

A STUDY OF FACTORS ASSOCIATED WITH SELECTIVE  
RESPONSE PATTERNS ON THE SEMANTIC DIFFERENTIAL SCALE

by

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## Chapter I

### Introduction and Theoretical Framework

All sciences require measuring tools for the acquisition of knowledge; so too does the science of sociology. Any new and useful tool or technique for measuring social behavior is highly valued by the sociologist. Such a relatively new tool is the semantic differential technique.

The semantic differential technique is designed to serve as a method of measuring "meaning." It is a multi-dimensional rating scale based on the assumption that words represent things. Furthermore, words produce in the human being "some replica of the actual behavior toward these things as a mediating process" (Osgood, et.al., 1957:7). This mediation process or thinking process is that link between the sign-stimulus and the sign-response. Meanings, however, vary to the extent that the individual's experience toward the things in question have varied. In other words, the specific meaning attached to the specific word or sign is dependent upon the nature of the behavior which was occurring while the sign was being established (Osgood, et.al., 1957). Therefore, if an unpleasant situation prevailed during the time in which a particular sign was being established, that sign would most likely convey a negative connotative meaning.

The semantic differential was an outgrowth of Langfeld's 1914 studies on synesthesia which is defined by Warren in his Dictionary of Psychology (1934) as:

. . . a phenomena characterizing the experiences of certain sensations belonging to one sense or mode attached to certain sensations of another group and appear regularly whenever a stimulus of the latter type occurs (1934).

In his synesthesia experiments, Langfeld discovered that respondents displayed a tendency to relate specific colors of the spectrum with particular musical notes. Specifically, low notes were associated with dark colors, while high notes were associated with lighter, brighter colors. The synesthesia research revealed that "the process of translating from musical stimulus to 'visual' response, for example, could be described as the parallel alignment in thinking of two or more dimensions in terms of polar opposites . . . with the translations occurring between equivalent portions of these related continua" (Osgood and Suci: 1969:42). Furthermore, it was discovered that this process was not limited to certain rare individuals. Karowski and Odbert in their 1938 study found that approximately 13% of all Dartmouth students frequently participated in music-color synesthesia experiences. Osgood (1969:30) examined the earlier synesthesia findings cross culturally, and discovered that the generality of certain relationships previously discovered continued to exist - i.e., "good" things were associated with

lightness and highness, while "bad" things were associated with darkness and lowness.

The research in the area of synesthesia paved the way for the development of the semantic differential technique as we know it today. The technique is founded on three logical premises:

(1) "The process of description or judgement can be conceived to an experimental continuum, defined by a pair of polar terms" (Osgood and Suci: 1969:43). This process is revealed in both synesthesia experiments as well as common language metaphors. Furthermore, the greater the intensity of the assertion, "the more extreme becomes the allocation toward one or the other of polar terms" (1969:43).

(2) "Many different experimental continua, or ways in which meanings can vary, are essentially equivalent and hence may be represented by a single dimension" (1969:43). This single dimension is the evaluative factor which is the characteristic of thinking and language that makes the development of such a "quantitative measuring instrument" as the semantic differential feasible.

(3) "A limited number of such continua can be used to define a semantic space within which the meaning of any concept can be specified" (1969:43). This premise was necessary for the technique to be useful. If there were unlimited possible continua,

the semantic differential would offer little useful information; however, factor analytic studies have revealed three such continua which consistently account for the "variance in semantic judgements" (1969:44). An example of such a factor analytic study is Osgood and Suci's analysis (1969) of a 1000-item test form. This test consisted of twenty concepts with fifty semantic scales with which the subject was to respond. Employing Thurstone's centroid method of factor analysis, Osgood and Suci discovered three factors or continua. They labelled the first factor the "evaluative" variable. Scales which had very high loadings on this factor were: good-bad, valuable-worthless, happy-sad, pleasant-unpleasant, and fair-unfair. The second factor discovered by Osgood and Suci was the "potency" variable. Among the scales which had high loadings on this second factor were: strong-weak, large-small, heavy-light, and thick-thin. These scales, however, tended to be "contaminated" with the evaluative factor. The final factor which was revealed in this factor analytic study was the so-called "activity" variable in judgements. This variable revealed some relation to abruptness and physical sharpness. The most distinctive scales loading on this factor were: active-passive, fast-slow, and hot-cold.

Osgood and Suci further discovered in their factor analytic study of the 1000-test form that the percentages of



total variance and common variance confirmed the "dominant role of evaluation in semantic judgements" (1969:49). It was found that approximately fifty percent of the total variance in judgements could be accounted for by these three factors: evaluative, potency, and activity. Unsurprisingly, the evaluative factor accounted for seventy percent of the common factor variance.

Other such factor analytic studies by Osgood and Suci (1969) supported the logical basis of the semantic differential technique. It was possible to allocate a concept to an experimental continuum. Furthermore, there was a single factor in which most meanings were allocated. And finally, semantic space could be defined by a limited number of continua - three to be specific.

The semantic differential technique as was employed by Osgood and Suci in their factor analytic studies and as is employed in scientific research today should be considered as a combination of scaling procedures and controlled associations. Subjects are provided with a particular concept which is to be differentiated as well as a set of adjectival scales with which to do it. Furthermore, the polar terms are separated by a seven-step continuum, an example being:

good 1 2 3 4 5 6 7 bad .

Subjects were asked to select a position among the seven which

best expresses their own feelings or attitudes about the concept in question. The direction chosen is associated with what specific mediators are being evoked, while the distance from the origin is associated with the intensity with which these mediating processes are evoked (Osgood, et.al., 1957).

The semantic differential does not require verbal responses. Furthermore, "it measures emotional reactions rather than rational or well reasoned ones" (Kaufman: 1959:437). It also has the capacity to tap dimensions and areas in which we lack an adequate or "well-differentiated" vocabulary for expressing feelings about these areas and dimensions. As Kaufman states, the semantic differential encourages the "intuitive, impulsive, emotional expression of reactions" (1959:437). It is also a very economical tool requiring only a short period of time for its administration. Thus, the semantic differential technique offers numerous possibilities in sociological research. It can be employed as an attitudinal measure as well as a method for acquiring information concerning the emotionally laden areas of social life. However, a tool possessing such potential as the semantic differential must first be evaluated before being fully adopted in research endeavors. Such an evaluation is one goal of the present study. Specifically, this study will attempt to ascertain the general effects of age, education level, and sex on extremeness of response on the semantic differential technique.

A second and primary objective of the present study is to determine if response patterns on the semantic differential do support the developmental perspectives set forth in the theories of Lewin, Werner and Kaplan, and Piaget. Each of these theorists focus on the development of cognitive processes. They each expound upon a thesis centering on the shift from homogeneity to heterogeneity and from less to more differentiation in psychic structure with age. Support for these theoretical perspectives could possibly aid the sociologist in his attempt to understand variability in human social behavior as well as the process of socialization. For better understanding, the specific theoretical perspectives of each will be considered.

In Field Theory and Social Structure: Selected Theoretical Papers (1951), Lewin renders the two fundamental postulates upon which his field theory is founded:

(1) "behavior has to be derived from a totality of coexisting facts," (2) "these coexisting facts have the character of a 'dynamic field' in so far as the state of any part of this field depends on every other part of the field" (1951:25). Lewin proposes that the fundamental element to be considered in any attempt to explain behavior is the "life space." This "life space" is hodological in nature, finitely structured, and consists of parts or units which are not infinitely divisible. These parts or units are what Lewin refers to as "facts" which

make up the cells of the life space. These facts are all that is observable as well as that which is not observable, but which can be inferred from something which is observable. In his field theory, Lewin attempts to explain behavior via mathematics. This explanatory perspective is referred to as topological psychology (Lewin: 1936). Of particular concern in the present study, however, is Lewin's explanation of differences in behavior at the different developmental levels.

According to field theory, differences in behavior at the various developmental levels can be classified in the following manner:

1. variety;
2. organization of behavior;
3. extension of areas of activity;
4. interdependence of behavior; and
5. degree of realism.

Each of these classifications will be considered in the following discussion.

Variety of Behavior: Lewin states that "the indifferiated behavior becomes differentiated by a branching out into a variety of species of action" (1951:99). In the area of knowledge, this differentiation is especially clear; for changes in knowledge include many cognitive changes. With increasing

age; increased differentiation and richness occur in regard to both learning and insight. Social behavior also shows a similar increase in variety with aging. Basically, it can be stated that "the variety of behavior increases during childhood with normal development" (1951:100):

$$\text{Var (Bch)} < \text{Var (Bad)}.$$

Organization of Behavior: With only an increase in the variety of behavior, one might anticipate increasing chaos in behavior. Fortunately, this is not the case. Concomitant with the increasing differentiation of behavior "goes a development according to which an increasing greater variety of parts is included in one unit of action" (1951:100).

Lewin continues by listing three aspects of the organization of behavior with the first of these being the complexity of units. With development, the ultimate number of sub-parts as well as the variety of sub-parts contained in a single unit of action increases. In accordance with this increase in the number of sub-parts and manipulatory abilities, there comes hierarchial and complexity in organization. There appears to be various levels of behavior, each being ruled by the higher level. Referring to this complex organization, Lewin states that "the maximum degree of hierarchial organization seems to increase with age" (1951:102):

$$\text{Hier org}^{\text{max}}(\text{Bch}) < \text{Hier org}^{\text{max}}(\text{Bad}).$$

Furthermore, behavior tends to become overlapping with one act, actually "covering up" another. Thus, behavior which develops in complexity and variety with age retains an organized character.

Extension of the Area of Activities: In this third consideration, Lewin proposes that both the life space as well as the space of free movement increases with age:

$$\text{Lsp (Ch)} < \text{Lsp (Ad)}$$

$$\text{Sfm (Ch)} < \text{Sfm (Ad)}.$$

In this stage of the developmental process, the "psychological time dimension" also increases. The psychological past and future become more salient features of the psychological present.

Interdependence of Behavior: Along with the increase in the life space, comes an increase in the degree of independence of its parts. The number of parts of the individual which are capable of functioning independently increases with age.

Development appears to bring with its increasing differentiation in the life space a decrease in interdependence of certain of its parts. Thus, the degree of unity as indicated by simple interdependence of particular sub-parts of the life space increases with age:

$$\text{Si uni (Ch)} < \text{Si uni (Ad)}.$$

Along with this increase in unity occurs an increased degree of differentiation with age:

$$\text{Dif (Ch)} < \text{Dif (Ad)}.$$

This increasing differentiation of the life space is, however, counteracted by increasing organization within the life space. The hierarchial organization previously considered serves to unify the whole:

$$\text{Hier org (Ch)} < \text{Hier org (Ad)}.$$

With this steady increase in the hierarchial organization, one might expect increased unity of the individual. This, however, is not necessarily the case. There appears to occur "ups and downs in the degree of unity of a person, whereby differentiation tends to decrease the unity from time to time and organization to reestablish or increase the unity on consecutively higher levels" (1951:111):

$$\text{Org uni (Ch)} \lesseqgtr \text{Org uni (Ad)}.$$

Lewin has thus proposed that "the degree of organizational unity (Org uni) at a later developmental level can therefore be either greater or smaller than that of an earlier level" (1951:111).

It thus appears that there are marked individual differences with regard to the degree of organizational unity of the adult. Therefore, there seems to be two contradictory forces at work - differentiation and continuous hierarchial organization.

Furthermore, this competition occurs as the life space constantly expands with age.

Degree of Realism: In this final section, Lewin focuses on the element of realism. Lewin states that with development, the perceived environment becomes less "'subjectively colored.'" Reality and fantasy become more clearly distinguished with the objective world becoming more crystallized within the life space. Therefore, the degree of realism of the child is less than that of the adult:

$$\text{Real (Ch)} < \text{Real (Ad)}.$$

There also develops the attitude of striving to attain maximum results with a minimum effort.

Lewin's field theory is definitely a developmental perspective. It offers a challenge for the present study; for in his theory there is a definite shift from homogeneity in the life space, as exemplified by the empty life space of the newborn, to heterogeneity in the life space, as exemplified by the increasing differentiation and complexity of organization of the sub-parts of the life space which occurs with aging. With this increase in the number of sub-parts or cells of the life space, occurs an increase in complexity and organization of behavior. Possibly, the multitude of sub-parts and complexity of organizations of the life space of the older individual would



facilitate more varied responses to the semantic differential technique than those of the younger adult; however, as Lewin states, fluctuations do indeed occur.

Werner also focuses on the developmental aspects of mental functioning. In Comparative Psychology of Mental Development (1948) he cites the fundamental principle of mental phenomena and functions and a progressive hierarchization" (1948:51). This principle applies both to neurological development as well as to perceptual and motor activity. Furthermore, with development, there is a shift from concrete to abstract or non-sensori motor thinking. Even with this shift, the differentiation does not indicate a total discontinuity of lower and higher function. There instead appears to be an "inter-relationship of function and a sub-ordination of the lower to the higher," for never can abstract thinking be so self-sufficient that "material of sense" is completely dispensed with (1948:52).

In further reference to differentiation and hierarchization, Werner states that "the more differentiated and hierarchially organized the mental structure of an organism, the more flexible (or plastic) its behavior" (1948:55). Thus, the less differentiated and hierarchially organized, the more rigid and less stable is the behavior. Furthermore, organization which is less differentiated at earlier levels of development is more homogenous.

In a later work, Symbol Formation (1963), written in association with Kaplan, Werner restates his developmental perspective based on the tendency to shift from homogeneity and relative globality and undifferentiatedness ". . . towards states of increasing differentiation, and hierarchic integration" (1963:7). They refer to this tendency as the "'orthogenetic principle'" which serves to make development distinct from other forms of change over time. These developmental transformations are, according to Werner and Kaplan, both continuous and discontinuous, for all changes entail continuity as well as discontinuity. In "overall terms" the "'orthogenetic principle'" in terms of increased differentiation and hierarchic integration implies continuity. On the other hand, "in terms of specific, concrete forms and operations, novel functions and structures 'emerge;'" so, in this respect changes are indeed discontinuous (1963:7,8).

Concerning prior lower levels of functioning, Werner and Kaplan turn to Hegel's Lectures on Philosophy of History. In his work, Hegel states that:

'The life of mind is a totality of levels, which on one hand exist side by side, but which on the other, appear transitory one after the other. The moments which the mind seems to have left behind actually exist in it at the present time in full depth' (Werner: 1963:8).

Thus, the past lower levels of functioning are ever present. This is consistent with Lewin's psychological present which consists of not only present levels, but also those of the past.

The major portion of Werner and Kaplan's Symbol Formation is concerned with the development of symbolic behavior. Only the above discussed elements of developmental theory are considered.

Piaget also offers a developmental perspective concerning intellectual functioning. Basic to his theoretical perspective are two fundamental characteristics of intellectual functioning, organization and adaptation. These two characteristics are actually two sides of the same coin. Adaptation, however, involves the two essential and important processes of assimilation and accommodation. Through these two processes, the shift from homogeneity to heterogeneity in intellectual functioning occurs.

Piaget further proposes that it is through these same two processes, assimilation and accommodation, cognitive processes are actually made possible. Accommodatory acts are constantly being extended to different and new features of the surroundings. It is only "to the extent that a newly accommodated-to feature can fit somewhere in the existing meaning structure," will it be actually assimilated to that structure (1963:49). Once this new feature is assimilated, it changes the original

structure to some degree. Through these changes, other new and different features are accommodated. Thus, from a state of relative emptiness and homogeneity, new features are constantly being added to the existing meaning system with the basic provision that only those features can be assimilated which have had the way paved for them by preceding assimilations and accommodations.

Piaget further includes in his developmental perspective a "stage independent theory." This theory holds that each developmental stage builds on its predecessor "by virtue of new increments of assimilation - accommodation activity" (1963:407). Furthermore, each stage goes a little beyond all preceding stages.

Although the mind which learns remains homogenous throughout according to Piaget, development entails the acquisition of more and more knowledge. The culmination of these many processes is intelligence, which constitutes:

. . .the state of equilibrium towards which tend all the successive adaptations of sensori-motor and cognitive nature, as well as all assimilatory and accommodatory interactions between the organism and the environment (Psychology of Intelligence: 1963:11).

Although Piaget does focus mainly on child development, his work provides a type of "historical perspective" and framework with which to view the adult. His role is certainly

pertinent for an understanding of complex human behavior - both individual as well as group behavior.

From the theoretical perspectives of Lewin, Werner and Kaplan, and Piaget, one central hypothesis and two corollary hypotheses have been formulated.

Central Hypothesis: As age increases, there is a decrease in the tendency to select extreme or polar responses on the semantic differential technique.

Corollary Hypotheses:

Hypothesis I: As educational level increases, there is a decrease in the tendency to select extreme or polar responses on the semantic differential technique.

Hypothesis II: There is no difference in the tendency to select extreme or polar responses on the semantic differential technique between the sexes.

The central hypothesis is a definite test of the homogeneity-heterogeneity, undifferentiated-differentiated, concrete-abstract shift suggested by Lewin, Werner and Kaplan, and Piaget in their developmental theoretical perspectives. The corollary hypothesis concerning educational level is also felt to reflect to some extent the above shift, which occurs with the increasing experiences and richness which accompanies age. The second

corollary hypothesis is to be examined to determine if experiences which would effect response tendency vary between the sexes.

These three hypotheses should also shed light on factors which might effect semantic differential responses in such a manner that they need to be considered in any utilization of the technique.

## Chapter II

### Review of Relevant Research

A review of the literature has revealed considerable research dealing with polarity or extremeness of responses on the semantic differential technique. These studies have focused on the effects of such factors as age, sex, and intelligence on extremeness of responses on the semantic differential. One of the earliest of such studies was conducted by Osgood and Stagner in 1946 (see Osgood et.al.: 1957). In this study, they discovered that more intelligent subjects or possibly better educated subjects tended to select intermediary positions on the semantic differential seven-step continuum. Subjects for their investigation included two groups; college students versus laymen. It was found that the college students tended to select the 2,3,5, and 6 positions on the continuum much more frequently than either of the extremes, 1 or 7, or even the neutral position. Laymen, however, selected the extreme positions on the continuum with greater frequency than did the students.

Numerous other studies have also focused on the effects of intelligence on semantic differential responses. These studies are highly relevant to the present study, for as Botwinick (1967) states: "Either education makes for higher

intelligence, or the more intelligent go to school longer or both of these" (1967: 164).

In 1953, Ware (see Osgood: 1962) examined the effects of intelligence level on diversity in semantic differential responses. His major hypothesis was that more intelligent people would display greater diversity in responses to the semantic differential. Subjects for this study consisted of male and female high school students for whom IQ scores were available. Employing thirty-one concepts and twenty-one semantic differential scales, Ware discovered that there was no relationship "whatsoever" between intelligence level and diversity of responses.

Based on the findings of Ware (see Osgood: 1962), Neuringer (1963) attempted to further examine the relationship between intelligence level as well as neuropsychic disposition and diversity of responses on the semantic differential. Sixteen neuropsychiatric hospital patients and sixteen normal hospitalized patients served as subjects for this study. For methodological purposes, the extreme, moderate, and neutral positions on the semantic differential scales were assigned values of 3,2,1, and 0, respectively.

Subjects were divided into two groups via a median split in their attained scores on the Information Subtest of the Welschler-Bellevue Intelligence Scale. Comparisons in



semantic differential responses of these two groups revealed no significant differences between the mean intensity scores on semantic differential items. Thus, it appeared that intelligence level did not effect semantic differential ratings.

For further comparison, subjects were matched within 1 and +1 correct responses on the Information Subtests in order to control for intellectual differences. Analysis of the extremeness of responses between these groups did reveal significant differences in semantic ratings. Neurotics displayed less intensity diversity in responses than did normal individuals. The author concludes that "diversity of intensity of semantic differential ratings seems to be related more to neuropsychiatric involvement than to intellectual level" (1961:280).

Contrary to the Neuringer (1961) finding is the Stricker and Zax (1966) discovery that there is a significant relationship between extremeness of responses on the semantic differential and intelligence. Subjects for this 1966 study consisted of 240 public school students subdivided according to intelligence (high and low), sex, and grade level (fourth, eighth, and twelfth). These subdivisions constituted twelve groups composed of twenty subjects each. Intelligence quotients ranged in the six low IQ groups from 92.0 to 100.5, while for the high group, intelligence quotients ranged from 110.4 to one of 127.0

Ten Rorschach inkblots were used by Stricker and Zax to elicit responses on fifteen seven-point semantic differential bipolar scales. Statistical analysis of the responses revealed no "significant sex effects; however, older and more intelligent students did show a "greater ability to utilize the full range of semantic space" (1966:776). Furthermore, the relationship between IQ and discriminability as exemplified by varied responses, only existed with the fourth and eighth graders. Possibly, with regard to discriminability, an asymptote is reached during mid-adolescence. After carefully examining all of their findings, Stricker and Zax concluded that "there is a positive relationship between intelligence and the ability to utilize semantic space" (1966:777).

The above finding lends support to Osgood's 1962 statement that "there ought to be a relationship between intelligence and completeness of utilization of the semantic space" (1962: 13-14). Osgood stated that such a good hypothesis should not be given up without a fight.

Another extremely important investigation in the area of intelligence level and extremeness of responses on the semantic differential technique was conducted in 1965 by Light, Zax, and Gardiner. As the theoretical basis for their study, the authors focused on the developmental theories of Lewin, Werner, and Piaget. Common to these theorists, as has been previously

discussed, is the progression from relative homogeneity to heterogeneity and from a state of less differentiation in psychic structure to more differentiation with age. Therefore, as the categories of experience increases and as differentiation takes place, there is "more 'freedom of choice' for making judgements" (1965:907). It would seem, then, that the child and the "pathologically regressed individual" would tend to respond in an all-or-nothing fashion and demonstrate more rigid forms of behavior. Furthermore, both Piaget and Werner propose that abstract thinking abilities increase with age. With regard to this proposition, the authors state that this shift from concrete to abstract thinking with development would decrease not only with increasing chronological age, but also with increasing intellectual maturity within given age groups" (1965:907).

From the above theoretical perspectives, it was hypothesized that: (1) "younger children would rate more extremes and fewer intermediates than older children" (1965:907); (2) males would show less extremes than females; and (3) "that within grade levels, the more intelligent children would rate fewer extremes than the less intelligent" (1965:908).

Subjects for this study consisted of 240 public school students divided into four groups at each of the three grade levels - fourth, eighth, and twelfth. The four groups for each grade level were categorized as: high IQ females, low IQ females,

high IQ males, and low IQ males. As in the Stricker and Zax study (1966), Rorschach inkblots were used as stimuli for responses on fifteen seven-point semantic differential scales.

Responses to fifteen scales did support the developmental hypothesis that development does indeed effect the tendency to select extreme responses. Furthermore, it was found that older children did choose fewer extreme responses and more intermediate responses, thus supporting the "theoretical notions of the gradual development of the child's abstract powers" (1965:909). The development of such abstract abilities possibly indicates "greater control and command of the abstract faculty by the older child and hence would permit more interrelations and connections to be seen and weighted in the formation of a judgement by such a subject" (1965:909). With this perspective, the differences found in responses with IQ would be related to the ability to employ abstractions.

The only disappointment which this study contributed was the absence of response differences between the sexes. Such differences had been previously reported by Berg and Collier (1953), who discovered that "with the exception of Negro groups, there is a tendency for females in general and maladjusted males to make more extreme responses when compared either to males-in-general or to low-anxiety females" (1953:167). The basis for these findings were response scores on the Perceptual

Reaction Test, which consists of sixty abstract designs to which subjects are requested to respond either; "like much, like slightly, dislike slightly, or dislike much" for each of the designs (1953:165).

Berg and Collier's investigation also revealed that the mean extreme response score was lower for white males than for Negro males. Possibly these findings indicate that extremeness of responses reflects certain group and personality characteristics.

Specific insight into the role of emotional adjustment and response tendency is rendered by Zax, Gardiner, and Lowy (1964). They hypothesized that maladjusted subjects would select extreme responses more frequently than adjusted subjects. The basis for their hypothesis was developmental theory, that of Werner mainly.

In Werner's comparative approach, he proposes that the mental development of the child is diffuse and global, causing the child to demonstrate rigid forms of behavior. These rigid forms of behavior are also characteristic, according to Werner, of those who suffer from "regressive pathological disturbances." Higher forms of activity, however, are characterized by differentiation and plasticity. Maladjusted individuals would then be expected to respond in a more rigid and probably extreme fashion; for just as the child reacts in an all-or-nothing fashion, so too will the maladjusted individual.

Thirty male chronic schizophrenics and thirty male attendants at the same hospital served as subjects for the Zax, Gardiner, and Lowy study. Once again, Rorschach inkblots were used as stimuli to the twenty-one semantic differential scales.

As hypothesized, the "sick" or "maladjusted" groups did make more extreme responses than the "well" or "adjusted" group. There were no differences with regard to the selection of the neutral category. Zax et.al. concluded that "in addition to or perhaps in the same way as pathology, developmental levels play a role in this stylistic tendency to be drawn to the extremes of a rating scale rather than to intermediate points" (1964:656). As has been demonstrated, this conclusion is well supported by the theoretical perspective of Werner as well as other theorists such as Lewin and Piaget.

Remaining within the realm of emotional and psychological factors is the study "Anxiety and Semantic Differential Responses" conducted by Brod, Kernoff, and Terwilliger (1964). Basic to their study is the concept discriminability which the authors operationally define as the selection of a different response to each stimulus which is presented. With regard to the semantic differential continuum, discrimination would be defined as the selection of all positions on the continuum equally often.

In response to Ware's findings, as previously discussed, Brod et.al. (1964) hypothesized that there would be "no correlation between intelligence and either discrimination or response bias on the semantic differential" (1964:571). Secondly, the authors hypothesized that a positive correlation would exist between manifest anxiety as measured by the Taylor Manifest Anxiety Scale and discrimination on the semantic differential. Finally, Brod, Kernoff, and Terwilliger anticipated a positive correlation between response biases on the semantic differential and response bias tendencies on the Lie (L) score on the Minnesota Multiphasic Personality Inventory.

The responses of fifty female undergraduates classified according to total SAT scores to fifty words rated on nine semantic scales revealed that intelligence had no effect on response bias or discrimination on the semantic differential. With regard to anxiety, however, there appeared to be a "positive relationship between anxiety, as measured by the Taylor MA scale and discrimination" (1964:473).

In their concluding comments, Brod et.al. offer a tentative explanation for the extremeness of responses on the semantic differential. Possibly the social desirability motive enters into the selection of responses; thus, subjects would respond in a manner which they feel is socially desirable; also, there may be a "black-white" dichotomy in operation in which certain

individuals are unable to select middle-of-the-road responses. Something is either very good or else very bad to these people. There are no shades of gray. These individuals would only select extreme responses on the semantic differential scales.

Specific focus on age and variation in the meaning of concepts is offered by Donahoe (1961). Founded on the rationale that "since the number of pairings between signs and the objects which they signify increases with age, systematic changes should occur as a function of the age of the subject," Donahoe hypothesized that the above changes should be in the "direction of increasing disparity between the meaning of a concept and the normative adult meaning" (1961:23). Donahoe assumed that the amount of variance associated with a particular factor, i.e. evaluative, potency, and activity, should reflect the "frequency of discrimination relevant to that dimension" (1961:23). From prior factor analytic studies of the semantic differential, it would, therefore, be anticipated that the evaluative factor which accounts for approximately one-half of the variance in the semantic differential should asymptote at an earlier age than either the potency or activity factors.

Employing five-step semantic differential scales, Donahoe presented the two-hundred subjects consisting of four age groups (first, third, and sixth grades as well as students in a college introductory psychology class) ten pictures to respond to. As



expected, the evaluative factor did indeed reach asymptote values at earlier ages than the potency factor. This finding supports his contention that "the proportion of common variance associated with a factor is an index of the frequency of discrimination along that dimension" (1961;26). Due to the considerable differential reinforcement received by the evaluative factor, it stabilized first. The fact that the activity factor showed no actual variability over the age levels is, according to Donahoe, "inexplicable" within the framework of the present study. He concedes that possibly the concepts chosen (hot-cold, fast-slow, and sharp-dull) to represent the activity factor were poor choices on his part.

The 1965 study by Weksel and Hennes offers insight into change in attitude intensity with advancing age. Their study is of great importance for basic to the semantic differential is the premise that extremeness of responses (polarity) is the measure of attitude intensity. Weksel and Hennes, however, argue that polarization of scores does not actually reflect attitude intensity. They state that "there is no reason to believe that the degree of favorableness of an attitude determines the strength with which that attitude is held" (1965;91). According to the authors, one can certainly be favorable toward a concept without holding that attitude strongly. Furthermore, a neutral position may be held very

strongly by an individual. Weksel and Hennes do, however, state that in certain cases polarity and attitude intensity will be significantly related; yet, such a positive relationship does not provide an adequate basis for assuming that polarity and intensity are identical.

To substantiate their argument, Weksel and Hennes compared independent intensity ratings on a series of semantic differential scales administered to seventy-five college students. Specifically, the students responded to the semantic differential items, then to the side wrote a number from one to seven which represented the intensity with which they held the particular view recorded on the semantic differential item. The forty-four polarity scores and forty-four intensity scores were then correlated and transformed to "z" scores. The resulting "z" values were averaged with the resulting value transformed to a mean correlation value.

In this first phase of the study, the mean correlation for college students was .31. A second similar investigation employing college freshmen and sophomores, sixth, and tenth graders revealed the following mean correlations: college students = .43, tenth graders = .47, and sixth graders = .69. These correlations tend to suggest that intensity of attitude and polarity are truly related, especially at younger ages. However, the authors conclude that such an assumption is not

warranted due to the unreliability of the measures and the existence of a response set. It appears from these findings that there are possible weaknesses in the semantic differential technique which could definitely affect its effectiveness as a measuring instrument.

Contrary to the previous study which challenged the semantic differential is the idea Mitosis (1961) offers to enhance the technique. In "Personal Constructs and the Semantic Differential," Mitosis proposes that using personally meaningful words should "yield concepts more saturated with meaning without significant change in the total semantic structure" (1961:433).

Sixteen students enrolled in an undergraduate psychology class were asked by Mitosis to select nine out of twenty-one semantic differential scales which they thought could be "meaningfully used in construing people" (1961:433). These selected scales were then applied to seven concepts. Analyses revealed that there was a direct relationship between degree of saturation of meaning and personal meaningfulness of the scales. Furthermore, it appeared that this saturation of meaning did not occur "at the expense of 'distortion' in the semantic field" (1961:434).

Studies which have focused on variation in general test abilities with age are numerous. Hanes (1953), employing three

groups of subjects ranging in age from twenty to seventy years of age, discovered that test performance on Tachistoscope exposures declined with advancing age. Although all subjects had difficulty learning nonsense materials, the older subjects demonstrated even greater difficulty. Possibly those materials requiring the reversal of old habits cause problems for older people. If this is true, it could certainly be a factor in semantic differential responses as well.

Howell (1955) investigated the effects of sex differences and educational differences in mental deterioration. Subjects for his study ranged in age from 60 to 89 years of age and constituted four educational levels - grade school education, high school education, and college education. Employing subtests of the Welscher-Bellevue, Howell discovered that there appeared to be no differences in mental deterioration between the sexes. Furthermore, the deterioration index appeared to be independent of educational influences, as well as general IQ level.

In "Differential Changes in Mental Abilities in Old Age," Kamin (1957) reports that there is a definite decline in mental test scores with age. With Thurstone's Primary Mental Ability Test, Kamin compared the responses of older and younger subjects. He discovered that the decline in mental abilities was greatest in areas of space and reasoning.

Korchin and Basowitz (1957) discovered that the "older individual will perform less well in any situation in which he must deal with material which is in any novel" (1957:68).

Furthermore, in any test situation the older respondent is much more cautious and attempts to respond correctly or not at all.

Korchin and Basowitz conclude that:

In the aged there is a decreased ability to comprehend, organize, and integrate new experience both in perception and in memory. Integration is likely to be incomplete, often rigid or confused, and the integrative process requires greater time (1957:69).

In The Range of Human Capacities (1969), Wechsler proposes that there is a general decline in all mental as well as physical abilities with age. However, this decline is not consistent among individuals.

Although the studies concerning variation in test abilities with age are not ostentatiously relevant to the present study, they do offer perspectives which should be considered in any attempt to compare responses across age levels as is the case in the present study.

Summary: The review of the literature relevant to the present study has produced many significant, yet sometimes contradictory insights. Studies by Osgood and Stagner (see Osgood et.al.: 1957), and Stricker and Zax (1966) have revealed a negative relationship between intelligence and/or educational attainment and extremeness

or polarity of responses on the semantic differential technique. Similar findings have been reported by Light, Zax, and Gardiner (1965) as well as Zax, Gardiner, and Lowy (1964). These two studies also served to further substantiate the developmental perspectives of Lewin, Werner and Kaplan, and Piaget. Although Brod, Kernoff, and Terwilliger (1964) failed to discover a relationship between intelligence and response tendencies on the semantic differential, their study did reveal that manifest anxiety does play a direct role in selection of extreme responses. Such anxiety factors could certainly enter into the developmental processes.

Other studies considered have, to the contrary, revealed no relationship between intelligence and/or educational attainment, and response tendency on the semantic differential technique. Ware (see Osgood: 1962) and Neuringer (1963) both failed to discover such a relationship.

Directly concerning age and response tendency is the study by Donahoe (1961). His investigation revealed that the evaluative factor did indeed reach asymptotic values at an earlier age than the potency factor; thus, supporting one of the logical premises of the semantic differential.

Specific emphasis on sex and variation in response patterns has been placed by Berg and Collier (1953). Their study revealed that mean extreme response scores were lower

for males than females. However, the Light, Zax, and Gardiner (1965) study failed to replicate their findings.

As can be ascertained from this review of relevant research, findings concerning polarity or extremeness of responses on the semantic differential are inconsistent. While some studies have indeed found significant relationships between such factors as intelligence, educational attainment, age, and sex and polarization of responses; other similar studies have failed to reveal such relationships. Furthermore, there has not been an investigation of response tendency on the semantic differential which involved such a large and heterogenous adult sample as that considered in the present study. It is hoped that the present study will help to bridge the gap which presently exists concerning polarity of responses on the semantic differential technique, and the effects of age, educational level, and sex.

## Chapter III

### Methodological Approach

#### Sampling Procedure:

Households in the city of Roanoke, Virginia served as the sample universe for the present study. A random selection of households was drawn based on the 1970 Census tract designations, and the cluster sampling technique as outlined by Kish (1967:48).\* Downtown business tracts (number 11 and number 7) were omitted as well as one central city residential-commercial area (number 18).\*\* Further randomization of the sample was accomplished through a random selection of blocks within the census tracts. Also, the direction of movement within the particular blocks was consistent.

Successive households were contacted by interviewers until approximately twenty interviews from each tract had been acquired. In the event that interviews were inaccessible in the designated blocks, previously selected alternate blocks were employed. A total of 370 households were successively contacted. Only one adult member of the household was interviewed at each residence.

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\*The sample was drawn as part of a more extensive research effort sponsored by the Department of Interior and the Water Resources Research Center at Virginia Polytechnic Institute and State University under project No. 038-Va.

\*\*See map of Roanoke, Virginia in Appendix A.



Of these 370 contacts, there were 53 refusals, contributing a refusal rate of 14.3%. There were also twelve interviews which lacked some semantic differential responses, and were omitted from the study. Thus, from a total of 370 households contacted, 305 of the interviews were employed.

Interviewers for the present study consisted of graduate students enrolled in the Department of Sociology's Advanced Research Seminar. All interviewers received instruction on interviewing techniques and conducted pre-test interviews prior to the field assignments. Interviews were conducted in the homes of respondents. Approximately twenty minutes was required for the completion of an interview.

#### Interview Schedule:

The interview schedule was a structured instrument consisting of four identical sets of eight seven-point semantic differential scales. Six of the scales represented the evaluative factor as discussed by Osgood and Suci (1969:47-49): good-bad, ugly-beautiful, valuable-worthless, unpleasant-pleasant, happy-sad, and unfair-fair. The two other scales, unimportant-important and useful-useless, were designed to tap the dimensions of activity and potency. Semantic differential scales were constructed in a manner to prevent the most favorable factor from appearing first in the scale on all

occasions. Such a construction was undertaken in order to prevent response sets and/or response biases from occurring.

With the four sets of eight semantic differential scales, subjects were requested to respond to four statements:

"Consider Smith Mountain Lake as a recreational area;"

"Consider Smith Mountain Lake as a source for the production of electric power;" "Consider the state colleges as institutions of higher learning;" and "Consider the state colleges as they provide services to citizens." The two sets of semantic differential scales dealing with water resource use appeared early in the interview schedule, while the two sets concerning state colleges appeared much later in order to deter any practice or treatment effects. Respondents were presented a card on which appeared the eight semantic differential scales in order to facilitate responses and also prevent uncertainty as to the possible selections which could be made.

In addition to semantic differential scales, the research instrument contained a series of questions designed to obtain demographic characteristics of respondents. Information was obtained on age, sex, marital status, occupation, educational attainment, family income, and similar classificatory items.

### Selected Characteristics of Sample Subjects:

The sample for the present study consisted of more females than males, as is illustrated in Table 1. Specifically, 56.4% (N=172) of the sample subjects were females and 43.6% (N=133) were males. This composition is relatively consistent with the total adult population (persons 18 years and older) of Roanoke as of 1960, at which time approximately 53% were females and 45% were males.\*

Concerning the racial composition of the sample (Table 2) 88.8% or 271 of the respondents were white, while 11.1% or 34 were black. It is interesting to note that of the black respondents, 64% (21) were females. Such a racial composition is also highly consistent with the 1960 census findings, which report 17.0% non-white residents and 83.0% white residents.

Data presented in Table 3 reveal that the greatest proportion of respondents were married. A total of 234 (76.7%) individuals reported such a marital status. In addition to this number, 32 respondents stated that they were widowed, accounting for 10.5% of the total sample population. Approximately 4.9% (N=15) of the respondents reported that they were presently

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\* Census Population: 1960. (Part 48: Virginia). U. S. Bureau of the Census. Washington, D. C.: U. S. Government Printing Office, 1963.

TABLE 1  
Sex of Respondent  
N=305

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Sex	Number of Respondents	Percent
Male	133	43.6%
Female	172	56.4%
Total	305	100.0%

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TABLE 2  
Race of Respondent

N=305

Race	Number of Respondents	Percent
White	271	88.8%
Black	34	11.1%
Total	305	100.0%

TABLE 3  
Marital Status of Respondent  
N=305

Marital Status	Number of Respondents	Percent
Single	24	7.8%
Divorced	10	3.3%
Separated	5	1.6%
Married	234	76.7%
Widowed	32	10.5%
Not Reported	0	.0%
Total	305	100.0%

either divorced or separated, while 7.8% (N=24) of the subjects claimed that they were single. The 1960 census figures reveal that in that year only 45% of all persons 18 years of age and older who resided in the city of Roanoke were married. Thus, the sample is somewhat over-represented by married individuals.

Approximately 83.0% of the respondents reported that they did have children. With the large percentage of married, divorced, widowed, and separated individuals (92%), this finding is not surprising (Table 4).

Sample subjects ranged in age from 18 to 89 years of age, with the median age of the sample being approximately 45 years. It should be noted that this median age is somewhat higher than the 32.4 years reported by the Census Bureau in 1960, due to the fact that the sample consisted only of persons 18 years of age and older. Twenty-one percent (N=64) of the sample constituted the age category 41-50 years, which incidentally accounts for the greatest concentration of subjects. Approximately 36.4% (N=111) of the respondents reported ages between 41 years and 60 years, while 29.9% of the subjects were over 61 years of age. Only 1.9% of the respondents reported the attainment of 81 to 90 years (Table 5).

Respondents were grouped according to occupation into the following categories: unskilled, semi-skilled, skilled, clerical,

TABLE 4  
Children in Family  
N=305

Children in Family	Number of Respondents	Percent
No	48	15.7%
Yes	253	83.0%
Not Reported	4	1.3%
Total	305	100.0%



TABLE 5  
Age of Respondent in Years

N=305

Age	Number of Respondents	Percent
Refused	5	1.6%
0-20	10	3.3%
21-30	53	17.4%
31-40	50	16.4%
41-50	64	21.0%
51-60	47	15.4%
61-70	38	12.4%
71-80	32	10.5%
81-90	6	2.0%
Total	305	100.0%

proprietor (manager, official), professional, disabled, retired, and housewife. It was found that 39.3% (N=120) of all sample subjects were housewives, which is consistent with the greater proportion of females in the sample. The retired category constituted the next largest percentage of the total sample subjects - 12.1%. This large percent of retired individuals is consistent with earlier data on the age composition of the sample. Approximately 26.9% (N=82) of the respondents were characterized as members of the "blue collar" force, while 18.4% (N=56) of the respondents could be classified as "white collar" workers.\* Only two individuals reported that they were disabled, thus constituting an almost negligible proportion of the sample (Table 6).

The educational composition of the sample subjects is presented in Table 7. A total of 83 (27.2%) of the respondents reported that they had only attained a grade school education. Approximately one-half of the sample (50.2%) subjects reported that they had attended secondary school, while 33.1% of these individuals received a high school diploma. This large

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\* "Blue collar" workers include unskilled, semi-skilled, and skilled workers; members of the "white collar" force include clerical workers, proprietors, and professionals. (see Alba Edwards, Comparative Occupational Statistics for the United States, Washington: U. S. Government Printing office, 1943.

TABLE 6  
 Occupation of Respondents  
 N=305

Occupation	Number of Respondents	Percent
Unskilled	13	4.3%
Semi-Skilled	36	11.8%
Skilled	33	10.8%
Clerical	26	8.5%
Prop., Mgr., or Official	18	5.9%
Professional	12	3.9%
Disabled	2	.7%
Retired	37	12.1%
Housewife	120	39.3%
Not Reported	8	2.6%
Total	305	99.9%

TABLE 7  
Educational Attainment of Respondent

N=305

Educational Attainment	Number of Respondents	Percent
Grade School (0-8)	83	27.2%
Attended H.S. (9-11)	52	17.0%
H.S. Graduate (12)	101	33.1%
Some College (13-15)	35	11.5%
College Graduate (16)	21	6.9%
Post-Graduate Education (17-20)	12	3.9%
Not Reported	1	.3%
Total	305	99.9%

proportion of individuals who had at least attended secondary school is somewhat consistent with 1960 census information, which reports that the median school years completed for Roanoke residents was 10.5 years. Fifty-six (18.4%) of the sample subjects reported that they had attended college; twenty-one of the persons who attended college obtained a college degree. Only 3.9% (N=12) of the respondents reported participation in post graduate education.

The final characteristic to be considered is income. Data concerning the income distribution of the total sample are presented in Table 8. These data reveal that two categories, under \$5,000 per year, and over \$10,000, but under \$15,000 per year, were almost equally represented (24.3% and 23.6% respectively). The highest proportion of respondents reported a family income ranging between \$5,000 and \$10,000 per year, which reflects the \$5,130 median income reported by the 1960 census. Only 11.2% (N=34) of the respondents reported an annual income in excess of \$15,000 per year.

The analysis of selected social and economic characteristics of the sample employed in the present study has revealed that this sample is highly representative of the total population in Roanoke, Virginia from which it was drawn. While the specific design of the present study did not require

TABLE 8  
Annual Income of Household in Dollars  
N=305

Income	Number of Respondents	Percent
Under 5,000	74	24.3%
Over 5,000 Under 10,000	118	38.7%
Over 10,000 Under 15,000	72	23.6%
Over 15,000	34	11.2%
Not Reported	7	2.3%
Total	305	100.0%

sample subjects who reflected the population characteristics of a particular urban aggregate, the availability of a sample representing the city of Roanoke does not detract from analysis or interpretation of findings. It could be stated that the typical respondent in the present study was middle-age, married, a parent, is a high school graduate, and had an annual income between \$5,000 and \$10,000 per year.

**Methodology:**

In order to optimally focus on polarity of responses, the following transformations of the original semantic differential scores were necessary: all "7" responses were transformed to "1's," all "6" responses to "2's," and all "5" responses to "3's." These transformations thus created a four item polarity scale out of the original seven items. A number "1" response could now be considered as most polar or extreme and a "4" response as neutral, or the absence of polarity. It should be noted that the project focuses on the existence of polarity rather than the direction of polarity.

The next methodological procedure undertaken was to determine individual polarity scores for each of the four sets of eight item semantic differential scales. Such an endeavor was accomplished by summing the scores on each item in the particular set of eight items. Also a polarity score for the

two sets of semantic differential items dealing with water resource use was acquired, and likewise with the two sets concerning educational institutions. Finally, the sum of all polarity scores was obtained by adding the scores on all thirty-two items. This score could range from 32, most polar on all items, to 138, neutral on all items. For example, an interviewee who selected the most polarized response on each of the thirty-two adjective pairs would receive a score of 32; a neutral response on each item would be four times as great - or 128 points. In summary, the above procedures produced the following information: (a) a polarity score on each of the thirty-two semantic differential items; (b) a polarity score on each of the four sets of eight item semantic differential scales; (c) a polarity score for the two sets of semantic differential scales concerning water resource use; (d) a polarity score for the two sets of semantic differential scales concerning state colleges; and (e) a composite polarity score for all thirty-two semantic differential scales.

Employing the Pearson Product Moment Technique as outlined in Blalock (1960), the information acquired in the above procedures was correlated with the two factors of age and educational level. Since these two variables were continuous, such a procedure was warranted. These correlation coefficients



offer the "measure of linear relationship" which is suggested by the hypotheses (Blalock: 1960: 286).

The correlations were then examined to determine if they were statistically significant at the a priori designated level of .05. The coefficient "r" was assumed to be an estimate of the population correlation coefficient rho. With the basic assumptions as outlined in Blalock (1960) that: (a) scores on each variable are continuous and equal interval; (b) scores are normally distributed in the population; and (c) homoscedasticity, "t" tests of significance\* were performed. Since sex is not a continuous variable, a different methodological procedure was required in the attempt to ascertain the effect of this variable on extremeness of response. First, the mean polarity score on all thirty-two items for both sexes was obtained. A "t" test\*\* of the difference between two means was then performed with the .05 level being designated as the level of significance.

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$$* t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$

$$** t = \frac{X_1 - X_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

## Chapter IV

### Analysis and Findings

The methodological procedures to be employed in the analysis of data and tests of hypothesis consisted of frequency distributions for all thirty-two semantic differential items according to age, educational level, and sex; Pearsonian correlations between the variables of age and educational level and polarity of responses on all thirty-two items; tests of significance on each of the correlation coefficients; and a test of the difference between mean polarity scores of males and females. The results of these methodological procedures follow:

**Central Hypothesis:** As age increases, there is a decrease in the tendency to select extreme or polar responses on the semantic differential technique.

The frequency distribution for responses to the thirty-two semantic differential scales according to age is presented in Table 9.\* Over one-half of all responses (N=4872) were found in the extreme or most polar position, #1. Approximately 23% or 2,187 responses were in the second position, while response #3 accounted for 13% (N=1,245) of all responses. The neutral or fourth position received 1,296 responses, or approximately 14% of the 9,600 responses.

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\*N=300; five respondents who failed to report their age are omitted from this distribution.

TABLE 9

Frequency Distribution for Responses to  
32 Semantic Differential Scales According  
to Age of Respondent  
(N=300)

Age of Respondent	Polarity Scale				Total
	1	2	3	4	
11-20	102	108	63	79	352
21-30	807	317	286	254	1664
31-40	746	412	204	302	1664
41-50	1175	476	209	165	2016
51-60	911	305	150	170	1536
61-70	533	297	230	156	1216
71-80	480	243	84	153	960
81-90	118	38	19	12	192
Total	4872 (50.8%)	2187 (22.8%)	1245 (13.0%)	1296 (13.5%)	9600 (100.1%)

Correlation Coefficient =  $-.11724$

"t" Value = 2.0376 ( $p < .05$ )

The correlation of respondent age (N=300) and polarity of responses to the thirty-two scales produced the coefficient of  $-.11724$ . A negative relationship had been suggested by the hypothesis. The test of significance revealed the "t" value of  $-2.0367$ , which is significant at the a priori designated level of  $.05$ . Thus, the central hypothesis is supported. There is a significant inverse relationship between age and the tendency to select extreme responses on the semantic differential technique.

For further insight into the effects of age on extremeness of responses, the 300 respondents were divided into two categories; those below 50 years of age and those above 50, the younger group consisting of 173 respondents - fifty years of age and younger - and the older group consisting of 122 respondents over fifty years of age. The correlation between age and polarity or extremeness of responses on the thirty-two scales produced the coefficient of  $-.28533$  for the younger group, which is statistically significant.\* For the older respondents, a non-significant correlation coefficient of  $.06625$  was obtained.\*\*

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\*"t" value of  $-3.9506$ , significant,  $< .05$  level.

\*\*"t" value of  $+0.7270$ , not significant,  $> .05$  level.

It thus appears that the inverse relationship between age and polarity of response occurs prior to the fifty year mark, at which time the negative linear relationship no longer exists.

Corollary Hypothesis I: As educational level increases, there is a decrease in the tendency to select extreme or polar responses on the semantic differential technique.

As was true with the age distribution, over one-half of all responses (N=4,981)\*\*\* were found in the number 1 or most polar position (Table 10). The second position accounted for approximately 22.3% or 2,174 of the total 9,728 responses; while 1,260 (13.0%) of the responses were in the number 3 position. The neutral or fourth position was selected 1,313 times, accounting for 13.5% of all responses.

Further analysis reveals a correlation coefficient between educational level and extremeness of responses of .00788. The test of significance reports a "t" value of .1370, which is not significant at the designated .05 level. The hypothesis is not supported by these data. There does not appear to be a significant inverse relationship between educational level and selection of extreme or polar responses as the semantic differential hypothesis suggests.

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\*N=304; one respondent was omitted due to his failure to report his education attainment.

TABLE 10

Frequency Distribution For Responses to  
32 Semantic Differential Scales According  
to Educational Level of Respondent  
(N=304)

Education Level Of Respondent	Polarity Scale				Total
	1	2	3	4	
Grade School	1421	506	337	392	2656
High School	885	391	215	173	1664
H.S. Graduate	1542	786	431	473	3232
Some College	608	228	150	134	1120
College Graduate	364	141	92	75	672
Post Graduate	161	122	35	66	384
Total	4981 (51.2%)	2174 (22.3%)	1260 (13.0%)	1313 (13.5%)	9728 (100.0%)

Correlation Coefficient = .00788

"t" Value = .1370 (p > .05)

Corollary Hypothesis II: There is no difference in the tendency to select extreme or polar responses on the semantic differential technique between the sexes.

In Table 11 is presented the frequency distribution of responses to the thirty-two semantic differential scales according to the sex of the respondent. For both males and females, the number one or most extreme response was selected most frequently (N=4,990), followed by the number 2 position (N=2,195). These two positions account for approximately 73.6% of the total 9,760 responses. Males selected the third position more frequently (N=557) than the fourth or neutral position (N=504), while females preferred the fourth position (N=801) over the number 3 position (N=713).

A mean polarity score of 59.2030 was obtained for males, while the females contributed a higher mean polarity score of 60.8139. The "t" test of the difference between two means revealed a "t" value of -1.4636 (df=303), which is not significant at the designated .05 level. Thus, these data do support the hypothesis that there is no difference in the tendency to select extreme responses on the semantic differential technique between the sexes.

Summary: Although the polar position #1 was selected most often by respondents in all age categories, the correlation between age and polarity of responses has revealed that there is a

TABLE 11

Frequency Distribution for Responses to  
32 Semantic Differential scales According  
to Sex of Respondent  
(N=305)

Sex Of Respondent	Polarity Scale				Total
	1	2	3	4	
Male	2172	1023	557	504	4256
Female	2818	1172	713	801	5504
Total	4990 (51.1%)	2195 (22.5%)	1270 (13.0%)	1305 (13.4%)	9760 (100.0%)



decrease in the tendency to choose the extreme position with advancing age. Further analysis disclosed that this tendency occurs prior to the fifty year mark at which time it ceases to exist. The findings have also supported the corollary hypothesis that there is no difference in the tendency to select extreme or polar responses between the sexes.

Corollary hypothesis I, which states that as educational level increases there is a decrease in the tendency to select extreme or polar responses on the semantic differential technique, was not supported by these data. The correlation between educational level and polarity of responses was not significant at the .05 level.

## Chapter V

### Summary and Conclusions

The semantic differential technique is a relatively recent development in the social-psychological area. Designed to serve as a method of measuring "meaning," it can be considered as a multidimensional rating scale based on the assumption that words represent things. Furthermore, words produce in the human being "some replica of the actual behavior toward these things as a mediating process" (Osgood, et.al.: 1957:7). Meanings, however, vary to the extent that the individual's experience toward the things in question have varied. Thus, the specific meaning attached to a particular word or sign is dependent upon the nature of the behavior occurring at the time the sign was being established.

Three fundamental premises serve as the foundation for the semantic differential technique: (1) "The process of description or judgment can be conceived to an experimental continua, defined by a pair of polar terms;" (2) "Many different experimental continua, or ways in which meanings can vary, are essentially equivalent, and hence may be represented by a single dimension;" (3) "A limited number of such continua can be used to define a semantic space within which the meaning of any concept can be specified" (Osgood and Suci: 1969:43).

The semantic differential technique as employed in the present study should be considered as a combination of scaling procedures and controlled associations. Subjects are provided with a particular concept which is to be differentiated as well as a set of adjectival scales with which to do it. Furthermore, the polar terms are separated by a seven-step continuum. Subjects are requested to select a position along the continuum which best expresses their own feelings or attitudes about the particular concept in question. The direction chosen is associated with what specific mediators are being evoked, while the distance from the origin is associated with the intensity with which these mediating processes are evoked (Osgood, et.al.: 1957).

This methodological technique offers potential as a sociological research tool. Besides being a measure of "meaning," it also measures "emotional reactions rather than rational or well reasoned ones" (Kaufman: 1959:437). It does not require verbal responses, and has the capacity to tap dimensions and areas in which we lack an adequate or "well-differentiated" vocabulary for expressing feelings about these areas and dimensions. As Kaufman states, the semantic differential encourages the "intuitive, impulsive, emotional expressions of reactions" (1959:437). Such a tool could be employed by sociologists as an attitudinal measure or as a method for

acquiring information concerning the emotionally laden areas of social life; however, it requires refinement before being adopted in sociological research. The technique must first be examined in order to determine if such factors as age, education level, and sex influence responses. The present study had such an objective: to ascertain if such factors do indeed influence the tendency to select extreme or polar responses. However, the major aim of the present study was to determine if response selections on the semantic differential technique do support the developmental theoretical perspectives of Lewin, Werner and Kaplan, and Piaget. Common to each of these three theorists is the shift from homogeneity to heterogeneity and from less to more differentiation in psychic structure with age. Support for these theoretical perspectives could possibly assist the sociologist in attempts to understand variability in human social behavior as well as the complex process of socialization.

Based on the theoretical perspectives of Lewin, Werner and Kaplan, and Piaget, one central hypothesis and two corollary hypotheses were formulated: Central Hypothesis: As age increases, there is a decrease in the tendency to select extreme or polar responses on the semantic differential technique. Corollary Hypothesis I: As education level increases, there is a decrease in the tendency to select extreme

or polar responses on the semantic differential technique.

Corollary Hypothesis II: There is no difference in the tendency to select extreme or polar responses on the semantic differential technique between the sexes.

Data for the present study were obtained from 305 interviews conducted in Roanoke, Virginia. The interview schedule consisted of four sets of eight identical semantic differential seven-point scales as well as a series of questions designed to obtain demographic characteristics of the respondents. Interviews were conducted in the homes of respondents by graduate students enrolled in the Sociology Department's Advanced Research Seminar.

Analysis of the data revealed an inverse relationship between age and polarity of responses on the thirty-two semantic differential scales ( $r = -.11724$ ,  $p < .05$ ). This finding lends support to the developmental theoretical perspectives of Lewin, Werner and Kaplan, and Piaget. It does appear that the homogeneity to heterogeneity, less to more differentiation in psychic structure shift occurs with age. Such a shift permits more flexible behavior as has been demonstrated by the responses on the semantic differential technique. Variability in human social behavior could possibly be related to variability in psychic structure resulting by advancing age.

Furthermore, this inverse relationship between age and extremeness of response on the semantic differential technique supports earlier findings by Zax et.al. (1964) and Light et.al. (1965). In both of these studies, it was discovered that development, as considered by Lewin, Werner and Kaplan, and Piaget, plays an important role in the selection of extreme responses on the semantic differential technique.

Further analysis of the data revealed that this negative linear relationship between age and polarity or extremeness of responses ceases to exist when the responses of individuals over fifty years of age were considered. Possibly, this finding lends support to Donahoe's (1961) discovery that the evaluative factor, which accounts for over one-half of the common variance, asymptotes at an earlier age than the other two factors - activity and potency. This occurrence could be due to the fact that "the number of pairings between signs and the objects which they signify increases with age." (1961:23).

The first of the corollary hypotheses concerned the relationship between educational level and extremeness of responses on the semantic differential technique. Specifically, it was hypothesized that as educational level increased, there would be a decrease in the tendency to select extreme or polar responses. Earlier studies by Osgood and Stagner (see Osgood: et.al.: 1957) and Stricker and Zax (1966) discovered such an

inverse relationship between the two variables. The present study, however, failed to reveal significant inverse relationship between educational level and extremeness of response. It should be noted that the Osgood and Stagner study compared only the responses between college students and laymen, while the Stricker and Zax study involved responses from public school students. Neither of these samples was as heterogenous or as large as that of the present study.

Studies that support the present study are reported by Ware (see Osgood: 1962), Neuringer (1963), and Brod et.al. (1964) who also failed to discover an inverse relationship between educational level of the respondent and extremeness of response.

The absence of a significant inverse relationship between educational level and extremeness of response serves to shed further light on the developmental theoretical perspectives of Lewin, Werner and Kaplan, and Piaget. It appears that mental or psychic development occurs independently of education. Although education serves to broaden one's horizons, it does not appear necessary for the homogeneity to heterogeneity (undifferentiated to differentiated) shift in psychic structure to occur.

The data have also revealed that there is no difference on the tendency to select extreme responses between the sexes.

This finding supports the 1965 report by Light et.al. that extremeness of response and sex were unrelated. It is contrary to the earlier Berg and Collier (1953) finding that females tend to select more extreme responses. It must be noted, however, that Berg and Collier employed the Perceptual Reaction Test in their study, not the semantic differential technique.

Conclusions: The present study tends to support the developmental perspectives of Lewin, Werner and Kaplan, and Piaget. It was found that as age increases, extremeness of responses on the semantic differential technique decreases. This study has also helped to assuage the controversy as to the effect of age on the selection of extreme responses on the semantic differential technique. However, more research on the semantic differential is required in order to fully understand the technique. Differences in response patterns between the various specific age levels needs to be explored. The cessation of the negative linear relationship after fifty years of age also poses many interesting questions. Further examination of the effects of education on responses on the semantic differential could also be profitable. Such research may help us to even better understand the semantic differential: a technique which enables us to explain man's behavior through an under-



standing of his language - language which "makes possible the communication of meanings and the sharing of experiences among a people, enabling them to form an enduring society and to create and transmit a distinctive culture" (Krech, et.al.: 1962:273).

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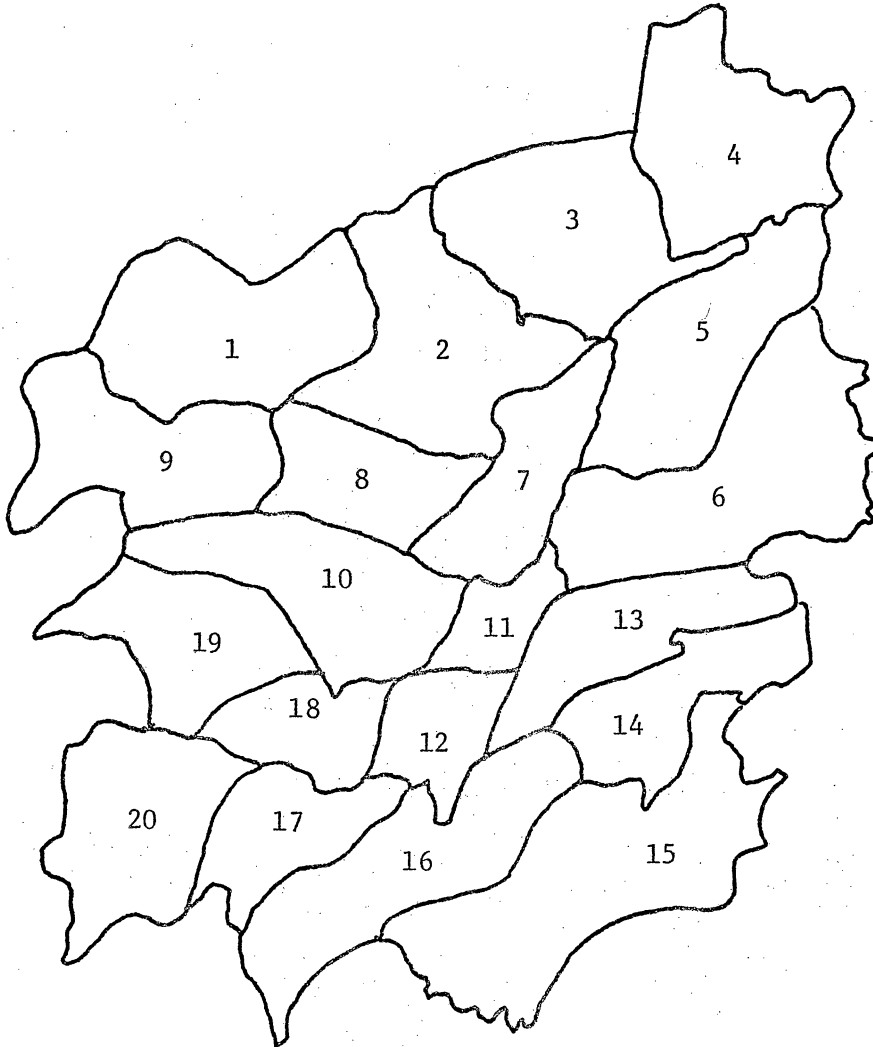
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APPENDIX A

Figure 1: Census Tract Map for Roanoke, Virginia

Figure 1

## Census Tract Map for Roanoke, Virginia



## Tracts Included in Study:

1	5	10	15	20
2	6	12	16	
3	8	13	17	
4	9	14	19	

APPENDIX B

Interview Schedule



ROANOKE SURVEY: NOVEMBER 1970

conducted by:

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY  
Research Project 373388-7

Tract \_\_\_\_\_ Area No. \_\_\_\_\_ Field No. \_\_\_\_\_

Address: \_\_\_\_\_

Status: Complete \_\_\_\_\_

Incomplete \_\_\_\_\_ Reason: \_\_\_\_\_

Refused \_\_\_\_\_

Callback Report:

Residence Type:

Date \_\_\_\_\_ Status \_\_\_\_\_ House, single detached \_\_\_\_\_

\_\_\_\_\_ House, Duplex \_\_\_\_\_

\_\_\_\_\_ House, multiple unit \_\_\_\_\_

\_\_\_\_\_ Apartment \_\_\_\_\_

Respondent: \_\_\_\_\_ Trailer \_\_\_\_\_

Sex: \_\_\_\_\_ Other (specify) \_\_\_\_\_

Date of Interview: \_\_\_\_\_ Time: began \_\_\_\_\_ ended \_\_\_\_\_

Interviewer: \_\_\_\_\_ No. \_\_\_\_\_

Coder: \_\_\_\_\_ No. \_\_\_\_\_

\*\*\*\*\*

DO NOT WRITE IN THIS SPACE

## RESEARCH INSTRUMENT FOR ROANOKE STUDY 1970

INTRODUCTION: I am \_\_\_\_\_ with Virginia Tech. We are conducting interviews in this area and want to ask you a few questions.

1. How long have you lived in the Roanoke Valley?

\_\_\_\_\_ years

\_\_\_\_\_ all my live (Skip to 3)

\_\_\_\_\_ refused

2. Where did you live before coming to Roanoke?

\_\_\_\_\_ does not apply (respondent lived all life in area)

\_\_\_\_\_ Name of community

Did you live in a rural \_\_\_\_\_ area?

\_\_\_\_\_ urban \_\_\_\_\_ area?

\_\_\_\_\_ suburban \_\_\_\_\_ area?

3. Have you ever heard of a body of water in this area called SMITH MOUNTAIN LAKE?

\_\_\_\_\_ No (Skip to 11)

\_\_\_\_\_ Yes

4. Do you remember how you first heard about SMITH MOUNTAIN LAKE?

\_\_\_\_\_ No

\_\_\_\_\_ radio/TV

\_\_\_\_\_ newspapers

\_\_\_\_\_ friend/neighbor

\_\_\_\_\_ found by accident

\_\_\_\_\_ other (specify)

5. Have you ever visited the lake?

No

Yes

How often?  once

occasionally

frequently

6. Do you know whether SMITH MOUNTAIN LAKE is a "man made" or a "natural" lake?

man made

natural

don't know

7. There is a dam at SMITH MOUNTAIN LAKE. Do you know who built the dam?

No

Government

Power Company

Other

8. Do you know if the water at SMITH MOUNTAIN LAKE is used for generating electric power?

No

Yes

Don't know

9. Do you know if there are boating, fishing or recreational facilities at the lake?

No

Yes

Don't know







And now to change the subject.

20. Do you follow the activities at any college?

No

Yes What kind of activities?

sports

education

extension activities

special programs (what?)

other (specify)

21. Where do you get most of your information about colleges?

don't know

a student

friends/relatives

radio/TV

newspapers/magazines

other (specify)

MY NEXT QUESTION WILL CONCERN STATE COLLEGES AND UNIVERSITIES.  
THESE ARE THE COLLEGES OPERATED BY THE STATE RATHER THAN BY A  
CHURCH OR PRIVATE GROUP.

22. What do you consider the most important thing a state college  
does?

education

research

social development

other (specify)

23. What would you consider the second most important thing a state college does?

- education
- research
- social development
- other (specify)

24. Where do state colleges get most of their financial support?

- don't know
- tuition
- taxes
- grants
- gifts
- other (specify)

25. What is the second most important source of money?

- don't know
- tuition
- taxes
- grants
- gifts
- other (specify)

26. Do the state colleges charge the same, more, or less for out-of-state students than they do for persons who live in the state?

- don't know
- same
- more
- less





- (14) I have never made any use of the services the state colleges offer.
- (15) There is little or nothing people like me can do to influence state college officials.
- (16) People like me have a lot of say about the way state colleges are run.

1 SA	2 A	3 N	4 D	5 SD

TURNING THE CARD OVER AGAIN, PLEASE INDICATE THE NUMBER YOU BELIEVE MOST CLOSELY DESCRIBES YOUR FEELINGS:

28. Consider the state college as an institution of higher learning:

VALUABLE	1	2	3	4	5	6	7	WORTHLESS
UNFAIR	1	2	3	4	5	6	7	FAIR
USEFUL	1	2	3	4	5	6	7	USELESS
UNPLEASANT	1	2	3	4	5	6	7	PLEASANT
HAPPY	1	2	3	4	5	6	7	SAD
UNIMPORTANT	1	2	3	4	5	6	7	IMPORTANT
GOOD	1	2	3	4	5	6	7	BAD
UGLY	1	2	3	4	5	6	7	BEAUTIFUL

29. Consider the state college as it provides services to citizens:

VALUABLE	1	2	3	4	5	6	7	WORTHLESS
UNFAIR	1	2	3	4	5	6	7	FAIR
USEFUL	1	2	3	4	5	6	7	USELESS
UNPLEASANT	1	2	3	4	5	6	7	PLEASANT
HAPPY	1	2	3	4	5	6	7	SAD
UNIMPORTANT	1	2	3	4	5	6	7	IMPORTANT
GOOD	1	2	3	4	5	6	7	BAD
UGLY	1	2	3	4	5	6	7	BEAUTIFUL

One final subject I would like to ask you about is the use of kinship terms.

30. Do you use kinship terms (such as son, daughter, uncle, aunt) to refer to members of your family and relatives?

- No  
 Yes  
 Refused

31. Sometimes members of religious groups or fraternal orders call each other "brother," "sister," or some other kinship term. Have you ever heard of kin terms used in this way?

- No (Skip to 33)  
 Yes

32. Have you ever used kinship terms in that way?

- No (Skip to 33)  
 Yes Would you say that you felt as close to that person as you would to a blood relative?

- No  
 Yes If yes, why? \_\_\_\_\_

33. Have you ever used a kinship term to refer to a person who is not a relative? For example, called a neighbor lady "aunt" etc.

- No  
 Yes When in your life did you do that?  
 as a youth  
 at the present time  
 both of above

34. When you used a kin term with a non-relative, did you feel that you were as close to this person as you would be to a relative?

\_\_\_\_\_ No

\_\_\_\_\_ Yes

35. Why did you use the kin term? PROBE

.....  
\_\_\_\_\_  
.....  
\_\_\_\_\_  
.....  
\_\_\_\_\_  
.....  
\_\_\_\_\_

FINALLY, A FEW QUESTIONS FOR CLASSIFICATION PURPOSES:

36. Are you married?

\_\_\_\_\_ single

\_\_\_\_\_ divorced

\_\_\_\_\_ separated

\_\_\_\_\_ married How many years? \_\_\_\_\_

37. Are there any children in your family?

\_\_\_\_\_ No

\_\_\_\_\_ Yes Number \_\_\_\_\_ How many live at home? \_\_\_\_\_

38. Are there any other adults that live in your home?

\_\_\_\_\_ No

\_\_\_\_\_ Yes Number \_\_\_\_\_

39. What is your occupation? \_\_\_\_\_

firm name \_\_\_\_\_

40. What is the occupation of your spouse? \_\_\_\_\_

firm name \_\_\_\_\_

41. What is the highest grade in school you completed?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
16 17 18 19 20

42. What is the highest grade in school your spouse completed?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
16 17 18 19 20

43. What is your age? \_\_\_\_\_

44. What is the age of your spouse? \_\_\_\_\_

45. Was your total family income last year over or under \$10,000?

(a) \_\_\_\_\_ over 10,000 Was it over or under 15,000

\_\_\_\_\_ over

\_\_\_\_\_ under

(b) \_\_\_\_\_ under 10,000 Was it over or under 5,000

\_\_\_\_\_ over

\_\_\_\_\_ under

THANK YOU FOR YOUR COOPERATION.

\*\*\*\*\*

INTERVIEWER'S COMMENTS

**The vita has been removed from  
the scanned document**

A STUDY OF FACTORS ASSOCIATED WITH SELECTIVE  
RESPONSE PATTERNS ON THE SEMANTIC DIFFERENTIAL SCALE

by

John Julius Beasley

(Abstract)

The semantic differential technique can be employed by the sociologist as an attitudinal measure or as a method for acquiring information concerning the emotionally laden areas of social life. The technique, however, requires refinement before being adopted in sociological research. It must first be examined in order to determine if such factors as age, educational level, and sex influence responses on the technique. The present study had such an objective; to ascertain if such factors do indeed influence the tendency to select extreme or polar responses. However, the major aim of the present study was to determine if response selections on the semantic differential support the homogeneity to heterogeneity (undifferentiated to differentiated) shift in psychic structure proposed in the theoretical perspectives of Lewin, Werner and Kaplan, and Piaget.

Data for the present study were obtained from 305 interviews conducted in Roanoke, Virginia. These data revealed that as age increases, there is a decrease in the tendency to select extreme responses on the semantic differential technique. This

finding lends support to the theoretical perspectives of Lewin, Werner and Kaplan, and Piaget. It was also discovered that there is no significant relationship between educational level and polarity of responses on the semantic differential. Furthermore, there existed no difference in the tendency to select extreme or polar responses between the sexes. These findings lend support to the theoretical perspectives of Lewin, Werner and Kaplan, and Piaget as well as provide further insight into factors which could possibly effect extremeness of responses on the semantic differential technique.