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Individual Differences in the Reduction of Cognitive Dissonance

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INDIVIDUAL DIFFERENCES IN THE
REDUCTION OF
COGNITIVE DISSONANCE

by

Richard S. Dunn

A thesis presented to the
Faculty of the School of Graduate
Studies in partial fulfillment
of the
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This research was designed to study individual differences in cognitive dissonance reducing behavior. A specific attempt was made to relate personality variables to cognitive dissonance reducing behavior.

The theory of cognitive dissonance has at its core the proposition that people are motivated to achieve or perceive a subjective consistency in the world in which they live. Festinger (1957) gives a detailed description and explanation of the circumstances under which this motive is aroused and the kinds of behavior that result from its activity.

Festinger (1957) has discussed cognition as being decomposable into finite bits or cognitive elements. These are internal states or events whose existence is inferred from external conditions; they represent things such as memories, bits of knowledge, facts, and specific attitudes.

Among cognitive elements, or clusters of cognitive elements, there can be three kinds of relationships:

1. Irrelevant - no relationship
2. Consonant - this occurs when one cognitive element "follows from" the other, or, more recently, "psychologically implies" the other
3. Dissonant - this relationship prevails when the obverse of one cognitive element "follows from" or "psychologically implies" the other

The "follows from" formulation is clearly intended as in a subjective sense, but it is a subjectivity that is relatively constant from individual to individual. "Follows from" can be generally understood, for instance, as by logical implication, social convention, empirical association, and social or cultural group standards. A simple example of consonant cognitions would be the cognitions associated with the knowledge that it is raining and that one has an umbrella. Considered alone, the cognitions associated with being a Republican and voting for a Democrat are dissonant.

The existence of a dissonant relationship between cognitive elements constitutes the state of cognitive dissonance. In practical application, as in research studies, these conditions are inferred from knowledge of preceding external conditions. The central aspect of the theory is that the existence of cognitive dissonance motivates behavior that will reduce or eliminate the dissonant relationship. The strength of this motivation is directly related to the subjective importance of the cognitive elements involved.

In general, there are three types of behavior that can occur as modes of dissonance reduction:

1. Changes in one or more of the cognitive elements involved in the dissonance relationship.
2. Addition of cognitive elements which are consonant with one (or some) of the cognitive elements involved.

3. Lessening of the subjective importance of all of the cognitive elements involved.

Research involving the theory has been limited to studies designed to test the theory itself in controlled experimental situations. It is generally agreed that the gross predictions from the theory have been consistent with empirical findings (Berkowitz, 1963). In this sense, the cumulative results of research to date have been supportive with respect to the theory.

Some authors, however, have criticized the rather shallow level at which the theory of cognitive dissonance has been employed. Berkowitz (1963) refers to the research as "demonstration experiments", since they typically demonstrate the theory's applicability in given experimental situations and do little else.

These studies generally follow a set pattern. The experimenter controls external conditions and arranges them so that he may infer dissonant cognitive elements. From a consideration of the nature of the experimental situation, he selects or invents a mode of dissonance reduction, makes it available to the experimental subjects, and measures the extent to which it is employed. It is interesting to note that while the theory is one of individual behavior, and the behavioral measures employed are measures of individual behavior, data on these experimental dependent variables are always dealt with nomothetically. Group averages for

these dependent variables are compared for treatments differing in the existence or intensity of cognitive dissonance.

Since experimenters select subjects with similar backgrounds and present them with the same situation or treatment, ideally they can be said to entertain identical or equivalent cognitions relevant to the experiment. Proponents of the theory would probably agree that, as the theory is stated now, all subjects can be said to experience the same amount of dissonance, the same motivation to dissonance reduction, and can be expected to engage in the same amount of dissonance reducing behavior. Nothing is said of individual differences with regard to this type of behavior.

Yet, inspection of the individual data for any of the demonstration experiments indicates that some subjects engage in more dissonance reduction than others, as reflected in the dependent variable measure. Those working with the theory maintain that this variability in the dependent variable occurs, because in any given situation there are many possible modes of dissonance reduction. Those subjects who do not show dissonance reduction as reflected in the dependent variable, which is only one mode of dissonance reduction, are assumed to employ other unmeasured modes. This point, coupled with the theoretical concept that various modes of dissonance reduction can be engaged in simultaneously, and the customary experimental error, are employed to account

for variability in the dependent measure (Brehm and Cohen 1962).

However, the author believes that this variability should be viewed in terms of individual differences. Thus, it might be important to investigate the problem of whether or not some people generally behave more in accordance with the theory than others, show a greater sensitivity to cognitive dissonance than others, or have a greater tendency to reduce cognitive dissonance than others. In any case, all of these conditions would have the same experimental consequences, namely, dissonance reducing behavior would show variability among individuals. It is to the preliminary investigation of this question of individual differences that this study addresses itself.

The possibilities with respect to individual differences in tendency to reduce cognitive dissonance can be reduced to three contingencies. First, it may be that the tendency to reduce cognitive dissonance is uniform from individual to individual. In this case, variability found in experimental situations is totally a function of experimental error and the inability to assess more than one form of dissonance reduction. Second, it may be that this tendency to reduce cognitive dissonance is a variable for any given individual, fluctuating from moment to moment in some unspecified manner. Third, it may be that individual differences in this tendency to reduce dissonance reflect

systematic personality characteristics which have the property of relative stability for the individual.

If this third contingency prevails, and the tendency to reduce cognitive dissonance is a generalized stable characteristic of personality, then it should be possible to relate it to other observed personality characteristics. More specifically, it should be possible to show differences in personality traits between subjects who do and who do not reduce dissonance.

Dunn and Valenzi (1963) conducted a pilot study that attempted to do just this. The K scale of the MMPI was selected with the thought that much behavior which is dissonance reducing closely resembles various types of ego defensive behavior. Interpreted as a measure of the degree to which the individual desires to project a socially acceptable image, the K scale was felt to be an adequate starting point. The K scale scores were then related to ratings of dissonance reducing tendency obtained for each of 18 subjects.

The results of the pilot study did not confirm the basic hypothesis that subjects scoring high on the dissonance measure would also receive high K scale scores and vice versa. A strong relationship was found with significance beyond the 1% level, but it was in the direction opposite to that predicted. Subjects who scored high on dissonance reduction earned low K scale scores.

With this pilot study as a basis, the present research

was originated. Four scales from the MMPI were selected to evaluate personality differences. The hypothesis was that subjects showing high and low cognitive dissonance reducing behavior would differ significantly on the MMPI scales.

The procedure for assessing tendency to reduce cognitive dissonance in the present study duplicates the experimental condition of an experiment done by Yaryan and Festinger (1961). They conducted a study designed to test the theory as follows. Both experimental and control groups were told that exactly one half of the group had been selected to take an aptitude test. Before revealing the names of the subjects who were to take the test, however, all subjects were induced to prepare for the test. The experimental group was required to memorize completely a long list of abstract verbal and symbolic definitions. The control group was asked only to look over the definitions and be familiar with them. The control group was told that they would be allowed to keep the definitions for reference during the test. Thus, there was a future event with a known probability of its occurrence, and two conditions of preparation for it differing in the amount of effort expended.

After preparation for the test was completed, the subjects were asked to rate on a six-point scale from -3 to +3, how likely they felt it was that they would be included in

the group that would take the aptitude test. At this point, according to the theory, the individual had cognitive elements in a dissonant relationship. For the experimental group, the dissonant elements are these: a) that the subject has prepared with effort for a future event, and b) that the future event may not occur. For the control group, the dissonance is nonexistent, or at least negligibly small, since relatively little effort was involved. For the experimental group, however, the effort expended was considerable and the dissonance ensuing can therefore be judged as considerable. The existence of this dissonant relationship comprises the state of cognitive dissonance which activates the motive to reduce dissonance. There are probably several ways of reducing the dissonance in this situation, but one way to accomplish this end is to change the cognitive elements related to the probability of the future event. Yaryan and Festinger predicted that the experimental group would judge the probability of their selection for the test as more likely than the control group, and definitely greater than one half. Results of the experiment confirmed the hypothesis.

While there are several cognitive dissonance procedures that would serve the present purpose, the Yaryan and Festinger procedure has several practical advantages. It is a paper and pencil task which is easily standardized, can be

administered in groups of virtually any size, is inexpensive, relatively short; and it yields a simple numerical score which can be readily interpreted as a reflection of the tendency to reduce dissonance.

The A, R, K, and ego strength scales of the MMPI were selected as the personality variables. The A and R scales were selected because they represent the two factors which have been shown by factor analysis to make the principal (and uncorrelated) contributions to variance on the entire instrument (Dahlstrom and Welsh, 1960). This would seem to be the most economical procedure for relating the over-all MMPI to cognitive dissonance reducing behavior. The ego strength scale was also chosen as it was thought to be related to ego defensive, self-consistent, and self-regulatory behavior. Finally, the K scale was used in order to verify the findings of the author's pilot study.

METHOD

The 75 subjects who made up the sample were college students drawn from Psychology and Management Department courses. The subjects were almost equally divided between males and females, and distributed over all college levels.

The MMPI was administered to groups ranging from 10 to 20 subjects. Within a week, a second session was arranged for the administration of the cognitive dissonance procedure. Again, groups of 10 to 20 were used.

The cognitive dissonance situation was standardized in the following way. Subjects entered a well-lighted classroom where they found blackboard instructions to the effect that alternate seats were to be used, from the rear of the classroom forward. Visible on the desk were the materials for the procedure, the memory items and the questionnaires, (samples of which may be seen in the Appendix), electrographic pencils, and a box which was selected to look as if it contained the aptitude test.

When all of the subjects were seated, the experimenter read the following statement:

"Good afternoon. We can begin now.

"In the interest of experimental precision, I will read all of the instructions to you. You are asked not to talk. If you have any questions later, you may raise your hand and I will come to your seat to answer them. Please do not ask questions unless it is absolutely necessary.

"I will not explain this experiment in detail until after it is over. For the present,

however, I will tell you this. What we are doing is a standardization run on a fairly new aptitude test. In addition, I wish to assess the effects of some specific information on the results of the test. This information will be given you in a list of preparatory material which you will memorize.

"For certain experimental reasons, you have been divided into two groups. Half of you are in each group. Both groups will memorize the preparatory material, but only one group will take the aptitude test. After the preparatory material is memorized, I will tell you which group you have been placed in. Then one group will take the test and the other group will be dismissed and be finished.

"The preparatory material should take about 45 minutes; the test about an hour. I will now pass out the preparatory material. You may read the instructions and begin immediately."

After distributing the memorization items, the following statement was read: "For the purposes of the experiment, it is essential that each of you memorize the material completely. I enlist your cooperation in doing the very best you can with this task."

After 40 to 45 minutes, the experimenter asked if everyone was ready to stop. When subjects requested more time, five additional minutes were allowed for a total of not more than 50 minutes.

After retrieving the preparatory material, the following statement was read:

"Now, just one more thing before we get to the group assignment lists. This is a short questionnaire. Ignore the spaces for names and numbers; I will give you instructions about this later. Right now, please respond to each question by circling the number printed above the answer that seems best to you. This should only take a short time; then we can get on to the test. When you are finished, please look up."

When the questionnaires had been distributed, marked, and returned, the fact that there was no aptitude test was revealed and the nature of the experiment was explained. After discussing the research to everyone's satisfaction, the experimenter explained the importance of not disclosing the nature of the experiment to anyone for a certain period of time.

RESULTS

Questions one and two were included on the questionnaire in order to provide a context in which to imbed question three. They also provide a means of determining whether responses were primarily a result of a tendency to respond to the left or right of the page. No such tendency appeared in this study.

Response to question three is the dependent variable here.

"Do you believe that you are one of the people who have been selected to take the test?"

+4	+3	+2	+1
virtually certain	probably	more likely than not	slightly more likely than not
-1	-2	-3	-4
slightly unlikely	less likely	probably not	very definitely not

Yaryan and Festinger obtained an average of 1.1 for the experimental condition in their study. Results here are comparable. Averages for each of the several runs made range from 1.5 to 1.8 with an over-all average of 1.72. Individual scores range from +4 to -3.

Subjects with high numerical scores on this question, interpreted as a tendency to reduce dissonance, were separated from those subjects with a low score. These groups

were then compared on the selected MMPI scales. Significant differences would support the hypothesis that differences in dissonance scores represent stable personality differences. Comparisons of MMPI average scores were made both for subjects grouped around the mean dissonance score (that is, +2's and up vs. +1's and down), and for the subjects at the extremes of the distribution (the high 33% of subjects vs. the low 33% of subjects). In neither case did the differences on any of the four MMPI scales approach significance on a "t" test. Since a relationship, if it existed, would be most apparent at the extremes of the distribution, the results for the upper one-third and lower one-third are given in Table 1 on page 15. Results for dissonance reduction scores divided at the mean were very similar.

Because of the exploratory nature of the study, an analysis of the results was also made in the opposite direction. The extremes of the distributions of each of the four MMPI scales were examined, and average cognitive dissonance reduction scores for these groups were tested for differences. For each scale, subjects scoring one standard deviation or more away from the mean were grouped into high and low conditions. Table 2 on page 16 presents the average cognitive dissonance reduction scores for these groups and the results of the analysis. In no case did the differences approach significance on a "t" test.

TABLE 1
Comparison of Mean MMPI Scores for Groups at the
 Extremes of the Dissonance Reduction Distribution

MMPI Scale	HIGH DISSONANCE REDUCTION N=24		LOW DISSONANCE REDUCTION N=30		"t" value
	Average	SD	Average	SD	
A Scale	11.63	6.09	12.20	7.74	0.31
R Scale	16.42	4.73	16.50	3.94	0.07
Es Scale	47.04	6.62	48.83	4.39	1.15
K Scale	14.79	3.97	15.13	4.52	0.30

TABLE 2
Comparison of Mean Dissonance Reduction Scores for
 Groups at the Extremes of Each MMPI Scale Distribution

MMPI Scale	HIGH GROUP			LOW GROUP			"t" value
	Average Score	SD	N	Average Score	SD	N	
A Scale	1.64	1.06	11	1.91	0.83	11	0.63
R Scale	1.58	1.15	12	1.62	1.17	16	0.03
Es Scale	2.01	0.72	10	1.85	1.27	13	0.56
K Scale	1.29	0.89	14	1.67	1.33	12	0.28

DISCUSSION

The specific relationships being sought in this experiment are clearly absent. The implications for the general issue under investigation are less clear. An unfortunate aspect of the experimental design is that negative results cannot be clearly interpreted. Positive results would tend to support the hypothesis and clear the ground for more precise experimentation. However, several factors make it impossible to state that negative results disconfirm the hypothesis.

One of these is the issue of what is reflected by high and low scores on the cognitive dissonance measure. It is established that a high score indicates that dissonance reduction has occurred. The opposite, however, is not true. In other words, the question is the validity of the dependent variable measure as a rating of tendency to reduce dissonance. Because it is possible to engage in several modes of dissonance reduction simultaneously, it cannot be said that a low score necessarily indicates that dissonance reduction has not occurred. Moreover, there is no assurance that those subjects who engage in the most dissonance reduction are also the ones who employ the mode of dissonance reduction observed in this study to the greatest extent.

Second, the personality variables measured by the

four MMPI scales may not be related to differences in cognitive dissonance reduction. However, the possibility exists that a personality test other than the MMPI might have shown differences in this study.

Finally, the negative results challenge the original hypothesis. That is, differences in the tendency to reduce cognitive dissonance may not reflect differences in stable personality characteristics.

The primary function of an exploratory study such as this is not to resolve definitively a complex theoretical question, but to serve as a guide and impetus for the initiation and direction of more precise research. This study has several implications for future research on the same general question. The matter of rating the tendency to reduce dissonance must be investigated further. Practical problems prevent an experimenter from achieving sufficient control to measure all dissonance reduction in any given situation. Nevertheless, the development of some means of rating dissonance reducing tendency must precede further work on this problem. Comparisons of dependent variables in several dissonance situations would be a start in this direction.

In a more technical vein is the suggestion that large spans of time (more than a few hours) between ratings can perhaps obscure results. This was the principal difference in design between the pilot study and the present research.

In the pilot study, the K scale items were assembled and administered immediately before the dissonance procedure. In the present study, the K scale items were administered as regular MMPI items and as much as a week before the dissonance reducing rating was made. This may have important implications for the possibility mentioned earlier, that the tendency is a variable for the individual and fluctuates in some unknown way.

SUMMARY

The general hypothesis was that differences in the tendency to reduce cognitive dissonance reflect differences in stable personality characteristics. To test the hypothesis, the Yaryan and Festinger experimental treatment was duplicated. MMPI scores on several scales were compared for subjects grouped according to dissonance reduction scores. No significant differences were observed. These results were discussed with respect to the specific problem, the general question, and further research.

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APPENDIX

For the purposes of this experiment it is essential that all of the following material be completely memorized by each subject. Some of the items are true factual statements; some others are simply symbols with abstract definitions. Please begin now and memorize this material completely.

1. Dalhousie University is in Halifax, Nova Scotia.
2. Rensselaer Polytechnic Institute is a school of engineering and science in Troy, New York.
3. The astronomer Copernicus died in 1543.
4. The approximate volume of the earth is 2500×10^8 cubic miles.
5. The planet Neptune has a period of revolution equal to 60,188 days. This is the length of one Neptune year.
6. A natural bridge in the early stages of formation is Trick Falls in Glacier National Park, Montana.
7. Of the Iriquois Indian group, the Mohawks were the leading tribe.
8. They formerly inhabited the lower Mohawk Valley in New York State.
9. The population of Stalingrad in 1956 was approximately 525,000.
10. George Elliot was born in Warwickshire County, England, on November 22, 1819.
11. Hermosillo is a city in the Mexican Province of Sonora.
12. Entropy (ξ) is the tendency of a closed system to approach the state which has the highest probability.
13. Mean Square (MS) is the variation divided by the number of degrees of freedom.
14. Power ($1-\beta$) is one minus the probability of a type two error.
15. The symbol for integration (\int) designates a summation of values throughout a specified range.

16. The symbol σ designates the square root of the mean distance from the earth to the sun in miles.
17. (N.1) designates a normal statistical distribution in which the standard deviation is equal to one.
18. (Z) is the impedance of a circuit. $(Z) = R + j\omega L - \frac{1}{j\omega C}$
19. The symbol (\star) stands for an adult Great Northern Sumac on many forestry maps.
20. In Fortran language the asterisk (*) indicates that multiplication is to be performed.
21. $M_x (\ominus)$ is the general symbol for a moment generating function.
22. On a blueprint a dotted line of the following type: (- - -) indicates the locus of the center of a circular component or opening.
23. ARRC designates the U.S. Air Force Air Reserve Records Center whose headquarters are in Denver, Colorado.

NAME _____

Did you find the work you had to do in preparation

+3	+2	+1	-1	-2	-3
very difficult	somewhat difficult	slightly difficult	slightly easy	somewhat easy	very easy

How do you feel about taking the test?

+2	+1	-1	-2
very comfortable	comfortable	uncomfortable	very uncomfortable

Do you believe that you are one of the people who have been selected to take the test?

+4	+3	+2	+1	
virtually certain	probably	more likely than not	slightly likely	
	-1	-2	-3	-4
	slightly unlikely	less likely	probably not	very definitely not