualitative way in earlier work, establishing the validity of the method.

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Table 1. Degree of conformity shown by informed and naive participants, according to experimental conditions and line length. (Large positive values indicate greater conformity. Negative values indicate that subjects drew their lines longer when confederate lines were short, and the subjects drew their lines shorter when confederate lines were long.)

	Informational Status of Subject							
	Naive				Informed			
Length:	50	90	130	170	50	90	130	170
Condition								
Baseline	-0.40	-2.10	-0.20	1.50	-4.70	-2.00	-0.60	1.60
Experimental	5.40	7.00	9.30	6.90	1.40	-4.50	4.00	2.10

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