1965

An analysis of extreme response set as related to personality

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A thesis submitted in partial fulfillment
of the requirements for the degree of Master of Arts
in Psychology in the Graduate School of the
University of Richmond

June, 1965

To Susan

ACKNOWLEDGMENTS

The author is indebted to Dr. Austin E. Grigg for his advice and supervision during the course of this study. The author is also indebted to Dr. William H. Leftwich and Dr. W. Warner Burke for their helpful ideas and criticisms in the preparation of this paper.

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Chapter I

INTRODUCTION

The phenomenon that certain individuals have unique and consistent patterns of responding to test items is called "response set" or "response style". Such a set leads a person to respond to test items differently than he would if the same content were presented in a different manner or form. Thus, when response sets are present, the content of a statement becomes less important in determining the response. During the last decade, the study of various response styles has been one of the most active areas of research in psychology.

Response sets were initially viewed as contaminating variables which had undesirable effects on the reliability and validity of psychological tests. The feeling, therefore, was that these non-content effects should be controlled or, if possible, eliminated from the test variance (Cronbach, 1946,1950; Webster, 1958). Other investigators, however, have suggested the possibility of exploring the use of response styles as indicators of certain personality characteristics (Jackson and Messick, 1958; Lorge, 1937; McGee, 1962; Meehl, 1945). If response sets which are

characteristic of the individual are stable from time to time and from test to test (and there is considerable evidence that they are), then they might be used in predicting certain aspects of one's personality. As McGee (1962) has stated,

> ...the recent trend...is based on the thesis that a response style has its roots in the underlying personality complex of the responder. It is proposed that individuals who vary in the extent to which they manifest a particular style of responding, will also vary in terms of certain measurable personality traits. (p. 284).

The most extensive study of this type was that of Couch and Keniston (1960), which explored the personality variables underlying the acquiescent response set.

The three response sets which have been most thoroughly studied are (a) acquiescence (Bass, 1955; Couch and Keniston, 1960), (b) deviation (Berg, 1957, 1959), and (c) social desirability (Edwards, 1953, 1957). The research on these sets has been summarized elsewhere (Jackson and Messick, 1958; McGee, 1962; Brown, 1964; Heilbrun, 1964). A fourth style of response - the extreme response set - has received considerably less attention. It is with this response set that the present paper is concerned.

The extreme response set is often found in tests which employ items which ask the subject to rate his response along an intensity dimension, such as, strongly agree, moderately agree, moderately disagree, strongly disagree. In such situations, some persons have a tendency for the extreme alternatives when making their response while others tend to employ the middle

categories with greater frequency. The tendency to endorse the extreme categories on these items is called the extreme response set.

One of the earliest specific references to the extreme response tendency was in Osgood's (1941) study of polarization of attitudes. Osgood used a device in which subjects checked their responses along a seven-category gradient. As an incidental finding of this study, Osgood noticed that some individuals tended to mark the gradients almost exclusively in categories 1 and 7, some used 1, 4, and 7, and others employed the entire scale. Without reporting any supportive evidence, he concluded that such response differences are related to occupation, education, and intelligence.

Another instance of the extreme response tendency is reported by Brim (1955). In this experiment, subjects had to state a probability value for each of a number of general statements, and then indicate their certainty of this probability estimate on a five-point "Certainty" continuum ranging from "Very Sure" to "Not Sure at All". Among other results, individual differences were found in responses on the "Certainty" continuum. Some people used the extreme categories frequently, while others generally did not. Also there were individual differences in the extremeness of the probability estimates, i.e., some people usually gave probability values close to 0 and 100 per cent, while others seldom gave such extreme estimates. Brim interpreted these findings as individual differences in "tolerance for ambiguity"

which was considered a function of need for security. According to this explanation, a strong desire for certainty is expressed in two ways: in a tendency to set probability values near the two extremes of 0 and 100, and in a tendency to claim a high degree of certainty that these values are correct. The tendency to respond in the extreme is seen as an effort to achieve a greater degree of structure and ordering in the environment. From these data Brim and Hoff (1957) developed a measure of need for security, and found that scores on this measure correlated with extremity of response on a number of standardized attitude tests. Thus, persons with a high security need had a greater tendency to make extreme responses.

If the extreme response style is to be considered a manifestation of an underlying personality complex, it is necessary that the reliability of this set be demonstrated. A number of studies have in fact shown extreme response set to be consistent, both between tests and under test-retest conditions. Rundquist (1950) demonstrated the consistency of the extreme response set between tests. Female factory workers took two tests, a checklist of self-descriptive words and a checklist of preferences for various activities. Substantial individual differences were found in the extreme response tendency, and the correlation between this tendency in the two checklists was .40. This was the first experimental indication of the reliability of this response set.

Further experimental evidence of this reliability is reported by Berg (1953). Berg studied extreme response sets over two intervals of time and with two tests using qualitatively different items. College students took the Perceptual Reaction Test (PRT) and the Word Reaction Test (WRT), and were retested either 7 or 15 days later. The extreme response set was shown to be highly stable over test-retest periods up to 15 days. For 7 and 15 day intervals the correlation coefficients were .85 and .78, respectively, for the PRT, and .84 and .94, respectively, for the WRT. Consistency between tests was also measured. Correlations in extreme set between the PRT and WRT administered in immediate succession ranged from .34 to .77. With a 7-15 day interval, the coefficients ranged from .30 to .64. Berg states that these correlations fall in the same area of .40 found by Rundquist (1950). He concludes that this response style appears to be more than a transient state and that, on the basis of the demonstrated reliability, extreme response set could be used in investigating personality variables.

Zuckerman, Norton, and Sprague (1958) have also reported the reliability of extreme response set, both across time and tests. Using the Parental Attitude Research Instrument (PARI), which measures parental attitudes toward child-rearing and family life, these authors found a repeat reliability of .89 of the extreme response set on this test with an interval of two weeks.

The correlation of the extreme set between the PARI and the F scale was .59, a somewhat higher coefficient than those reported by Rundquist (1950) and by Berg (1953).

Forehand (1962) used the PRT and an Adjectives Preference Checklist in assessing extreme response set. The tendencies for extremity on the two tests were significantly related, although the correlation was only .28.

It appears, then, that the extreme response style is a consistent tendency on the part of some people. Reliability over intervals of time and the generality from one test to another have been demonstrated. These findings suggest that extreme set may be indicative of stable personality traits. There has been a considerable amount of research in recent years exploring this possibility.

Several studies have suggested that extreme response set is related to anxiety. Berg and Collier (1953) used groups of high and low anxiety subjects, on the basis of the Taylor Manifest Anxiety Scale. These groups were given the PRT, and high scorers on the MAS made significantly more extreme responses to the abstract designs. In a similar study, Lewis and Taylor (1955) used the same test instruments and also found the same results. Soueif (1958) has also suggested a relationship between anxiety and response extremity, but in terms of groups. He gave a 70-item Personal Friends Questionnaire, an adjective list with a five-category rating system, to a sample of Egyptians. He found that

social groups with high tension levels had higher extreme response scores than social groups with low tension levels. These studies indicate a relationship between these two variables. The only negative results are reported by Brengelman (1960a), who found a low, insignificant correlation (.15) between extreme positive responses and MAS scores in abnormal subjects.

Brengelman (1960a, 1960b) has studied the relationships between extreme responses and a number of personality variables primarily concerned with the rigidity concept. In an exploratory experiment, extreme positive response set correlated significantly with a rigidity scale, but extreme negative response set did not. Thus, in a more exhaustive study he used only the extreme tendency in a positive direction. He found that this response style correlated with a rigidity complex, comprised of two scales of rigidity, one of dogmatism, and one of intolerance of ambiguity. This set was not, however, related to scores on Eysenck's extraversion and neuroticism scales. Also, extreme positive set did not discriminate occupational status (unskilled, skilled, higher-trained, and academic). This casts doubt on Osgood's earlier conclusion, as cited above. Brengelman's conclusion is that the set to respond in an extreme manner is a primary characteristic of the "rigid" personality. These results may be related to Brim's (Brim, 1955; Brim and Hoff, 1957) desire for certainty interpretation, which also was related to intolerance of ambiguity.

In recent years a number of studies have appeared which compare different groups of subjects with respect to the extreme response style. Zax, Cowen, and Peter (1963) compared college females with novice nuns in a convent on semantic differential responses to the 10 Rorschach cards. It was found that the novice nuns responded in a more extreme manner, whether in the positive or negative direction. The consistency of this response in these subjects "...points strongly to the likelihood that we are observing a specific manifestation of a more generalized tendency to respond in an extreme manner, once given the possibility of positive or negative response" (p.374).

Zuckerman, Oppenheimer, and Gershowitz (1965) administered Berg's PRT to male and female high school teachers and to a group of actors and actresses. The actors and actresses had significantly higher extreme set scores than did the teachers. The authors hypothesize that the extreme response set may be a symptomatic either of an inability to modulate attitudinal reactions or of high drive level.

Several experimenters report differences between sexes in extreme response style, but conflicting reports have also appeared. Females have been found to make significantly more extreme responses than males, both in normal (Berg and Collier, 1953; Borgatta and Glass, 1961; Brown, 1964) and abnormal (Brown, 1964) samples. However, negative results in regard to sex differences have been found in normal adults (Brengelman, 1960b; Zuckerman, Oppenheimer,

and Gershowitz, 1965), normal children (Zax, 1965a), and abnormal adults (Brengelman, 1960a, 1960b). Apparently this question has not yet been answered. However, in no case have males been reported to make significantly more extreme responses than females.

With respect to level of adjustment there is less doubt: abnormal subjects tend to make extreme responses with greater frequency than normal subjects (Barnes, 1955; Borgatta and Glass, 1961; Brengelman, 1960a, 1960b; Brown, 1964; Jones, 1956; Zax, Gardiner, and Lowy, 1964; Zax, Loiselle, and Karras, 1960). Zax and his associates have recently reported some pertinent and impressive results. Zax, Gardiner, and Lowy (1964) studied the relationship of this response style to different adjustment levels in normal and abnormal subjects. They compared the extreme response tendency in three pairs of groups, each pair being relatively well matched except with respect to the independent variables, which was level of adjustment. Thus, each pair of groups consisted of an "adjusted" and a "maladjusted" group. One pair matched male chronic schizophrenics with male hospital attendants. The second pair of groups consisted of female college students. Half of them had been rated by their dean as particularly maladjusted to campus life, while the other half were designated as particularly well adjusted. Thirdly, a group of normal children were compared with children hospitalized for emotional disorders. The "maladjusted" group of each of the first two pairs made significantly more extreme responses than the "adjusted" groups. The third

comparison showed the same direction, but did not reach the significance level.

> This may be partially explained on the basis that theoretically children qua children should be expected to compile high E [extreme] scores in any case. If they approach a high level in such scores in the ordinary case, there is little room for an increase even in the face of serious pathology. This may be partially substantiated by the fact that the [normal] group [of children]...made an average of 48% E ratings while even the chronic schizophrenics...made slightly fewer such ratings on the average (45%). (p.656).

Zax (1965a) has also studied extreme response patterns in 4th, 8th, and 12th grade subjects drawn from a public school system. Findings were that the older and brighter subjects gave significantly fewer extreme responses than the younger, duller subjects. This would also lend support to the interpretation of the earlier results. Zax (1965b) is currently investigating the possibility that 5th graders who are rated by peers as "impulsive" will tend to be more extreme responders than subjects not so rated. These and other studies led Zax, Gardiner, and Lowy (1964) to conclude that this response style is a function of immaturity or poor adjustment. Individuals in these categories are likely to interpret their experience in terms of polar extremes. According to this view, extreme response set is related to cognitive development.

Two studies which have used the correlational approach have found largely negative results. In these experiments, extreme response set scores have yielded low correlations when correlated with a large number of personality traits, as measured by psycho-

metric instruments. Zuckerman, Norton, and Sprague (1958) compared extreme response set measures with the 15 manifest needs assessed by the Edwards Personal Preference Schedule (EPPS) and measures of self-acceptance and acceptance of others. Extreme response set did not correlate with any of these measures of personality. Borgatta and Glass (1961) correlated extreme set measures from six populations - male and female college students, prisoners, and mental patients - with the Cattell 16 Personality Factor Questionnaire and the EPPS. Of 186 relationships only 11 were significant, which is only slightly above chance expectations of four significant relationships. These data are surprising when considered against the results of the other studies reviewed here.

Further examination of these experiments, however, reveals the presence of variables in both studies which may have played a role in these negative results. In both cases, the index of extreme tendency was an instrument not optimally suited for measurement of response sets. Whereas response sets appear most readily in unstructured, content-free situations, the response set measures employed in these studies were relatively structured instruments, developed to measure effects other than response styles. Zuckerman, Norton, and Sprague (1958) obtained extreme set scores from the Parental Attitude Research Instrument. The measure of response style used by Borgatta and Glass (1961) was the General Orientation Profile. In both of these tests the content factor may have been a highly determining factor influencing the subjects' responses, an undesirable effect when looking for "pure" response set measures.

Another point should be made regarding the Zuckerman, Norton, and Sprague (1958) study. They found that extreme set scores did not correlate significantly with measures of self-acceptance and acceptance of others. It should be noted that the latter measures were obtained from a test, constructed by Zuckerman, which has never been well developed. No reliability or validity data are available for this test (Zuckerman, 1965). The value of these results, then, is questionable. Another relevant factor of the Borgatta and Glass (1961) study is that the .02 confidence level was used as the criterion of significant correlations. The use of the .02 level of significance as the minimum acceptance requirement is somewhat unusual. Its importance to the present discussion is seen in the authors' comment that several other relationships would have been significant at the more commonly used .05 level.

The studies reviewed here have contributed scattered bits of information regarding the function of extreme set as a manifestation of some personality characteristic or pattern of characteristics. There seems to be a need, however, for a study which would (1) employ standard measures of response set and (2) investigate the relationships of this variable to a number of personality characteristics. It is hoped that the present study can fulfill such a need.

The purpose of the study reported here was to examine further the nature of the extreme response set, and to attempt to determine what variables might be related to this response style. This was

done by administering two extreme response set measures and two personality inventories to samples of male and female college students. From the resulting data it was possible to test the following hypotheses: (1) that there would be a significant positive correlation between the two measures of extreme response set, demonstrating the reliability of this response style across tests; (2) that female college students would make significantly more extreme responses than male college students; and (3) that significant correlations would appear among the relationships between extreme response set scores and measures of personality variables.

Chapter II

PROCEDURES

Extreme Response Set Measures. Two measures of extreme response set were used. Each index consists of a number of relatively unstructured, content-free stimuli to which the subjects respond in one of four categories.

1. The Aphorisms Questionnaire. This questionnaire (Foster, 1960) contains 72 heterogeneous aphorisms or proverbs, all concerned with human behavior. The response alternatives are "strongly agree", "agree somewhat", "disagree somewhat", and "strongly disagree". The number of "strongly agree" and "strongly disagree" responses constituted the extreme response score on this test.

2. The Personal Adjective Checklist. This is a list of self-descriptive adjectives, many of them found in the Adjective Reaction Test developed by Brown (1964). An attempt was made to maintain an equal balance in the positive and negative affective tone of the list of adjectives. The response alternatives are "like much", "like slightly", "dislike slightly", and "dislike much". Extreme response set was determined by counting the number of responses in the "like much" and "dislike much" categories.

Personality Assessment Instruments. Two personality inventories were employed in obtaining measures of personality traits. The two questionnaires together yield scores on a total of 16 variables.

1. The Guilford-Zimmerman Temperament Survey. This inventory

consists of 300 self-descriptive statements, 30 items used in assessing each of 10 traits. The ten traits measured are: general activity, restraint, ascendance, sociability, emotional stability, objectivity, friendliness, thoughtfulness, personal relations, and masculinity. Split-half reliabilities of the separate factors range from .75 to .85. Being a test developed by the facsor analytic method, the internal validity of the scales is high. The extent of empirical validity varies from scale to scale, but evidence is available for the validity of most of the factors.

2. The Study of Values. This is a 45-item instrument which examines the interests and value systems of the individual. The values assessed by this test are: theoretical, economic, aesthetic, social, political, and religious. Split-half reliability coefficients range from .84 to .95, and test-retest reliabilities are generally the same. Considerable evidence of validity of the scales has been obtained in research with contrasted groups.

Subjects. Male and female college students enrolled in undergraduate psychology courses comprised the sample for this study. The data were considered separately for each sex. Testing was conducted in the classroom during the regular class periods whenever possible. However, time limitations necessitated that all female subjects and approximately half of the male subjects take the Study of Values questionnaire individually, outside of the classroom. All other testing took place during class periods.

The data gathered from these test instruments were analyzed in three ways. First, the reliability of the extreme response

style across the two response set measures used in the study was determined. A Pearson r correlation was performed between the two sets of extreme response set scores. Secondly, the response set data were further analyzed for differences in response style according to sex. Mean extreme response set scores were determined for each sex on each of the response set measures, and a t-test was performed between the sex groups on each measure of response style. Thirdly, the data were studied for relationships between personality characteristics and the tendency to make extreme responses. A pearson r correlation was performed between the scores on each response set measure and each of the sixteen psychometric measures of personality traits. This correlational analysis was done separately for males and females.

The .05 confidence level was used as the criterion of significance for all statistical tests.

Chapter III

RESULTS

The results of this study lend support to hypotheses (1) and (2), but do not satisfactorily support hypothesis (3).

The data were first analyzed to determine the reliability of the extreme response style between the two response set measures. This was done separately for each sex, and in both cases significant correlations were obtained. The correlation coefficients between the Aphorisms Questionnaire and the Personal Adjective Checklist was .45 for females and .51 for males. Both coefficients are significant beyond the .01 level, demonstrating the consistency of the extreme response style from one test to another. These results would support the position that this response bias is related to some underlying personality complex, rather than specific to a given test.

The results of the tests of significance for differences between sexes on the two response set measures also supported this position. Results of these tests are presented in Table 1. A t-test of differences between means for males and females was performed for each response set measure. On both the Aphorisms Questionnaire and the Personal Adjectives Checklist females made endorsements in the extreme categories with greater frequency than males. Differences were significant at the .01 level.

Hypothesis (3) stated that the extreme response set would be significantly related to a number of the traits assessed by the personality

inventories. Correlation coefficients were obtained between each response set measure and each personality variable measured by the Guilford-Zimmerman Temperament Survey and the Study of Values. This analysis was performed separately for each sex. Of a total of 64 correlations, only 7 were significant at the .05 level. The data for females are presented in Tables 2 and 3. It can be seen in these tables that the only significant correlation for females was between extreme scores on the Aphorisms Questionnaire and the Thoughtfulness scale on the Guilford-Zimmerman. There were no significant relationships between extreme set and Study of Values measures. Thus, of 32 correlations for females, only one reached the criterion of significance. The data for male subjects are shown in Tables 4 and 5. As seen in Table 4, the only significant correlation on the Guilford-Zimmerman was between the Restraint scale of that inventory and the extreme scores on the Personal Adjective Checklist. On the Study of Values, significant negative correlations were found between both response style measures and the Economic scale of the questionnaire. There was also a significant negative correlation between the Aphorisms Questionaire and the Political scale. Significant positive correlations were found between the Aphorisms Questionnaire and the Aesthetic scale and between the Personal Adjective Checklist and the Religious scale. In all, then, 6 of the 32 correlations in the data for males reached significance level.

In contrast to the data on reliability and differences between sexes on the extreme response tendency, these results present little evidence of a consistent relationship between extreme response style and personality variables.

TABLE 1

Tests of Significance for Differences

Between Sexes on Response Set Measures

Aphorisms Questionnaire:

	N	Mean	S.D.	t
Females	45	25.84	9.31	2.41**
Males	59	20.39	12.78	

**p < .01

Personal Adjectives Checklist:

	N	Mean	S.D.	t
Females	46	34.72	7.34	2.54**
Males	59	30.20	10.18	

** p<.01

TABLE 2.

Correlation Coefficients Between Extreme Response Set Measures and Guilford-Zimmerman Temperament Survey Measures for Females

	Aphorisms Questionnaire (N=38)	Personal Adjective Checklist (N=39)
General Activity	.19	.18
Restraint	.12	.07
Ascendance	.18	.23
Sociability	.10	.26
Emotional Stability	.01	.09
Objectivity	-.05	-.15
Friendliness	-.12	-.09
Thoughtfulness	.53**	.30
Personal Relations	-.21	-.16
Masculinity	.10	-.18

** $p < .01$

TABLE 3.

Correlation Coefficients Between Extreme Response Set Measures and Study of Value Measures For Females

	Aphorisms Questionnaire (N=43)	Personal Adjective Checklist (N=44)
Theoretical	.28	-.02
Economic	-.28	-.13
Aesthetic	.12	-.07
Social	-.08	.03
Political	.06	-.20
Religious	-.04	.30

TABLE 4.

Correlation Coefficients Between Extreme Response Set Measures and Guilford-Zimmerman Temperament Survey Measures for Males

	Aphorisms Questionnaire (N=45)	Personal Adjective Checklist (N=46)
General Activity	.13	.14
Restraint	.17	.30*
Ascendance	.02	.11
Sociability	.04	.20
Emotional Stability	.10	.26
Objectivity	.10	.05
Friendliness	.07	.12
Thoughtfulness	.01	.28
Personal Relations	.08	.20
Masculinity	-.01	-.08

* $p < .05$

TABLE 5.

Correlation Coefficients Between Response Set Measures and Study of Values Measures for Males

	Aphorisms Questionnaire (N=58)	Personal Adjective Checklist (N=59)
Theoretical	-.11	-.19
Economic	-.28*	-.27*
Aesthetic	.25*	.12
Social	.09	.18
Political	-.25*	-.17
Religious	.23	.27*

* $p < .05$

Chapter IV

DISCUSSION

As reported in the previous section, the reliability of the extreme response set was demonstrated and differences between sexes in this bias were significant. Response set measures, however, correlated significantly with few of the psychometric variables used in this study. A discussion of each of these findings is appropriate.

The fact that the reliability coefficients obtained from the response set measures were.45 and .51 for females and males, respectively, demonstrates that this response style generalizes from one test to another. Persons who tend to endorse the extreme categories on one test will have the same tendency on another test; those who make few extreme responses on one test will not make many more on similar such tests. This finding is not at all new. As reviewed in Chapter I, Rundquist (1950), Berg (1953), Zuckerman, Norton, and Sprague (1958), and Forehand (1962) have all demonstrated this consistency. The present study is in keeping with their findings. The reliability of the extreme response style seems well established, and the evidence strongly suggests a relationship between this response bias and some personality aspect of the responder.

On each of the two response set measures used in this research, female college students made significantly more extreme responses than did male college students. These results also are not without

precedent. Although some investigators have not found such differences, those studies which have used college students as subjects have reported results similar to those obtained here. Berg and Collier (1953), Borgatta and Glass,(1961), and Brown (1964) have all found that college females exhibit this response tendency more than college males. These results would also seem to suggest that the extreme response set is something more than a phenomenon of certain tests, and that it has correlates in the personality structure.

The third hypothesis was a direct test of this position - that response set measures would correlate significantly with personality variables assessed by the psychometric instruments. However, only seven of the sixty-four relationships were significant. Even those coefficients that did reach the criterion of significance were small enough to make one wonder how much common variance there is between the two variables. Indeed, the number of relationships which reached significance level could easily be attributed to chance alone. These data give little support to the position that the extreme response style may be indicative of stable personality traits. Furthermore, similar findings are reported by Borgatta and Glass (1961) and by Zuckerman, Norton, and Sprague (1958). Combining these studies with the present research, extreme response set measures have been correlated with the 16 Personality Factor Questionnaire, the Edwards Personal Preference Schedule, the Guilford-Zimmerman Temperament Survey, and the Study of Values. In each case, surprisingly few significant relationships have emerged. These inventories assess a wide range of variables, yet no consistent relationships with

extreme set have been found. The data as a whole, therefore, lead to a conclusion that extreme response style is a stable manifestation of an aspect of personality, and yet is related to nothing! This position is hardly tenable!

The fact that, as noted above, reliability and sex differences have consistently been reported, as well as continued demonstration of relatedness to anxiety (Berg and Collier, 1953; Lewis and Taylor, 1955) and poor adjustment (Barnes, 1955; Borgatta and Glass, 1961; Brengelman, 1960a,1960b; Brown, 1964; Jones, 1956; Zax, Gardiner, and Lowy, 1964; Zax, Loiselle, and Karras, 1960) prevents the rejection of the position that a relationship exists between extreme response style and personality structure. Obviously, the nature of this relationship has not yet been determined. It would seem, however, that research has emphasized the wrong approach to the problem. Several studies have now attempted to relate extreme response set to behavioral, interpersonal, adjustmental or emotional factors, and with little success. The Personal Preference Schedule, 16 P.F., and Guilford-Zimmerman are all concerned with this realm of personality assessment. However, it would seem reasonable, both on logical grounds and on the basis of some experimental findings, that the extreme response style might be related to cognitive processes or styles characteristic of some persons. The remainder of this discussion is concerned with developing this theme.

In the course of cognitive development, two processes are of primary importance. One is the process of differentiation (Stone and Church, 1957), whereby a child gradually makes finer and finer discriminations among the many objects and events which he experiences.

Consequently, the child's environment becomes increasingly complex. Yet, if he were to respond to each object or event as a unique entity, he would soon be overcome by the complexity that exists in his world. For example, Bruner (1957) reports that there are over 7 million discriminable colors alone. Therefore a parallel process of categorization (Allport, 1954; Bruner, 1957; Bruner, Goodnow, and Austin, 1956) becomes necessary. Categorization involves the grouping of objects, people, and events into classes which are considered equivalent, and are responded to on the basis of their class membership rather than their uniqueness. These two processes - differentiation and categorization - are vitally important and although seemingly opposite in function, develop together. They are basic to the cognitive, adaptive, and intellectual development of the child, a development which continues throughout childhood and adolescence. (Bruner, 1964; Piaget, 1953,1957). The important point for the present discussion is that individual differences emerge in these cognitive processes, especially categorization. Bruner (1957) has discussed the categorization process in terms of a "coding system". He defines such a system as "a set of contingently related, nonspecific categories... the person's manner of grouping and relating information about his world." (p.46). It is a learned cognitive process which characterizes a person's approach to his experience in the environment.

Klein and his associates (Klein, 1951, 1958; Gardner, 1953; Gardner, Holzman, Klein, Linton, and Spence, 1959) have introduced the concept of cognitive control, which in many ways seems similar

to Bruner's ideas. This concept emphasizes an individual's typical strategies of thinking, perceiving, and remembering. Such a process (or "regulative tendency") is called a cognitive attitude. A cognitive attitude is a person's characteristic way of "contacting reality, whereby one's intentions are coordinated with the properties, relations, and limitations of events and objects" (Klein, 1958, p.88). It represents his personal mode of organizing information received from the environment. This concept is useful in explaining consistent individual differences in perception and cognition. An example of a cognitive attitude is the dimension of "leveling vs. sharpening" (Klein, 1951). The "sharpening" attitude is characterized by a heightened sensitivity to differences, details, and change, whereas "leveling" is seen in the diminution of such differences. Other cognitive attitudes are "equivalence range", which refers to variations in inclusiveness with which objects and events are classified in conceptual categories, and "tolerance vs. resistence of the unstable", which refers to individual differences in tolerance for ambiguity in one's experience. Klein (1958) points out that differences are found in these processes at different stages of development. Also a person is not characterized by one cognitive attitude alone, although one may be a more typical pattern for him.

> Clearly, a person can take up different cognitive attitudes which vary in appropriateness to different circumstances of task and intention. The particular cognitive attitude exhibited most typically by a person is not necessarily the one which is most apt for a particular situation or adaptive intention.....Different cognitive attitudes can, however, be equally effective.(p.108).

Thus, an individual's cognitive processes are not dominated by any one cognitive attitude. Indeed, in any complex situation a combination of such attitudes are probably at work to maintain self-consistency in a person's behavior. This structural arrangement of cognitive attitudes is called cognitive style. Although some attempt has been made to study cognitive styles (Gardner, et al., 1959), the research by Klein and his associates has generally been concentrated at the level of cognitive attitudes.

The study of cognitive styles would seemingly be related to Rokeach's study of The Open and Closed Mind. Rokeach (1960,1964) has been concerned with the structure of belief systems, and has found that the relative openness or closedness of a mind is not determined by specific content. An individual's approach to any ideology is dependent upon the formal characteristics of his cognitive structure. This is a relatively enduring pattern of response for the individual, and Rokeach's discussion emphasizes the relationship of personality variables to the open and closed mind.

There seems to be a considerable amount of similarity among the theoretical positions of Bruner, Klein, and Rokeach. When the findings of investigations of extreme response set are considered in relation to the writings of these theorists, there appears to be extensive support for the proposition that this response style is indicative of characteristic cognitive processes. This evidence can be seen in four areas.

1. Bruner (1964) and Piaget (1953,1957) have demonstrated the

gradual development of cognitive skills in children. Cognitive potential can be realized only with age and experience. Klein (1958) has noted that different stages of development are characterized by different conceptual structures. Gardner, et al. (1959) have pointed out that little is known of the relationships between age and cognitive control principles. For example, the stage of development at which the various cognitive attitudes emerge is still unknown. This is an area that future studies must explore. These differences in cognitive behavior at different stages of the developmental process may be reflected in extreme response style. Zax (1965a) found differences in this response style between 4th, 8th, and 12th grade students. The younger children gave significantly more extreme responses. It may also be of significance that brighter children tended to make fewer extreme responses.

2. Rokeach and Kemp (1960) found a strong relationship between manifest anxiety level and closed systems of belief. They correlated scores from anxiety scales with Rokeach's Dogmatism scale, which was the measure of closed-mindedness. Significant positive correlations were found in a number of populations. Brengelman (1960a) also found a significant relationship between these two variables. Evidence relating anxiety and extreme response set has already been presented (Berg and Collier, 1953; Lewis and Taylor, 1955; Soueif, 1958). Thus, the evidence would lead to the conclusion that extreme response set is somehow related to the "closed mind" as discussed by Rokeach.

3. The point has already been made that people characterized by poor adjustment make more extreme responses than well-adjusted subjects. The results have been so consistent that it must be accepted as an established fact. Although the cognitive processes of abnormal people has not been well discussed by the present theorists, Rokeach (1964) has suggested a relationship between level of adjustment and cognitive consistency, specifically that psychosis is characterized by a lack of concern for consistency of thoughts, statements, and behaviors. Klein (1958) has pointed out that some cognitive attitudes may be more adaptive than others. He states that "pathology in cognitive control is . . . seen in . . . failures of coordination between cognitive attitude and adaptational requirements" (p.108). It has also been suggested that the thought processes of psychotics are similar to those of children. If this is so, the findings of Zax, Gardner, and Lowy (1964) would strongly suggest a relationship between extreme response style and cognitive functioning. They found that normal school children and chronic male schizophrenics made extreme responses with about the same frequency, and that both of these groups were significantly different from normal adults. Further evidence of similarity of response style between children and psychotics is reported by Hesterly and Berg (1958) and Roitzsch and Berg (1959).

4. Rokeach (1960), in his discussion of the structure of the "closed mind", has emphasized rigidity in thinking, intolerance of ambiguity, and dogmatism as major characteristics. There is a

considerable amount of evidence relating extreme response style to these variables. Brim and Hoff (1957) correlated a measure of intolerance of ambiguity with three extreme set measures. All tests resulted in significant positive correlations. Brengelman (1960a) studied the relationship of extreme positive response set to two measures of rigidity, one measure of intolerance of ambiguity, and a modification of Rokeach's dogmatism scale. Using normal and abnormal samples, seven of the eight correlations were significant at the .01 level of significance.

The only negative evidence reported is that of Forehand (1962), who studied the relationship between extreme response set and cognitive controls as outlined by Gardner, et. al. (1959). Although some relationships were significantly correlated, the results were not consistent. However, the correlations among his measures of cognitive controls were extremely low, suggesting that his measures were not adequate. Consequently, the significance of Forehand's results are open to question.

The general nature of the evidence, then, supports the proposition that extreme response style may be indicative of certain characteristics of cognitive functioning. The evidence is largely indirect, but seems to warrant a further investigation of the relationship between these two variables. The results of such research may lead to another step in closing the gap between personality theory and personality assessment.

Chapter V

SUMMARY

A review of the literature dealing with extreme response set indicated that this response style is most likely indicative of some stable personality characteristics. There was a need, however, for a study which would (1) employ standard measures of response set, and (2) investigate the relationships of this variable to a number of personality traits. The purpose of the present study, then, was to explore further the nature of the extreme response style and to attempt to determine its relationship to personality variables.

Two measures of extreme response set - the Aphorisms Questionnaire and the Personal Adjective Checklist - and two personality inventories - The Guilford-Zimmerman Temperament Survey and the Study of Values - were administered to male and female college students. Relationships between the two response set measures and between these measures and the personality variables were determined. The data were analyzed separately for each sex.

The major results from the statistical analysis are as follows:

1. There was a significant positive relationship between the two measures of extreme response set. This was true for both males and females, and was viewed as a demonstration of the generality of this response style.

2. On both measures of extreme response set, female college students made significantly more extreme responses than male college students.

3. Extreme response set was not found to correlate consistently with the personality variables assessed in this study.

Since findings (1) and (2) had been demonstrated previously, and in view of past research which has consistently related extreme response set with certain personality differences, it was concluded that this response tendency is a stable characteristic of certain responders. Finding (3), in conjunction with past results, indicates that extreme set is probably not related to affective or behavioral variables. The possibility that extreme response style is indicative of certain characteristic cognitive processes was discussed, and tentative evidence supporting such a proposition was presented.

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APPENDIX

Means and Standard Deviations

of Scores on Guilford-Zimmerman

Temperament Survey Scales for Females

	Mean	S.D.
General Activity	12.75	5.55
Restraint	17.00	4.76
Ascendance	12.93	5.54
Sociability	16.93	7.54
Emotional Stability	13.90	5.92
Objectivity	14.88	5.39
Friendliness	15.27	5.30
Thoughtfulness	20.88	3.79
Personal Relations	16.98	4.65
Masculinity	9.43	3.94

Means and Standard Deviations

of Scores on Guilford-Zimmerman

Temperament Survey Scales for Males

	Mean	S.D.
General Activity	13.42	5.20
Restraint	15.81	5.21
Ascendance	15.66	5.78
Sociability	17.74	5.50
Emotional Stability	17.02	5.94
Objectivity	16.91	5.44
Friendliness	12.34	5.34
Thoughtfulness	18.64	5.24
Personal Relations	16.09	4.62
Masculinity	18.85	4.61

Means and Standard Deviations of Scores on Study of Values Scales for Females

	Mean	S.D.
Theoretical	35.74	6.43
Economic	36.04	7.38
Aesthetic	42.56	6.92
Social	40.63	6.23
Political	38.07	7.16
Religious	46.95	9.36

Means and Standard Deviations of Scores on Study of Values Scales for Males

	Mean	S.D.
Theoretical	42.07	7.67
Economic	41.15	8.92
Aesthetic	36.51	8.22
Social	35.88	8.23
Political	43.41	8.24
Religious	40.99	10.76

VITA

David L. Hamilton, the author, was born May 15, 1941 in Bridgeport, Connecticut. Having received his diploma from Andrew Warde High School in Fairfield, Connecticut, he entered Gettysburg College in Gettysburg, Pennsylvania and was awarded his Bachelor of Arts Degree in Psychology in June, 1963. While at Gettysburg he was a member of Phi Delta Theta social fraternity and Psi Chi psychology honorary, and was given recognition on the Dean's List in June, 1963. During the summer following graduation he toured Europe as a member of the Gettysburg College Choir. In September, 1963 he entered the University of Richmond to work toward the Master of Arts Degree in Psychology, which he received in June, 1965. He held a departmental assistantship during his first year of graduate study, and for the year 1964-1965 was a research assistant in the Department of Research in Medical Education, Medical College of Virginia. In August, 1964, he was married to the former Miss Susan Paulson of Glen Rock, New Jersey. In September, 1965 he will enter the University of Illinois to work toward the doctoral degree in psychology.