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The Effect of Systematic Desensitization and Information on Attitudes Toward the Physically Disabled

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THE EFFECT OF SYSTEMATIC DESENSITIZATION AND INFORMATION
ON ATTITUDES TOWARD THE PHYSICALLY DISABLED

BY

SUSAN F. COHEN

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
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ABSTRACT

This study was designed to investigate the modification of attitudes of the non-disabled toward physically disabled individuals via systematic desensitization and information. Subjects for experimental and control groups were taken from a pool of 212 non-disabled college freshmen and sophomores enrolled in basic psychology courses at the University of Rhode Island. Seventy-four subjects participated in the study. Their selection was made on the basis of their having little or no previous contact with physically disabled persons, and ATDP scores falling below the 50th percentile of students pretested.

The study was conducted considering the following assumptions:

(1) anxiety is aroused on the part of non-disabled in their interactions with the disabled and; (2) a relationship is established between anxiety and subsequent negative attitudes toward the disabled. Following this, three hypotheses were proposed: (1) systematic desensitization will reduce anxiety toward the physically disabled and thus, improve attitudes of non-disabled toward physically disabled individuals; (2) an increase in information about physical disabilities will allay anxiety in the non-disabled and therefore produce attitude change; (3) the combination of the two treatments will lead to the greatest significant positive change in attitudes of non-disabled toward the physically disabled.

Subjects were divided into four groups. One group received systematic desensitization over a period of four weeks (one session per

week). This was conducted using a hierarchy of imagined, increasingly anxiety-provoking interactions with physically disabled persons. A second group received information about the physically disabled in four, 20 minute sessions over a similar four week period. The third group received both treatments. The control group received no treatment. A questionnaire consisting of three measures of attitudes toward the disabled and one measure of anxiety toward the disabled was administered pre and post treatment (approximately a seven week interval).

The statistical analysis of the data by analysis of covariance revealed the following main results:

1. Systematic desensitization significantly lowered anxiety of the non-disabled toward the physically disabled, but did not significantly improve attitudes toward the physically disabled.
2. Information both significantly lowered anxiety and improved attitudes of non-disabled toward physically disabled individuals.
3. The combination of the two treatments did not have a significant effect, over and above the effect of information alone, on attitudes toward the physically disabled.

The implication was that providing information, on a large scale basis, is an effective means of improving the general public's attitudes toward the physically disabled. Systematic desensitization, on the other hand, may only demonstrate its effectiveness with individuals that have actual, regular contact with those who are physically disabled.

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INTRODUCTION

The destiny of the physically disabled, like the destiny of any other group in society, is dependent in part upon how they are accepted by society at large. Adverse attitudes toward particular groups are, more often than not, destructive to the potentials of members of that group. Erving Goffman (1963) discussed the potential handicapping effects of physical disabilities in terms of "stigma." He suggested that disabled individuals, who might otherwise be accepted in a variety of social situations, are viewed as neither whole or acceptable because of their disability. Instead, they are reduced in our minds to undesirable, possibly dangerous or inhuman creatures.

It is indeed a fact that disabled people are becoming an active and vocal minority in society today. They are no longer confined to their homes, institutions, or chronic care wards in hospitals. Their presence in society has a definite effect on the vast non-disabled population that must now come in contact with them. While legislation can be, and has been passed by the government permitting this prevalent minority their equal rights to employment, education and to all social and economic opportunities, the government cannot legislate positive attitudes.

The majority of the literature suggests in fact that many non-disabled people hold adverse attitudes toward the physically disabled. One tends to associate the concept disabled with words like inferior, unfit and weak. A study done on connotative reactions to disability

labels, for example, demonstrated that merely reading aloud the names of specific disabilities (i. e., cerebral palsy, blindness, etc.) connoted significantly more uncomfortable meanings than did reading aloud so-called neutral labels such as "white" and "normal" (Semmel & Dickson, 1966).

The existence of adverse attitudes toward the physically disabled would not be so crucial if attitudes had no influence on the ability of the affected group to function in society. This, however, is not the case. Adverse attitudes act as powerful barriers to the adjustment and functioning of the physically disabled. These attitudes not only alienate the disabled from society, but lessen their chances to fulfill their life potentials as well.

For adverse attitudes to change, some step must be taken that directly helps non-disabled individuals to overcome their fear of, their anxiety about, and their negative reactions to people who are physically disabled. Systematic desensitization is a technique designed specifically to help allay anxiety directed at objects, people and/or situations. It seems, therefore, that it may be a potent technique in lessening anxiety toward the physically disabled. It is the contention of this study that once anxiety surrounding interactions with the handicapped is diminished, attitudes will improve.

The purpose of this study is to offer systematic desensitization as a technique for improving attitudes of non-disabled toward the physically disabled. Additionally, the study aims at comparing the effects of systematic desensitization with providing information, a technique which, in the past, has been one of the primary modes of attitude change.

PREFERENCE AND DISABILITY

In reviewing the literature on attitudes toward the disabled, two things become apparent: first, peoples' attitudes are clearly polarized and second, attitudes are organized according to preference for particular disabilities. It takes little thought for a subject to report that he prefers one person over another, simply because of the type of physical disability that particular person displays. For example, in preference studies performed with children and adults, non-handicapped individuals are consistently preferred over handicapped individuals (Goldstein & Blackman, 1975; Colbert, Kalish & Chang, 1973; Richardson, 1971; Richardson, Goodman, Hastorf & Dornbusch, 1961). When comparing different kinds of disabilities, the specific type of disability is an important determinant of the favorability of peoples' attitudes. Elsberry (1974) found that non-disabled adults ranked physical disability as less desirable than either facial scarring, blindness or deafness. Whiteman & Lukoff (1962) reported that while physically disabled and blind individuals were ranked equally low, their subjects (non-disabled adults) believed blindness to be the "more destructive" of the two. Samerotte & Harris (1976) found that adults were less likely to help a person with a disfiguring handicap (i.e., eye patch and noticeable scar) than they were to help someone with a more neutral handicap (i.e. arm bandage). A number of studies have even reported norms for childrens' preference rankings of different disabilities. Most preferred, as stated

above, is consistently the non-handicapped child, with rankings from most to least liked as follows: child with leg brace; child in wheelchair, child with hand missing; child with facial deformity; obese child (Chigier & Chigier, 1968; Richardson, Goodman, Hastorf & Dornbusch, 1961). The general consensus is that the more noticeable the disability, the less favorably it is ranked.

The strength of the "noticeability" factor comes into question, however, when comparing attitudes toward the physically disabled with attitudes toward specific ethnic groups who are, in effect, also "noticeably" handicapped. In two major studies in this area researchers found physical disability to be such a powerful cue in determining childrens' preferences for other children that it almost completely masked the results of any preference based on color alone (Richardson, 1971; Richardson & Royce, 1968). However, a later study reported just the opposite--race was found to be the dominant factor determining childrens' preferences (Katz, Katz & Cohen, 1976). One explanation for these radically different results is that in the first two studies, the stimuli used were drawings of children with handicaps, while in the 1976 study, childrens' choices were measured in response to interactions with real people. The impact of this interaction effect was not taken into account. A replication of the Richardson and Royce study was completed with a Southern, black population where skin color was believed to be a more powerful determinant of behavior. The results reported suggest a compromise of positions. For Southern, black children, physical handicap and color were almost equally important in determining preferences. That is, when the usual most liked child (the non-handicapped child) was white, he remained the most preferred, but when he was black, his preference position dropped significantly (Richardson & Emerson, 1970).

In summary, it is apparent that the presence of the physical disability itself plays a central role in determining attitudes toward the disabled individual. Even in populations where race may be the predominant determiner of attitudes, when physical disability is introduced, the two factors are equally consequential in the formation of the attitude. It is also the concensus of these studies that the more noticeable the physical disability, the less liked the disabled individual.

PERSONALITY AND DEMOGRAPHIC VARIABLES AND ATTITUDES

Before attempting modification of attitudes toward physically disabled, it is important to consider what factors correlate with positive and negative attitudes. If there is, a priori, a particular group with positive attitudes, for example, there is no reason to include them in a study whose focus is enhancement of attitudes. One might also look to these variables for indications of areas to focus on when trying to improve attitudes toward the disabled. The following is a brief review of those studies that have correlated specific personality and demographic variables with attitudes toward disability. However, in evaluating these studies it should be noted that while some trends exist, individual variables more often than not, fail to consistently predict attitudes.

Age

There is general agreement that the older the person, the less favorable his attitude toward the physically disabled. Among children, five and six year olds have more favorable attitudes than older children (ages 11 and 12) with the greatest rate of shift in attitude occurring around the onset of adolescence. With increasing age, childrens' attitudes stabilize and more closely resemble those of their parents of the same sex (Richardson, 1970; Billings, 1963). Coet and Thornton, (1975) who also attempted to break down attitudes along age lines, found that middle aged persons (25-45) had less favorable attitudes toward the physically disabled than toward any other physically or emotionally handicapped

group. Persons in their teens and twenties least preferred individuals socially and/or economically handicapped, while persons over 45 least preferred the mentally ill. These results make sense in light of the Richardson study, for it appears that in middle age, attitudes toward physical disability are more negative than at any other time in one's life. The explanation for this may be, in part, the growing concern over vulnerability and mortality that one experiences during their middle years. In this case, the fear of becoming older, thus more vulnerable to disabling conditions--and therefore more like the disabled--leads to more negative attitudes toward physical disability.

Sex and Religious Preference

In most cases, sex has failed to correlate significantly with attitudes toward the disabled (Elsberry, 1974 ; Mussen & Barker, 1944; Moses, Rubin & Turner, undated). When significant differences have been found, however, they are reported in the direction of females having more favorable attitudes (Lazar, Orpet & Revie, 1971; Richardson, 1970). The explanation for this finding has consistently been the belief that females conform more to acceptable peer values and social expectations than do males. As for religious preference, it alone has no significant relationship to attitudes toward the disabled (Mussen & Barker, 1944; Moses, Rubin & Turner, undated).

Self Esteem

The way in which an individual views physical disability does bear a relationship to how he views himself. Adults who test high in areas of self esteem, for example, and children who rate high in areas of social adjustment, have more favorable attitudes toward the disabled than those low in self esteem and social adjustment (Lindowski & Dunn, 1974;

Billings, 1963). Members of stigmatized groups (i.e., the disabled, juvenile delinquents) have both lower self esteem and more negative attitudes toward the physically disabled than non-members (Comer & Piliavin, 1975; Evans, 1974; Dixon, 1973). Additionally, awareness of one's need for social approval also correlates positively with favorable attitudes toward the physically disabled (Moses, Rubin & Turner, undated).

Occupational and Cultural Background

It is possible that working with the physically disabled doesn't make for significantly better attitudes toward physical disability in general. Duntzman, Anderson and Barry (1966) found that students whose reported preference was for occupations in areas of physical rehabilitation had no more favorable attitudes toward the disabled than those preferring occupations in non-rehabilitation related areas. However, individuals in occupations which greatly emphasize intellectual skills have more favorable attitudes toward the physically disabled than people in occupations which place high emphasis on technique or require physical adeptness (English & Oberle, 1971; Jordon & Cessna, 1969).

Positive attitudes toward the disabled are also more characteristic of developed, modernized countries than traditional, agrarian societies. Again, the emphasis on intellect as opposed to physical abilities seems to be the crucial factor in determining favorability of attitude (Jordon & Friesen, 1968; Goodman, Dornbusch, Richardson & Hastorf, 1963). However, when the factor of parenting a handicapped child is added, any differences resulting from occupational or cultural variables are masked. For example, Dow (1966) found that parents of disabled children from both lower and middle class cultures had uniformly optimistic and positive attitudes toward the physically disabled. These results easily crossed

social class lines. The parenting, or closeness factor, is obviously much more important in determining subsequent attitudes toward the disabled than either occupational or cultural factors.

In summary, the results of these studies suggest that, with the possible exception of age and self esteem, there is no one personality or demographic variable that will successfully predict attitudes toward the disabled. It should also be noted as well that studies on age and self esteem were correlative and not causative. That is to say, if one were to attempt to improve a subject's sense of self esteem (at best a difficult task) the resulting improvement might have no effect on that subject's attitude toward the physically disabled. What is also apparent from these studies is that the closeness or contact factor may contribute more heavily to the formation of attitudes toward the disabled than any other factor mentioned. Some researchers have attempted to improve attitudes by manipulating this factor. These studies, as well as others that offer techniques to modify attitudes, are discussed in the following section.

ATTITUDE CHANGE

A majority of the research dealing with modification of attitudes toward the disabled can be broken down into four categories: a) those modifying attitudes via information about the disabled; b) contact with the disabled; c) simulated disabling experiences; and d) specific psychotherapeutic experiences. In the last category only, researchers attempt to deal with the emotional component of the attitude; in the other three categories, emotional responses to the physically disabled are virtually ignored. In this study, the proposal is made that what many regard as the primary emotional component of attitudes toward the disabled--anxiety--must be alleviated before these attitudes can improve. Perhaps the following attitude change studies have not been particularly effective toward this end because, despite the fact that some deal with subjects' emotional responses, none deal specifically with subjects' anxiety when in contact with the physically disabled.

Modifying Attitudes Via Information

There are approximately an equal number of studies which report that information successfully improves attitudes toward the physically disabled (as well as other handicapped groups) as those which report the opposite. Kinds of informative experiences vary from classroom lectures followed by lengthy discussions, to films providing little or no elaboration. All illustrate the initial point. For example, undergraduates taking courses in abnormal psychology had more favorable attitudes toward the

mentally ill than students taking no psychology courses (Costin & Kerr, 1962). In a second and third classroom study, graduate students in rehabilitation counseling had significantly more favorable attitudes toward the physically disabled than those majoring in non-related areas or than those majoring specifically in philosophy (Anthony & Carkhuff, 1970; Maglione, 1965). However, the following analogous classroom studies support the opposite position of no significant favorable attitude change toward the mentally or physically handicapped as a result of non-specific classroom lectures for specially trained as compared to regularly trained school teachers (Semmel, 1959); undergraduates in abnormal psychology courses as compared to those in non-related areas (Altrocchi & Eisdorfer, 1961); or masters students in rehabilitation counseling as compared to masters students in non-counseling areas (Kennedy & Anthony, 1972; Palmerton & Frumkin, 1969).

Unlike classroom lectures, courses designed solely for the purpose of attitude change toward the disabled have been, more consistently, effective toward that end. Shaw & Gillung (1975) developed a special six week course to improve teachers' attitudes toward mildly handicapped children by providing informative lectures on how to deal with these children in the classroom. Significant improvement in attitudes from pre to post test were found after six weeks, and were maintained for at least three additional months. A similar study by Brooks & Bransford (1971) reported equally successful results. Lazar, Gensley & Orpet (1970) successfully improved childrens' attitudes toward the physically handicapped through a special instructional program focusing on handicapped individuals who had made significant contributions to society.

In an analogous study with adults, researchers presented a series

of lectures and films illustrating social and vocational achievements of several disabled individuals. The post test found highly significant attitude change at the conclusion, and four weeks post the lecture-film series (Kiernan, 1974). However, Wyder, Wilson and Frumkin (1967) weren't quite as successful with their similar design. They found that while subjects undergoing a lecture on the achievements of the disabled reported a change in their perception of the disabled's ability to attain a successful family life, the same subjects showed no change in their perception of the disabled's ability to attain success in their personal, social or vocational functioning.

Brief lecture series which are strictly informative but do not address the emotional response of subjects to the disabled have demonstrated only moderate success in their ability to improve attitudes. While some examples of lecture series report favorable and significant results (Vincente, 1975; Matovu, 1974; McGinnies, Lana & Smith, 1958), others suggest that the amount of information alone has very little to do with the extent or modification of prejudicial attitudes (Merz & Pearlin, 1957). In such cases, subjects appear to accept only that information which is compatible with what they already believe. If they initially feel negatively toward the physically disabled, for example, they are unlikely to accept positive information about this particular group (Peak & Morrison, 1958). However, if the information addresses specific emotional issues (i.e., how one feels about the disabled), and is less purely informative, the chance of acceptance is greater, as is the chance of significant attitude change (Rusalem, 1967).

While it would appear that information alone is, at best, an inconsistent method for modifying attitudes toward the disabled, when the

technique is specifically designed with an emotional as well as informative component, the probability of producing attitude change is greatly enhanced.

Modifying Attitudes Via Contact

In 1961 G. Allan Roeher wrote that "when prejudiced people are brought into direct contact with minority group members. . .attitudes often undergo a gradual but deep change." While this statement supports the premise mentioned earlier that contact alone contributes greatly to favorability of attitudes toward the handicapped, there are a fair number of studies that question the effectiveness of contact as a technique to change attitudes. The kind of contact, and for what kinds of people, are certainly important factors in all these studies. One kind of contact is that which entails individuals who personally seek out experiences with the handicapped. For example, children and adults who know because of personal initiative, physically disabled individuals have more favorable attitudes toward the handicapped than those who have had no self-initiated contact with the disabled (Gaier, Lindowski & Jacques, 1968; Bateman, 1962). Adults who work side by side physically disabled also have favorable attitudes toward most handicapped groups (Arnholter, 1962). Nurses, after six to ten weeks volunteering on a psychiatric ward, demonstrate a more accepting and positive view of the mentally ill than control groups of nurses with no psychiatric experience (Lewis & Cleveland, 1966; Hicks & Spanner, 1962). And, it is generally held that students working in volunteer or companion programs in psychiatric hospitals (for two to five month durations) show significantly more favorable attitudes toward mental illness than students in equivalent control groups. For these students, in particular, attitudes about mental illness become more humanistic and less stereotypic (Chinsky & Rappaport, 1970; Keith-Spiegel & Spiegel, 1970; Kulik, Martin &

& Scheibe, 1969; Holzberg & Gewirtz, 1963). Finally, child health care workers who have completed a 20 hour per week clinical program with disabled and multi-handicapped children demonstrate significantly more favorable attitudes toward the physically disabled at the end of the two year program than at the program's onset (Felton, 1975). The consensus of these studies, therefore, suggests that for individuals who independently seek out experiences with particular handicapped groups, contact with such groups proves an effective means for creating favorable attitudes.

For individuals expressing no interest in particular handicapped groups, contact with the disabled can be equally effective in improving attitudes. For example, Mosely (1973) found that children in integrated schools (disabled and non-disabled) had more favorable attitudes toward their handicapped peers than children in non-integrated schools. In a second study, students exposed to live discussion groups or video tapes of disabled individuals reported more favorable attitudes toward the handicapped than students exposed to audio-taped discussions or to no treatment at all (Donaldson, 1976).

The contact variable is less consistent in predicting favorable attitude change for those individuals who are close relatives of physically disabled persons, and thus, in effect, in forced contact situations. While it may be, as Roehrer suggested, that intimate and regular contact with a specific disabled group diminishes the relative severity of that disability in the eyes of the perceiver, some studies report the opposite. Barsch (1964) found that parents of children with differing handicaps perceived other handicaps as more severe than the one their own child had. However, when films of physically disabled individuals were shown to close and distant relatives of stroke and spinal cord patients, post tests demonstrated

that only distant relatives showed significant positive attitude change toward the physically disabled. The close relatives showed no attitude change, and researchers hypothesized "ego involvement" to be the crucial factor accounting for the different responses on the part of the two groups. Distant relatives, whose sense of selves had little to do with their disabled kin, more readily demonstrated favorable attitude change after additional contact than close relatives, whose sense of selves were intrinsically tied to the disabled (Olsen, 1968).

It appears that while contact is often successful in modifying attitudes toward the disabled, the effect may actually be limited in scope. Smith (1969) found that while a psychiatric hospital experience initially improved student nurses' attitudes toward the mentally ill, the improvement was slight and did not increase the longer the hospital experience. Another study reported that for college freshmen at a university with a fairly large population of disabled students, only the attitudes of females considerably improved at the end of the semester. Males showed no attitude improvement toward physically disabled peers (Urie & Smith, 1970). Jaffe (1967) found that contact with the mentally retarded influenced the cognitive dimension of attitudes, but not the affective dimension. In this study, beliefs about the retarded, as opposed to feelings about the retarded, were altered through contact.

The following studies are in direct disagreement with those previously mentioned, and strongly support the opposite position that contact does not improve attitudes toward the handicapped. For example, in a review of early literature (1927-1958) on attitudes and contact with the disabled (specifically contact via institutional tours), Warren, Turner and Brody (1964) found at best, mixed results. In their own study, where 80

college students took a day long tour of an institution for the mentally retarded, results reported no favorable attitude change at the completion of the tour. In fact, in terms of subjects' reported preference for working with mentally retarded children, stated preferences were significantly more negative after the tour than before. Camp counselors who spent a summer working with a unit of handicapped children also showed less positive attitudes toward the handicapped at the end of the summer when compared to those counselors who dealt only with non-disabled children at camp (Dibner, 1973). Eight hours of social contact with visibly disabled veterans was found to be an ineffective procedure for modifying attitudes of 104 non-disabled women (Granofsky, 1956). The overall picture, in fact, showed little fundamental change in a positive direction. A later study reported that the two factors of "ease of avoidance" and "enjoyment or contact" were the best predictors of favorable attitudes toward the physically disabled (Palmerton & Frumkin, 1969). It would then appear that any "forced contact" situation, especially like the one presented in the Granofsky study, would not be a particularly desirable technique to employ when trying to improve attitudes toward the disabled. The subjects in this study felt at best, coerced, and at worst, fearful of the men with whom they were potentially socializing.

In summary, contact is particularly successful in improving attitudes toward the physically disabled when the nature of the contact is self-initiated, enjoyable, time-limited and basically uninvolving.

Modifying Attitudes Via Simulated Disabling Experiences

At a high school where a relatively large number of blind students attended, researchers noted particularly stereotypic and negative attitudes manifested in pity, undue sympathy and fear of the blind. Programs

were developed in this school, as well as others, which involved non-disabled students in simulated blindness situations with discussions following their experiences. Students, in blindfolds, were asked to cope with everyday challenges including identification of objects, sounds and odors. The Attitude Toward Blind People Scale was administered and results reported significant attitude change in a positive direction after the experience (Koch, 1975; Marsh & Friedman, 1972.) In a similar study, McDonald, Friedman and Weinberg (1973) suggested that students who underwent simulated blindness experiences demonstrated certain sensitivities and insights into the blind that were, in part, the result of their own brief period of "blindness." Perhaps, in simulating a disabling condition, one begins to recognize that disabled people can have the same feelings, beliefs and attitudes as their non-disabled peers--that they are, in fact, not very different from the able-bodied. This recognition may be one of the most important factors effecting attitude change toward the physically disabled (Asher, 1973).

In all the above studies, the simulated disabling experience focused on blindness as the disability. The following study, in which subjects were asked to spend 24 hours in a wheelchair to simulate paraplegia, reported startlingly different results. Experimental subjects did not adopt more favorable attitudes toward the disabled after the experience. In fact, the procedure served to crystalize pre-existing attitudes, not to change them. People who had positive attitudes toward the physically disabled pre treatment had more positive attitudes post treatment; people with unfavorable attitudes pre treatment, reported more negative attitudes post treatment (Ingwell, 1973). Perhaps both the length of time in the disabling situation (i.e., 24 hours as opposed to one or two hours) and the nature of the disability, combined to produce a less favorable result. As suggested

in the previous section on Contact, the two important factors in predicting favorable attitudes toward the disabled are ease of avoidance of contact, and lack of ego involvement with a disabled population. Subjects in wheelchairs for 24 hours were possibly more ego involved, probably more uncomfortable, and actually more disabled than subjects wearing blindfolds for two hours. One would therefore expect less favorable results at the completion of such an experimental treatment.

Modifying Attitudes Via Psychotherapeutic Experiences

Two studies have demonstrated that role playing, the therapeutic technique of verbalizing to others opinions which do not correspond to one's own, is an effective means of modifying attitudes. While Janis and King (1954) were successful in altering attitudes about a slightly controversial subject (whether there will be a cure for the common cold), Culbertson (1957) successfully modified attitudes toward a highly emotional subject--the support of racial integration in a white housing project.

The underlying theory in role playing assumes projection of feelings and subsequent arousal of self insight to be the modifying forces in attitude change. However, studies which attempt to modify attitudes toward racial prejudice through the arousal of self insight alone report mixed results. While Katz, Sarnoff and McClintock (1956) found that subjects who gained insight into the nature of their prejudicial attitudes reported more favorable attitudes toward blacks in general, these results bore out only for subjects low in ego defensiveness (the state of defending against inner conflict by projecting unacceptable impulses.) The attitudes of subjects high in ego defensiveness did not improve as a result of insight. A similar study, however, reported successful results when modifying prejudicial attitudes through the examination of deep, underlying motivations for holding such attitudes (Stotland, Katz & Patchen, 1959).

A more classic psychotherapeutic technique--group therapy--was the focus of an attempt to improve parents' attitudes toward their own handicapped children. It was suggested that the child's adjustment to his handicap is facilitated or limited by his parents' reactions to, and his ways of coping with, the problem; these coping mechanisms are, in turn, a function of the parents' own psychological dynamics. The study reported no quantitative results, but offered the observation that the parents who became involved in the process of their own inner growth were better able to respond, with empathy and understanding, to the inner life of their children (Heisler, 1974). It appears however, that although favorable results can be obtained through psychotherapeutic experiences, the process is often tedious and time-consuming--the results often elude quantification.

ANXIETY AND ATTITUDES

In reviewing the literature on attitude change, Festinger (1964) reported a startling discovery--he found only three studies that related actual attitude change with actual behavioral change. That is, although many experimenters have successfully modified attitudes, very few have successfully demonstrated a change in behavior subsequent to the attitude shift. A subject might report that his attitude has changed, but may behave toward the attitude object in the same way as he did prior to the change. The theory of attitude structure that describes attitudes as comprised of three unique components--affective, cognitive, behavioral--may in part, explain Festinger's discovery (Mann, 1960; Katz & Stotland, 1959). If, for example, in attitudes toward the physically disabled, the affective component is not changed, then subsequent behavior, as well as feelings toward the physically disabled, may also remain unaltered. This idea was alluded to in the introduction of major categories of studies attempting modification of attitudes toward the disabled. It was then stated, and now reiterated, that few experimenters who have attempted such modification have addressed themselves to this affective component of attitudes toward the physically disabled. The present study, however, proposes to direct itself to just that component. It is believed that the source of negative attitudes toward the physically disabled lies in the feelings, especially those of discomfort, unpleasantness and anxiety, that are aroused when non-disabled individuals come in contact with the physically disabled, and that these feelings, specifically anxiety, may explain resulting negative

attitudes. If one deals directly with this source of negative attitudes --anxiety--and eliminates it, the result may be the creation of a more favorable attitude toward the physically disabled. There is both theoretical and behavioral evidence in the literature to support the position that anxiety is aroused in non-disableds' interactions with the physically disabled.

Theoretical Evidence for Anxiety/Attitude Interaction

In 1935 Schilder suggested that physical difference creates a sense of uneasiness within a non-disabled person. The main reason for the uneasiness was attributed to the belief that the concept disability threatened an otherwise non-deformed concept of one's own body. It was some time later that theorists began to attribute this sense of threat, and hence fear and avoidance, to unconscious motives. In 1953, a textbook in social psychology ascribed widespread avoidance of the physically disabled to three unconscious mechanisms: (1) the belief that a physical disability is a punishment; (2) the fear that this punishment may have been unjust and thus provoke the disabled to demand retribution; and (3) the projection of the non-disableds own unacceptable desires on the disabled and the resulting belief that he is dangerous (Barker, Wright, Meyerson & Ganick, 1953).

In addition to unconscious motivations, the notion was soon to be advanced in social psychology that individuals like those who are similar to themselves and dislike those who are different. It was only natural, then, for it to be suggested that an additional reason for the rejection of the disabled could be their difference in, and strangeness of, appearance (Wright, 1960). Dissimilarity, or more exactly, that which does not fit in with our ordinary, everyday expectations, evokes discomfort

and fear. The fact of dissimilarity in this case is the individual with a physical handicap.

Being perceived by this vast, non-handicapped population as different and odd, the mere presence of physically disabled persons tends to make normal social relationships extremely difficult (Davis, 1961). The visibly disabled naturally call a certain amount of attention upon themselves and, especially in social settings, the non-disabled individual may find himself in the position of trying to ignore the disability. Whether the non-disabled observer chooses this position because of his own discomfort or not, the choice forces him to direct himself to the totality of the disabled person when in fact, his focus of attention is more likely on the specific disability. The resulting interaction arouses discomfort and awkwardness, and leads to negative feelings on both parts.

A more recent article also places a great deal of significance on the concept of anxiety when discussing reactions to physically disabled and/or disfigured individuals. The anxiety reaction was singled out as the most common reaction of both non-disabled and disabled individuals to physically handicapping conditions (Stone, 1976). Disability reportedly caused either real (in the case of the disabled) or imagined (in the case of the non-disabled) threats to one's sense of well being, these threats eventually leading to avoidant behavior and negative attitudes.

The primary focus of theoretical positions, therefore, has been to examine when and how anxiety is aroused in interactions between non-disabled and disabled persons. Experimental research more clearly relates the extent of this anxiety to resulting negative attitudes. A review of this research will be divided into the categories of correlational and behavioral studies. The behavior studies will be further broken down into

those that use non-physiological measures as opposed to those that use physiological measures of anxiety.

Correlational Studies

The theoretical position of Chevigny and Braverman, that negative attitudes to blindness are derived from man's castration anxieties, was tested by comparing men's and women's verbalized attitudes toward this disability (Cowen, Underberg & Verillo, 1958). While results showed a very strong tendency ($p=.06$) for males to verbalize more negative attitudes than females, the p value of .06 alone was not seen as strong enough evidence to support a theoretical position based on the concept of castration anxiety. However, a clearly significant negative relationship was found between anxiety and attitudes toward blindness for the male and female non-disabled adults tested (Whiteman & Lukoff, 1965). Those sighted individuals with more expressed anxiety tended to view the emotional life of blind people as "more unpleasant and abnormal" than those with lesser degrees of expressed anxiety.

In 1964 Siller tested the similar hypothesis that anxiety works against a free acceptance of the disabled, by correlating adult, non-disabled subjects' scores on two self-report measures of anxiety with their scores on the Attitudes Toward Disabled Persons Scale (ATDP). Out of six possible correlations that were reported, four were significant and the fifth showed a trend in the predicted direction. A later study, also attempting to examine the relationship of anxiety and attitudes toward the disabled, reported similar results. These researchers used a self report measure (Welsh Anxiety Scale) as well as projective techniques (Rorschach, TAT, DAP) to determine the presence and extent of subjects' anxiety. While no significant correlations were obtained for the projective measures, the Welsh Anxiety Scale showed significant negative correlations with attitudes toward disabled

persons for all three populations studied--non-disabled junior high school, high school and college students (Siller, Ferguson, Chipman & Vann, 1967).

In a publication by Yuker, Block and Young (1970) a number of unpublished articles on reactions to physical disabilities were reviewed. When anxiety was the measure being considered, reviewers reported that all studies showed negative correlations between anxiety and attitudes toward the disabled. The results showed that in general, the more anxious subjects tended to be the less accepting of a disabled population.

Only one correlational study was found that did not support the hypothesis that anxiety predisposes one to rejecting attitudes toward the disabled. The authors of this study believed that anxiety ratings, which were obtained from measures on the Rorschach and TAT, may have been doubtful because the lack of validity of these projective techniques (Siller & Chipman, 1965). The results, as well as the explanation, are similar to those reported in the above mentioned study (Siller, Ferguson, Chipman & Vann, 1967) and lend further skepticism to the use of projective techniques as accurate measures of anxiety.

Behavioral Studies - Non-Physiological

In the mid 1940's a neurological theory was proposed to account for what appeared to be a common fear response in animals to the strange and the different. The theory was formulated from an experiment which demonstrated that chimpanzees exhibit spontaneous fears (as defined by avoidant and unusual excitation behavior) in the face of mutilated, dismembered and unresponsive bodies (Hebb, 1946). The researcher concluded that man's behavior, in the face of similar stimuli, is like that of the chimpanzees, and both may be seen as the product of a conflict that is aroused by perceptions that are incompatible with previously experienced reality. A

second, more tentative conclusion of this research was that this exhibited fear is innate. A later study lending support to the notion that the fear is, to some extent, unlearned, was performed with four month old infants who were presented with three-dimensional representations of either distorted or familiar faces. The results reported that while infants fixated on both the distorted and familiar faces for the same length of time, smiling and large decreases in heart rate were significantly more frequent to the familiar face (Kagan, Henker, Hentor, Levine & Lewis, 1966). Thus, it is suggested that whether unlearned or not, as early as infancy one begins to associate the unfamiliar and distorted with distress and anxiety.

A third study hypothesized that the presence of an amputation represents a threat to the body image of the non-amputee and that this threat is reflected in more rejecting attitudes toward amputees than non-amputees. Here again the results supported the hypothesis. Centers and Centers (1963) reported that subjects, who were children ages five to 12, most frequently reported the amputee child as both the least liked and saddest child in their class.

Studies that test similar hypotheses with adults often measure rejection and/or aversion by asking subjects to give self reports of their feelings when interacting with the disabled. For example, when male high school students were asked to report on a seven-point scale how emotionally comfortable they felt in the presence of disabled and non-disabled persons, significantly less emotional comfort was reported when the interaction was with the disabled as compared to the non-disabled individual (Kleck, 1966). Personal space or distance between people has also been used as a measure reflecting negative attitudes and aversive reactions to the disabled. Researchers recently found that significant differences in spatial

distances were employed in interactions with stigmatized, disabled persons as compared to interactions with non-stigmatized, non-disabled persons (Worthington, 1974).

Behavioral Studies - Physiological

The physiological measures discussed in the following studies are galvanic skin response (GSR), heart rate, and changes in voice modulations. Because they measure actual body changes, physiological measures are often employed in research to reflect the state of arousal associated with anxiety.

Kaiser and Moosbrucker (1960) proceeded by presenting photographs of neutral items, normal persons, or persons with visible disabilities to subjects who scored one standard deviation above or below the mean on the ATDP. Results reported a significant difference between base GSR readings and GSR readings taken during presentations of photographs of overtly physically disabled persons. A significant difference was also found between GSR's of persons obtaining high scores as compared to persons obtaining low scores on the ATDP. The authors concluded that physical disability not only arouses anxiety, but that there is a relationship between the extent of that anxiety and resulting attitudes. A second experiment using GSR as the measure of arousal did so while subjects interviewed either handicapped or non-handicapped individuals. The handicapped interview condition created more emotional arousal as measured by GSR than the non-handicapped interview condition (Kleck, Haroshi & Hastorf, 1966).

Marinelli and Kelz (1973) found that subjects with negative attitudes toward cosmetically disabled persons showed both more state anxiety (as measured by increased heart rate) and more trait anxiety (as measured

by the Manifest Anxiety Scale) than subjects whose attitudes were more positive. Again, an inverse relationship between anxiety and attitudes was supported. Marinelli (1974) reported that subjects who interacted with visibly disabled peers showed an increase in heart rate greater than those interacting with non-disabled peers. The increase, although not significant, approached significance in the predicted direction. When a self report measure was used with the same population, a majority of the subjects reported feeling significantly more uneasy when interacting with the disabled as opposed to the non-disabled peer.

To behaviorally test the hypothesis that people have negative attitudes toward disability because it arouses a threat or anxiety, Vanderkolk (1976) asked subjects to verbally list, in order of "most willing to least willing to acquire," 11 groups of people with mental or physical disabilities. Using a measure of stress that charts voice modulations, Vanderkolk found that subjects, as a group, demonstrated stress significantly above situational stress in relation to verbalizing all 11 disabilities.

The above studies lend strong support to the twofold hypothesis that (1) anxiety is aroused on the part of the non-disabled in their interactions with the disabled and (2) a relationship is established between anxiety and subsequent negative attitudes toward the disabled. Since anxiety appears to play such an important role in the formation of negative attitudes toward disability, in trying to produce attitude change it would seem reasonable to use a technique geared toward lessening anxiety. Systematic desensitization has commonly been used as such a technique (Wolpe, 1969; Wolpe & Lazarus, 1969) and has recently been employed as a strategy to modify attitudes. The following is a discussion of behavioral measures in general used to induce attitude change with particular focus on system-

atic desensitization as such a strategy.

Attitude Change Studies - Behavioral Approaches Focusing on Anxiety

Buckout and Rosenberg (1966) used verbal reinforcement as the behavioral technique to modify attitudes by asking unsuspecting subjects to verbalize opinions about television counter to their own. Results showed that positive verbal reinforcement of opposing attitudes led to significant long term affect change (30-60 days) in the direction of the opposing attitude. Early (1968) taught children to verbally associate words with highly positive evaluations with the name of the child most socially isolated in their classroom. Significant changes occurred in childrens' free play behavior after treatment, with the socially isolated child being asked to play with other children significantly more often than before.

Imagery and covert reinforcement, techniques similar to systematic desensitization, have both been used successfully to modify attitudes. Cautela and Wisocki (1969) asked subjects to imagine scenes in which an elderly person comes to their aid in a life or death situation. Questionnaires measuring attitudes toward the elderly were administered pre and post treatment. Significant differences in a positive direction between first and second administration were reported. In a second experiment, subjects were asked to imagine as vividly as possible a mentally retarded person. Asked to put that picture out of their minds, they were taught to relax and then imagine doing something they greatly enjoyed. This technique differs from systematic desensitization only in that the disturbing scene (mentally retarded person) is paired with the relaxing scene without the Experimenter overtly specifying the nature of the association. Pre and post testing on the Mental Retardation Opinionnaire found experimental subjects to demonstrate significantly more favorable attitudes toward the

mentally retarded than controls (Cautela, Walsh & Wish, 1971).

Surprisingly few studies using systematic desensitization to modify attitudes have been found in the literature. Bandura, Blanchard and Ritter (1969) hypothesized that systematic desensitization would produce favorable changes in attitudes, as well as behavior, toward reptiles in persons with snake phobias. Attitude questionnaires and the Semantic Differential were administered pre and post treatment. After treatment, subjects' attitudes toward reptiles improved significantly. Haddle (1973) attempted to improve college students' attitudes toward the blind through the use of group systematic desensitization. The treatment consisted of four sessions in which subjects were taught to associate a feeling of deep relaxation with increasingly more disturbing scenes including blind persons. The results of a series of attitude questionnaires showed no significant differences in attitudes post treatment. The author's explanation of the failure to obtain significant results lay in two crucial factors: the subjects at the outset did not have particularly negative attitudes toward the blind, and the entire procedure was automated and allowed for no therapist contact during treatment sessions. Frazier (1975) also failed to obtain significant results in his attempt to use systematic desensitization to improve subjects' attitudes toward the mentally ill; however, subjects did show a significant decrease in anxiety toward mental illness post treatment.

In summary, the literature clearly suggests that anxiety is aroused on the part of the non-disabled in their interactions, either fantasized or real, with the disabled, and that there is a close link between this anxiety and subsequent negative attitudes toward physical disability. There is also some evidence to suggest that where anxiety plays an important role in the formation of attitudes, a behavioral technique such as systematic desensitization may be effective in producing attitude change.

HYPOTHESES

The major hypothesis of this study is that anxiety is aroused when the non-disabled interact with physically disabled persons, and that this anxiety may explain resulting negative attitudes. The following prediction derives from this hypothesis: using systematic desensitization to reduce anxiety in the non-disabled toward the physically disabled will result in a significant positive change in attitudes of these non-disabled toward physically disabled individuals.

A second hypothesis is that information about physical disabilities will help allay anxiety in the non-disabled and therefore produce attitude change. The following two predictions derive from this hypothesis:

- (1) an increase in information will lead to significant positive change in attitudes of non-disabled toward physically disabled individuals;
- (2) the combination of systematic desensitization and information will lead to the greatest significant positive change in attitudes of non-disabled toward physically disabled individuals.

METHODS

Subjects

Subjects for the experimental and control groups in this study were taken from an initial pool of 212 non-disabled freshmen and sophomores enrolled in basic psychology courses at the University of Rhode Island. All 212 subjects participated in pretesting, at which time they were told the time commitment involved if selected for participation (five hours over five weeks), and that upon completion of the requirements of the study, they would receive extra credit in their particular psychology courses. Of these 212 subjects, 12 were eliminated because they did not meet the requirement of having little or no previous contact with physically disabled individuals. This criterion was upheld because the literature suggests that extent and quality of contact are important, although inconsistent variables in the formation and changing of attitudes toward the disabled. Contact was assessed in the following manner: subjects indicated on a biographical form which contact category they fell into:

- Great Deal of Contact: Live or lived with one or more persons who are physically disabled;* see person almost every day who is physically disabled
- Some Contact: Relative, friend, neighbor, etc., who you see and speak to at least twice month is physically disabled
- Little or No Contact: Casually met, saw or was introduced to one or more physically disabled persons; never met anyone who is physically disabled.

*physically disabled is defined as person in a wheelchair paralyzed from the waist down, or person with either one or both limbs missing

Additionally, previous research in the area of attitude change has often failed to use subjects whose attitudes were initially unfavorable toward the object being measured, and have therefore not always obtained significant results. This experiment used only those subjects who on pretesting, fell in the bottom half in their scores on the Attitudes Toward Disabled Persons Scale - Form B. Therefore, of the remaining 200 subjects pretested, 100 were selected for participation in the study.

Data on subjects' age, college major and socioeconomic background was collected during pretesting. These three variables were randomized across groups and subjects were selected for specific group membership by using a table of random numbers. Originally, 25 subjects were assigned to each of four groups.

Of the total 100 subjects, 26 eventually dropped out of the study (four from the information group; five from the desensitization group; eight from the desensitization and information group; nine from the control group) leaving 74 subjects who completed the entire experimental treatment. The majority of subjects in the treatment condition who dropped out of the study (15) did so because they felt that they could not make the time commitment required to complete the experiment. Two subjects became ill during the treatment and were unable to attend make-up sessions. Subjects in the control group who dropped out failed to report, even after telephone reminders, to assigned posttest sessions.

Of the remaining 74 subjects, whose mean age was 18.95, 64 were women and 10 men. In the initial group of 100 subjects, there was also a disproportionate number of women to men--72 to 18. This disproportionality was not considered significant given that results of previous research fail to correlate attitudes toward the disabled with gender.

Measures

The measures used in this study were the Attitudes Toward Disabled Persons Scale (ATDP - Form B), the Semantic Differential (SD), the Social Distance Scale (SDS) and a modification of Wolpe's Subjective Unit of Distress Scale (SUDS).

The ATDP, first published in 1960 by Yuker, Block and Campbell, was specifically designed to measure attitudes toward the disabled. It has been used in numerous research papers (Anthony & Carkhuff, 1970; Noonan, Barry & Davis, 1970; Palmerton & Fromkin, 1969) and is of acceptable test-retest (.71-.83) and split-half (.79-.87) reliability (Yuker, Block & Youngg, 1970; Siller & Chipman, 1964). Validity studies have correlated the ATDP with a number of measures which assess general levels of prejudice (Yuker, Block & Youngg, 1970; Anthony, 1969). The scale consists of 30 opinion items about physically disabled individuals to which subjects respond by indicating the extent of their agreement or disagreement according to a scale ranging from +3 to -3. A final score is obtained by adding all items plus a constant. A final low score, relative to other scores, indicates the subject perceives disabled as different from and inferior to non-disabled. A final score that is high indicates that the subject perceives disabled as similar to non-disabled with no added negative connotations.

The SD has been used widely in research as an attitude measure (Harasymiw & Horne, 1975; Jaffe, 1967) and is of acceptable test-retest (.85) reliability (Osgood, Suci & Tannenbaum, 1957). A validity study determined that the terms "self," "ideal self" and "neurotic self" used in the SD are significantly different from each other at the .001 level (Grigg, 1959). A second validity study found 13 of 16 adjective pairs in

the SD to statistically demonstrate "functional antonymy" (Mordkoff, 1963).

The SD consists of a number of bipolar adjectives which one rates on a seven-point scale with respect to a particular concept. This study used three concepts for the SD: Person in a wheelchair paralyzed from the waist down; Person with either one of both limbs missing; Peer in a wheelchair paralyzed from the waist down. Each bipolar adjective relates to a specific factor. In this study, the three concepts were scored on the three factors: Evaluation, Potency, Understandability. The Understandability factor, previously used by Nunnally (1961) in his research on attitudes toward mental illness, is also assumed to be an important component of attitudes toward the physically disabled. It was defined by the scales: predictable-unpredictable; understandable-mysterious; familiar-strange; simple-complicated. The Evaluation factor was defined by the scales: pleasant-unpleasant; self reliant-dependent; ugly-beautiful; bad-good; kind-cruel; grateful-ungrateful; successful-unsuccessful, easy to get along with-hard to get along with. The Potency factor was defined by the scales: sharp-dull; strong-weak; happy-sad; relaxed-tense; serious-humorous; sweet-bitter; static-dynamic; masculine-feminine.

The concepts Person in a wheelchair paralyzed from the waist down, Person with either one or both limbs missing, Peer in a wheelchair paralyzed from the waist down, with the three factors of Evaluation, Potency and Understandability were the direct measures of attitudes toward disability.

The SDS developed by Bogardus (1933), has been one of the most widely used tests of social attitudes in psychological research (Campbell, 1953) and is of acceptable split-half (.94-.97) reliability (Murphy & Likert 1938; Likert, 1932). Acceptable validity was demonstrated by Hartley (1946)

who found a "general tolerance level," or less prejudice, to correlate with less prejudicial choices on the SDS. An SDS score was obtained by asking subjects to report the kinds of relationships, six in all, (as modified by Jaffe, 1967) they are willing to accept with a member of each of the following groups: Person in a wheelchair paralyzed from the waist down, Person with either one or both limbs missing, Peer in a wheelchair paralyzed from the waist down. The above three concepts were the direct measures of attitudes toward dissabiltiy.

The SUDS has been cited as an acceptable measure of change in anxiety in numerous research studies (Frazier, 1975; Prochaska, 1971; Wolpe, 1969). The modification used in this study consisted of 40 sentences or "scenes" involving interactions with a physically disabled person. Underneath each sentence is a line 100mm long with the numbers 0, 50, and 100 marked off at the corresponding 0mm, 50mm and 100mm points (as described by Frazier, 1975). Each subject was asked to read the sentences and to visualize himself in the particular interaction being described. The subject was asked to make a slash mark (/) at the point on the line which reflected the amount of anxiety each interaction elicited. 100 was considered as extremely anxious, 50 as an average amount of anxiety, and 0 as completely relaxed. The score obtained for the SUDS was the distance in millimeters of the subjects' slash marks from the zero point on each line, totaled for all sentences in the study.

Some of the pretest scores on the SUDS were used to develop the hierarchy for the desensitization procedure. The Experimenter extracted 15 common items from the list of 40 which individual subjects found to be increasingly anxiety provoking. The items used in the hierarchy were not included in the post test, although all remaining items in the pre and post test

were the same. Therefore, a total of 25 sentences were scored on the post test measure of the SUDS.

A total of 14 dependent variables were derived from the scoring: the post test score on the ATDP, nine post test scores on the SD; three post test scores on the SDS; the post test score on the SUDS.

The only difference between pre and post testing was the addition in the pretest of a form to collect biographical information. This included data on name, age, college major, socioeconomic background (determined by last grade parents' completed in school), and amount of previous contact with physically disabled persons, as defined in the Subjects section.

Procedure

Subjects' attitudes toward physical disability pre and post treatment were assessed by the following measures: The ATDP Form B, the SD, the SDS, and the modified SUDS. Information on name, age, college major, socioeconomic background, and amount of previous contact with physically disabled persons was also collected during pretesting. All potential subjects were given the packet containing the four scales plus the biographical information form and asked simply to complete them for a research study. Subjects were selected for the study on the basis of the following criteria: "Little or No Contact" with physically disabled persons and scores in the bottom half on the ATDP. Two weeks after pretesting, 100 subjects were invited to participate in a research study, with the added incentive of receiving extra credit in their class if they agreed to do so.

The experimental design required four groups. Subjects were assigned to the groups by random selection. The following chart shows the design of the study and the number of subjects in each group. There were

originally an equal number of subjects per group (25). However, 26 subjects eventually dropped out of the study, leaving 74 subjects who completed all requirements of the experiment.

	No Desensitization	Desensitization
No Information	16	21
Information	20	17

Thirty-seven of the 74 subjects received desensitization. The desensitization was done in small groups of eight or nine subjects (Paul, 1968; Lazarus, 1961) once a week, over the period of one month. Therefore, there was a total of four desensitization treatment sessions. Each desensitization session took approximately one hour. Make-up sessions, if necessary were arranged for the end of the week.

Information was given in four, 20 minute factual lectures corresponding to the above schedule. Subjects in the desensitization and information group received their lectures immediately following the relaxation sessions. Subjects in the information only group received their lectures on four consecutive afternoons. Subjects assigned to the control group participated in all initial assessment procedures without receiving any intervening treatment.

The desensitization sessions were patterned after those of Lazarus (1961) and set up as follows: The first session was devoted solely to training in deep muscle relaxation. The following is a brief description of the relaxation training procedure used:

Dim lights. Instruct subjects to close eyes and sit in such a way that their bodies are entirely supported by the chair. Subjects are instructed to successively tense and hold gross muscle groups throughout the body, focusing attention only on the specific muscle group of the moment, until Experimenter says "relax" (7 seconds) and then to immediately release the muscles and attend to

the relaxation which takes place (20 seconds). The first muscle group consists of the dominant hand and forearm, upper arm, non-dominant hand and forearm, upper arm, forehead, facial muscles, etc. throughout the body. In the first training session a minimum of two tension-release cycles will be covered for each muscle group. In each instance the Experimenter proceeds to the next muscle group when the first is reported to be completely tension free, proceeding at the pace of the "slowest" subject in the group. Subjects will signal they are not relaxed by raising their left hand. (Paul & Shannon, 1966).

Induction of relaxation required less time each session as subjects became more practiced. Subjects were asked to practice relaxation for 15 minutes twice a day during the course of the experiment.

The second session was held one week later and began with 10 minutes of additional relaxation training. Desensitization began with the presentation of the five weakest items in the relevant anxiety hierarchy. The subjects, for example, were told to picture themselves in a particular situation with a physically disabled person. If the scene proved upsetting or disturbing, they indicated this by raising their left hand. When any subject signaled in this manner, the scene was withdrawn.

The subsequent desensitization sessions followed a set pattern. The Experimenter induced a deep level of relaxation and then the subjects were presented with successive items from the hierarchical series. The desensitization procedure was conducted at the pace of the "slowest" (most anxious) subject.

Termination of the sessions was on the following basis:

Second Session: All subjects tolerate 10 second exposure to each of the first five items on the hierarchy without signaling anxiety. New items will be introduced only when a 10 second tolerance to the proceeding item has been achieved.

Third Session: All subjects tolerate for 10 seconds, 10 items on the hierarchy.

Fourth Session: All subjects tolerate for 10 seconds, all items (15) on the hierarchy.

On the Monday following the completion of the treatment approximately seven weeks after pretesting, the original attitude assessment battery was administered to all experimental and control subjects in the study. All experimental sessions were conducted during a seven week period during the fall semester of 1977 at the University of Rhode Island.

RESULTS

Introduction

An analysis of covariance was performed for each dependent measure employing a 2 x 2 factorial design. The computer program used was BMDP2V. The two factors, information and desensitization, formed four groups--control, information, desensitization, desensitization and information--with 16, 20, 21 and 17 subjects in each respective group. A total of 14 posttest measures were used as dependent measures, and each of the 14 pretest measures served as a covariate. Tables 1 and 2 present the pretest and posttest means, adjusted posttest means and standard deviations for the four groups for each measure.

Correlations Between the Dependent Measures

The study involved a large number of dependent measures (14) and covariates (14). For this reason, and because of the unequal sample sizes, overall multivariate analysis of covariance was both computationally intractable and logically meaningless. However, for purposes of interpretation, the relationship between the dependent measures remains important. Therefore, the correlation between the pretest measures was calculated (computer program SPSS) and employed to organize the dependent measures.

Table 3 presents the significant correlations for the 14 dependent variables (n=74). For purposes of interpretation of the data, and as supported by the above table, the Attitude Toward Disabled Persons Scale (ATDP) will be treated as a separate, dependent measure of attitudes toward

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR
PRETEST MEASURES (n=74)

Measure		Control (n=16)	Information (n=20)	Desensitization (n=21)	Desensitiza- tion and Information (n=17)
SUDS	$\bar{X}$	1137.19	1023.76	1017.00	1154.18
	s	469.29	418.23	409.13	458.50
ATDP	$\bar{X}$	101.44	93.14	98.85	97.65
	s	9.55	15.87	16.09	17.41
SDS - PERSON IN A W/C	$\bar{X}$	4.19	4.38	4.20	4.41
	s	.98	1.02	.52	1.00
SDS - PEER IN A W/C	$\bar{X}$	4.19	4.57	4.30	4.29
	s	1.11	.93	1.08	.92
SDS - AMPUTEE	$\bar{X}$	4.06	4.38	4.30	4.18
	s	1.18	1.07	1.08	1.18
SD-POT- PERSON IN A W/C	$\bar{X}$	33.81	34.76	34.85	34.94
	s	4.91	6.84	4.42	6.16
SD-POT PEER	$\bar{X}$	33.75	33.95	37.20	35.94
	s	5.65	6.90	4.76	4.53
SD-POT- AMPUTEE	$\bar{X}$	34.25	33.67	35.10	35.35
	s	6.50	6.60	6.02	5.87
SD-EVAL- PERSON IN A W/C	$\bar{X}$	35.75	37.57	39.35	37.71
	s	7.75	9.54	7.01	6.83
SD-EVAL- PEER IN A W/C	$\bar{X}$	38.50	38.33	42.60	39.00
	s	7.69	10.65	6.40	6.29
SD-EVAL- AMPUTEE	$\bar{X}$	38.75	37.86	41.10	38.12
	s	6.41	8.14	6.54	8.84
SD-UND- PERSON IN A W/C	$\bar{X}$	16.12	16.00	16.75	17.29
	s	3.30	4.57	4.62	4.21

TABLE 1 - Continued

Measure		Control (n=16)	Information (n=20)	Desensitization (n=21)	Desensiti- zation and Information (n=17)
SD-UND- PEER IN A W/C	$\bar{X}$	18.56	18.33	18.90	19.00
	s	5.60	4.75	5.51	3.43
SD-UND AMP	$\bar{X}$	15.37	14.71	16.00	17.82
	s	4.76	5.11	5.17	5.10

TABLE 2

MEANS, STANDARD DEVIATIONS AND ADJUSTED MEANS
FOR POSTTEST MEASURES (n=74)

Measure		Control (n=16)	Information (n=20)	Desensitization (n=21)	Desensiti- zation and Information (n=17)
SUDS	$\bar{X}$	1161.44	858.48	761.95	694.76
	s	460.75	392.37	374.64	373.63
	$\bar{X}_{adj}$	(1125.44)	(889.67)	(797.15)	(648.70)
ADTP	$\bar{X}$	98.25	123.33	115.35	120.76
	s	17.63	18.33	21.02	20.61
	$\bar{X}_{adj}$	(94.95)	(127.01)	(114.23)	(120.65)
SDS- PERSON IN A W/C	$\bar{X}$	4.19	4.76	4.35	4.76
	s	.98	.83	.99	1.03
	$\bar{X}_{adj}$	(4.27)	(4.70)	(4.42)	(4.68)
SDS- PEER IN A W/C	$\bar{X}$	4.25	4.86	4.50	4.88
	s	1.12	.91	1.19	.93
	$\bar{X}_{adj}$	(4.38)	(4.68)	(4.54)	(4.93)
SDS- AMPUTEE	$\bar{X}$	4.12	4.95	4.40	4.76
	s	1.15	.86	1.09	1.03
	$\bar{X}_{adj}$	(4.22)	(4.88)	(4.37)	(4.80)
SD-POT PERSON IN A W/C	$\bar{X}$	32.87	37.28	36.50	38.23
	s	4.73	5.32	5.10	6.61
	$\bar{X}_{adj}$	(33.11)	(37.28)	(36.43)	(38.14)
SD-POT- PEER IN A W/C	$\bar{X}$	34.06	36.24	36.80	39.06
	s	6.10	5.49	5.48	4.96
	$\bar{X}_{adj}$	(34.79)	(36.87)	(35.84)	(38.72)
SD-POT AMPUTEE	$\bar{X}$	35.50	35.95	35.45	38.94
	s	6.07	5.93	5.70	4.80
	$\bar{X}_{adj}$	(35.63)	(36.32)	(35.23)	(38.62)
SD-EVAL PERSON IN A W/C	$\bar{X}$	38.00	40.52	40.95	41.71
	s	7.29	6.79	5.39	7.07
	$\bar{X}_{adj}$	(38.99)	(40.58)	(40.10)	(41.70)
SD-EVAL PEER IN A W/C	$\bar{X}$	35.37	39.95	41.60	42.71
	s	9.97	8.17	6.84	7.29
	$\bar{X}_{adj}$	(36.08)	(40.76)	(39.84)	(43.11)

TABLE 2 - Continued

Measure		Control (n=16)	Information (n=20)	Desensitization (n=21)	Desensiti- zation and Information (n=17)
SD-EVAL- AMPUTEE	$\bar{X}$	38.06	39.76	39.90	42.29
	s	7.92	8.40	6.59	7.00
	$\bar{X}_{adj}$	(38.16)	(40.22)	(39.05)	(42.64)
SD-UND- PERSON IN A W/C	$\bar{X}$	17.25	18.38	18.15	20.88
	s	4.43	4.35	3.76	3.69
	$\bar{X}_{adj}$	(17.45)	(18.64)	(18.04)	(20.50)
SD-UND- PEER IN A W/C	$\bar{X}$	16.94	17.62	19.20	21.65
	s	5.20	3.75	4.26	3.71
	$\bar{X}_{adj}$	(16.98)	(17.75)	(19.12)	(21.53)
SD-UND AMPUTEE	$\bar{X}$	17.56	15.71	16.60	21.12
	s	4.33	5.40	6.08	3.59
	$\bar{X}_{adj}$	(17.76)	(16.15)	(16.57)	(20.42)

disabled persons. The Subjective Unit of Distress Scale (SUDS) was also clearly a separate measure; it is either uncorrelated, or slightly negatively correlated with all other measures used in this study. In both cases, the common variance with any other measure was less than 25%.

For the Social Distance Scale (SDS), three separate concepts were used--Person in a wheelchair, Peer in a wheelchair, Amputee. All concepts are highly correlated (lowest correlation = .50), and relatively uncorrelated with all other measures. Therefore, in the interpretation of data, all three will be treated as a single set of dependent measures.

The correlational analysis of the Semantic Differential (SD) data presents an unclear picture. Three separate factors were used on the SD--Potency, Evaluation, Understandability--with three unique concepts--Person in a wheelchair, Peer in a wheelchair, Amputee--making a total of nine subscales for the SD. Moderate correlations were reported throughout the scales, although no clear patterns emerged. It was therefore decided to organize the interpretation of the data along the theoretical structure proposed by Osgood, Suci and Tannebaum (1957). Therefore, Potency, Evaluation and Understandability will be viewed as separate, independent factors in the measurement of attitudes.

It should be noted that these correlational divisions are logically, as well as statistically meaningful. That is, the SUDS is the only measure in the study designed to assess anxiety--it is also, statistically, uncorrelated with all other measures. The ATDP is designed to measure people's perceptions of differences between those disabled and non-disabled; the SDS to measure people's willingness to engage in social interactions with the disabled; and the SD, people's choices of connotative labels in describing the physically disabled. These three measures are also, as described above, statistically uncorrelated.

TABLE 3

CORRELATIONS BETWEEN THE FOURTEEN PRETEST MEASURES OF ATTITUDES
TOWARD PHYSICAL DISABILITY AND ANXIETY TOWARD PHYSICAL DISABILITY (n=74)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	---	.16	.05	.26*	.20*	.25*	.03	.12	.18	.13	.15	.33**	.12	-.1
2		---	.50***	.71***	.27**	.27**	.05	.10	.10	-.08	-.03	.09	-.07	-.2
3			---	.65***	.40***	.23*	-.04	.17	.27**	.03	.26*	.29**	-.01	-.4
4				---	.34***	.27**	-.11	.23*	.28**	.04	.10	.12	-.11	-.4
5					---	.69***	.42***	.65***	.63***	.42***	.57***	.56***	.28**	-.2
6						---	.37***	.43***	.49***	.38***	.50***	.56***	.34***	-.1
7							---	.34***	.22*	.44***	.31**	.30***	.50***	.0
8								---	.78***	.57***	.51***	.42***	.16	-.1
9									---	.53***	.54***	.45***	.16	-.2
10										---	.41***	.31**	.30**	-.0
11											---	.81***	.51***	-.2
12												---	.56***	-.2
13													---	-.0
14														---

*.05 ** .01 ***.001

Analysis of SUDS Data

The analysis of covariance for the SUDS yielded significant differences on information ($F(1,69)=7.18$; $p < .01$), desensitization ($F(1,69)=15.76$; $p < .001$), but no significant interaction ($F(1,69)=.36$; $p > .05$). Figure 1 illustrates the additive effect of information and desensitization. Information alone had a significant effect on anxiety, causing a drop in means from 1125.44 to 889.67 for the no desensitization group, and 797.15 to 648.70 for the desensitization group. (The lower score indicates less anxiety). Additionally, desensitization alone had a significant effect on anxiety, decreasing means in the no information group from 1125.44 to 797.15, and in the information group from 889.67 to 648.70. The effect of information and desensitization was therefore additive. The group that received the combined treatment, as compared to the control group, showed a difference in mean scores from 1125.44 to 648.70. An Fmax test for homogeneity of variance for the posttest standard deviation was not significant ($F_{\max}(4,15)=1.58$).

Analysis of ATDP Data

The analysis of covariance on the ATDP yielded significant differences on information ($F(1,69)=30.02$; $p < .001$), on the interaction of information and desensitization ($F(1,69)=13.46$; $p < .001$), but no significant differences on desensitization ($F(1,69)=3.47$; $p > .05$). To further interpret the source of the interaction, a simple effects test was performed. A significant difference between desensitization and no desensitization was found for the no information condition ($F(1,69)=15.03$; $p < .01$) and no significant differences between the desensitization and no desensitization groups for the information condition ($F(1,69)=1.73$; $p > .05$). Figure 2 is a pictorial representation of this interaction. The effect, therefore, was that the mean for

FIGURE 1

ADJUSTED POST TEST MEANS FOR FOUR GROUPS ON SUDS

the desensitization group without information (114.23) was significantly higher than the mean for the no desensitization, no information group (94.95). (The higher score indicates more positive attitudes). With groups that had information, the additional effect of desensitization was negligible (mean differences of 127.01 to 120.65). An Fmax test for homogeneity of variance for the posttest standard deviation was not significant ($F_{\max}(4,15)=1.42$).

Analysis of SDS Data

The analysis of covariance for the SDS data yielded significant differences on information for all three concepts: Person in a wheelchair ($F(1,69)=4.37$; $p < .05$); Peer in a wheelchair ($F(1,69)=5.10$; $p < .05$); Amputee ($F(1,69)=7.73$; $p < .01$). No significant differences were found between any of the three concepts on desensitization (Person in a wheelchair $F(1,69)=.16$; $p > .05$); Peer in a wheelchair $F(1,69)=1.88$; $p > .05$; Amputee $F(1,69)=.03$; $p > .05$) or on the interaction (Person in a wheelchair $F(1,69)=.27$; $p > .05$; Peer in a wheelchair $F(1,69)=.10$; $p > .05$; Amputee $F(1,69)=.32$; $p > .05$).

Figure 3 illustrates the change in adjusted means for the four groups for the concept Amputee. As stated earlier, since all three concepts are highly correlated, this graph serves as an overall picture of response patterns on the SDS in general. The effect of desensitization as measured by the SDS was negligible. For those people who received information, desensitization caused a mean change of only 4.88 to 4.80. (The higher score indicates more favorable attitudes.) For those people who received no information, the effect of desensitization was again, insignificant (mean difference of 4.22 to 4.37). However, information alone did have a significant effect on attitudes, which is illustrated by an increase in means for the no desensitization group of 4.22 to 4.88 and an increase in means for the desen-

FIGURE 2.

ADJUSTED POST TEST MEANS FOR FOUR GROUPS ON ATDP--
INTERACTION EFFECT

FIGURE 3

ADJUSTED POST TEST MEANS FOR FOUR GROUPS ON SDS-AMPUTEE

sitization group of 4.37 to 4.80. The Fmax tests for homogeneity of variance for the posttest standard deviations on the three concepts were not significant (Person in a wheelchair $F_{\max}(4,15)=1.54$; Peer in a wheelchair $F_{\max}(4,15)=1.71$; Amputee $F_{\max}(4,15)=1.79$).

Analysis of SD Data

The analysis of covariance for the Potency factor yielded significant differences for information on the two concepts Person in a wheelchair ($F(1,69)=5.64$; $p < .05$) and Peer in a wheelchair ($F(1,69)=4.80$; $p < .05$), but not for the concept Amputee ($F(1,69)=2.95$; $p > .05$). However, no significant differences were found on desensitization or on the interaction for any of the three concepts / (Desensitization: Person in a wheelchair $F(1,69)=2.94$; $p > .05$; Peer in a wheelchair $F(1,69)=1.56$; $p > .05$; Amputee $F(1,69)=.63$; $p > .05$) (Interaction: Person in a wheelchair $F(1,69)=.97$; $p > .05$; Peer in a wheelchair $F(1,69)=.12$; $p > .05$; Amputee $F(1,69)=1.29$; $p > .05$) /.

For the evaluative factor on the SD, few significant results were reported. The analysis of covariance yielded no significant differences on information ($F(1,69)=1.66$; $p > .05$), desensitization ($F(1,69)=.80$; $p > .05$) or on the interaction ($F(1,69)=1.00$; $p > .05$) for the concept Person in a wheelchair, and no significant differences on information ($F(1,69)=3.00$; $p > .05$), desensitization ($F(1,69)=1.04$; $p > .05$) or the interaction ($F(1,69)=.22$; $p > .05$) for the concept Amputee. However, for the concept Peer in a wheelchair, the analysis of covariance yielded significant differences on information ($F(1,69)=6.73$; $p < .05$). No significant differences were yielded for either desensitization ($F(1,69)=3.95$; $p > .05$) or for the interaction ($F(1,69)=.21$; $p > .05$) for the concept Peer in a wheelchair.

The analysis of covariance for the understandability factor yielded significant differences on information for the concept Person in a

wheelchair ($F(1,69)=4.69$; $p < .05$), but not for the concept Peer in a wheelchair ($F(1,69)=3.08$; $p > .05$) or the concept Amputee ($F(1,69)=1.03$; $p > .05$). Significant differences were reported on desensitization for the concept Peer in a wheelchair ($F(1,69)=10.71$; $p < .01$), but not for the concepts Person in a wheelchair ($F(1,69)=2.20$; $p > .05$) or Amputee ($F(1,69)=1.87$; $p > .05$). For the interaction, significant differences were found for the concept Amputee ($F(1,69)=6.02$; $p < .05$), but not for the concepts Person in a wheelchair ($F(1,69)=.60$; $p > .05$) or Peer in a wheelchair ($F(1,69)=.83$; $p > .05$). To further break down the significant interaction effect for the concept Amputee, a test of simple effects was performed. A significant difference between desensitization and no desensitization was found for the information condition ($F(1,69)=7.69$; $p < .01$) and no significant difference between desensitization and no desensitization for the no information condition ($F(1,69)=.57$; $p > .05$). Figure 4 is a pictorial representation of this interaction. The analysis is interpreted as follows: for groups who had information, there was a significant mean change of 16.15 to 20.42 caused by the effect of desensitization. (The higher mean indicates more understanding.) Desensitization, however, had no effect on groups that had no information (mean change of 17.76 to 16.57). All Fmax tests for homogeneity of variance for the posttests standard deviations on the nine subscales of the SD were not significant (POT-PERS Fmax (4,15)=1.95; POT-PEER Fmax (4,15)=1.15; POT-AMP Fmax (4,15)=1.60; EVAL-PERS Fmax (4,15)=1.83; EVAL-PEER Fmax (4,15)=2.12; EVAL-AMP Fmax (4,15)=1.62; UND-PERS Fmax (4,15)=1.44; UND-PEER Fmax (4,15)=1.96; UND-AMP Fmax (4,15)=2.87).

In summary, the SD as a whole did not reveal a great deal of attitude change for the four groups. Most of the significant differences that

FIGURE 4

ADJUSTED POST TEST MEANS FOR FOUR GROUPS ON SD-UND-AMP--
INTERACTION EFFECT

were reported were yielded on information. That is, information alone proved effective in changing the potency factor for the concepts Person in a wheelchair, and Peer in a wheelchair, the evaluative factor for the concept Peer in a wheelchair, and the understandability factor for the concept Person in a wheelchair. Desensitization alone proved effective in significantly changing only the understandability factor on one concept Peer in a wheelchair. Interaction of information and desensitization was found only for the understandability factor on one concept, Amputee. Since a large number of tests of significance were performed for the SD ($3 \times 3 \times 3 = 27$) the last two findings are, at best, tenuous.

Demographic Data

64 women and 10 men participated in the study. Their mean age was 18.95 (sd=1.25). Data on parents' educational level was also collected. The mean level of mothers' education was 12.84 (sd=2.20) (completion of high school) and of fathers' education, 14.04 (sd=2.58) (completion of two years of college). In order to determine if the demographic data were related to any of the 14 dependent measures of attitudes, a correlational analysis was performed. Because of the large number of potential correlations with dependent measures, a .01 level of significance was imposed for demographic data. As a result, none of the demographic data were significantly correlated with the measures of attitudes toward disabled persons employed in this study.

DISCUSSION

The purpose of this study was to investigate the modification of attitudes of non-disabled toward physically disabled individuals via systematic desensitization and information. Three hypotheses were proposed. The first, that systematic desensitization would reduce anxiety and improve attitudes of non-disabled toward physically disabled individuals, was partially confirmed. Systematic desensitization was found to be successful in reducing anxiety about the physically disabled, but the anxiety reduction did not necessarily result in improved attitudes. The second hypothesis was fully confirmed. Information both lowered anxiety and improved attitudes of non-disabled toward physically disabled individuals. The final hypothesis, that the combination of systematic desensitization and information would lead to the greatest significant positive change in attitudes toward the physically disabled, was not confirmed. Subjects in this group, as compared to subjects receiving the treatments separately, did report significantly less anxiety toward the physically disabled. However, again as compared to subjects receiving information alone and subjects receiving desensitization alone, subjects receiving the combined treatment did not report more favorable attitudes toward physically disabled individuals.

While the focus of this study was on systematic desensitization and its effects on attitudes, and only secondarily on information and its effects, the results suggest that information has a greater than secondary function in attitude modification. According to the theory upon which

this research was based, the initial effect of the two treatments was hypothesized to be anxiety reduction toward disabled individuals. This anxiety reduction would then, it was hypothesized, lead to attitude change. As far as anxiety reduction is concerned, all treatments were very successful. Systematic desensitization and information were equally effective in lowering anxiety. The group that received systematic desensitization had significantly less anxiety toward the physically disabled after treatment than before. The group that received information also demonstrated significantly less anxiety toward the physically disabled post treatment. In fact, the two groups in combination produced an additive effect. That is, the combined effect of desensitization plus information produced greater anxiety reduction than either by itself.

The explanation for the reduction of anxiety in the group receiving desensitization is straightforward; for the group receiving information, it is less so. Systematic desensitization is described in the literature as a technique to be used in the reduction of anxiety toward specific fear-arousing objects. Its success toward this end is practically unquestioned (Wolpe, 1969; Wolpe & Lazarus, 1969). One would therefore expect that desensitization, if properly taught, would aid in the reduction of anxiety toward the physically disabled, when the physically disabled are considered the fear-arousing object. The subjects in the desensitization group were asked to imagine themselves in increasingly more anxiety provoking situations with physically disabled individuals. After learning to associate these fantasies with a feeling of relaxation, their anxiety did in fact diminish. Subjects in this group responded on the Subjective Unit of Distress Scale (SUDS)--the measure which required additional fantasy of social interactions with disabled individuals--with significantly

lowered anxiety. Fantasizing social interactions--or the thought of being in contact with the physically disabled--no longer made them anxious.

On the other hand, the goal of providing information is not usually to reduce anxiety. In about half of the studies reviewed, providing information is successful toward its primary goal, that of attitude change (Anthony & Carkhuff, 1970; Maglione, 1965; Costin & Kerr, 1962). In this study, providing information was decidedly also highly successful in reducing anxiety. The explanation for this, it is believed, lies in the fact that the subjects in this study had, as specified by the requirements of the experiment, very little or no previous contact with physically disabled individuals. A concomitant to this lack of previous contact is often a lack of information about the physically disabled. Additionally, it is generally accepted that people may be afraid of things, people, that are unknown. Individuals without previous contact may conjure up fantasized notions about the physically disabled that are not only inaccurate, but fear provoking as well. This kind of fear is most simply alleviated by gaining information about the unknown group.

Information was provided to subjects in four separate 20 minute lectures, one a week, over the period of a month. The lectures were designed to be purely informative, with no discussion or question period preceding or following each 20 minute segment. Information provided facts about how one may sustain spinal cord injury, suffer an amputation, the difference between paraplegia and quadraplegia, the types of treatment and rehabilitation one may receive after such an injury, and general statistics on who becomes disabled, and on what disabled people can and cannot do. The last informative segment presented two brief case studies of individuals who had sustained a disability, their course of treatment, and the kinds

of difficulties and achievements realized once released from the hospital and back in society.

Subjects in the information group were not required, during the treatment, to fantasize interactions with the disabled; they were asked only to listen to and think about the lectures. When these subjects responded on the post treatment SUDS, they were imagining themselves in interactions with disabled people who were no longer an unknown and fearful group. Their fantasized notions were replaced by factual data. Cognitive restructuring took place to the extent that, armed with information, they reported less anxiety.

The group that received both treatments (desensitization and information) not only learned to relax in the face of their anxiety, but also learned more about a group with which they had little or no previous contact. Thus, on the measure of anxiety (SUDS), this combined group reported the least amount of anxiety when imagining themselves in social interactions with physically disabled individuals.

It was determined, therefore, that all three treatments led to anxiety reduction. When then, would be the effect of this lowered anxiety on attitudes toward the physically disabled? It was hypothesized that once anxiety is lessened, attitudes would improve. The results demonstrated that for the group that received information alone, attitude improvement was significant. For the group that received desensitization alone, despite the significant decline in anxiety, attitudes did not improve. For the group that received both treatments it appears that the two treatments in combination did not produce significant attitude change above and beyond that obtained via information alone.

Three separate scales were used to measure attitudes: Attitude Toward Disabled Person Scale (ADTP); Social Distance Scale (SDS); and

Semantic Differential (SD). Three scales derived from the SDS, and nine from the SD, making a total of 13 dependent measures of attitudes. However, the effect of the results of the correlational analysis allowed each scale to be treated as separate, dependent measure of a unique facet of attitudes toward disabled persons. The ATDP, for example, was viewed as a measure of the extent to which non-disabled saw disabled persons as different. The SDS was a measure of the extent of intimacy non-disabled would permit with physically disabled persons, and the SD, subjects' connotative labels of those physically disabled.

On the ATDP, subjects in the group receiving information demonstrated significantly more favorable attitudes after treatment than before. The unexpected effect of information was to teach subjects that disabled people are, in fact, no different from those not disabled. The added knowledge, therefore, not only reduced anxiety about an unknown group, but reduced the differences between subjects' perceptions of disabled as opposed to non-disabled individuals. Thus, attitudes, as measured by this scale, improved significantly.

Scores on the SDS for subjects receiving information were also significantly improved as a result of treatment. Three separate concepts were used on the SDS--Person in a wheelchair; Peer in a wheelchair; Amputee--for it was initially believed that each concept would evoke a distinct response. Subjects would respond, for example, more empathically and therefore more favorably to the concept Peer in a wheelchair; the graphic nature of the concept Amputee would evoke less favorable responses. However, the results of the SDS suggest that this was not the case. In fact, an unusually high correlation between the three concepts created no need for any independent analysis, by concept, of the SDS data.

The overall analysis of the SDS data indicates that an increase in information enabled subjects to demonstrate a willingness to enter increasingly intimate interpersonal relationships with disabled people. (All three concepts represented the one idea--disabled person). Subjects who, before treatment, were only willing to have a disabled person as a close friend, were, after treatment, willing to date, and possibly marry a physically disabled person. It is probable that the reduction of anxiety created by additional information permitted this consideration of more intimacy with the disabled.

The results of the Semantic Differential data for subjects receiving information were so limited that it is difficult to interpret them meaningfully. The SD was the only other measure (beside the SDS) that employed three separate concepts (Person in a wheelchair, Peer in a wheelchair, Ampu-tee) to represent the idea disabled person. Three unique factors were also examined. Therefore, a total of nine scales were derived from the SD (EVAL-PERS; EVAL-PEER; EVAL-AMP; POT-PERS; POT-PEER; POT-AMP; UND-PERS; UND-PEER; UND-AMP). In general, moderate correlations were reported throughout all scales, and the use of the three concepts added little to the analysis or understanding of the data. (This result confirms the findings reported above for the use of three concepts on the SDS.) Therefore, the analysis of the SD data was attempted along the theoretical lines originally proposed by Osgood, et al, (factor analysis) rather than by concept (1957).

Osgood, in his research, found that the various adjectives used on the SD could be isolated into a number of separate factors. The three independent factors in this study were Potency, Evaluation, and Understandability, the last one proposed by Nunnally (1961) in his research on attitudes toward mental illness. With the exception of Potency, an examination

of the factors still sheds little light on these limited results. For the factor Potency, subjects in the information group rated two of the three concepts significantly more potent after treatment. (No significant differences were reported for the concept Amputee). During the information treatment, subjects were provided with potential accomplishments as well as possible setbacks disabled people might face. Subjects who initially chose adjectives like weak, dull, and static to describe their image of a disabled person, now chose the adjectives strong, sharp and dynamic for their descriptions. Additional knowledge therefore, enabled subjects to view disabled people as viable, potent and capable members of society.

On the Evaluative factor for subjects receiving information, only one out of the three concepts was rated significantly more positive after treatment (Peer in a wheelchair). For the Understandability factor, significant attitude change was similarly reported for only one of the three concepts (Person in a wheelchair).

However, for the majority of the measures, the overall results of information were clearly in the predicted direction. Information successfully lessened anxiety about, and improved attitudes toward, disabled people. Past research suggests that information as a technique to improve attitudes is most successful when it is designed with an emotional, as well as informative appeal (Rusalem, 1967). It is interesting, therefore, that while the design of this study did not call for an emotional component, information was as effective in improving attitudes as if it did. Perhaps without intending to, the information provoked more discussion about, and more insight into, subjects' feelings about the physically disabled. The case studies, especially, gave subjects an opportunity to examine their reactions to a total being rather than to a disabled person whose disability

eclipses a recognition of their humanness (Davis, 1961). The increase in self-awareness, possibly, enabled the subjects to control or change their initially negative reactions to disabled people.

There is, however, a second, perhaps more cogent explanation of the significant attitude change caused by information. The measures used in this study were clearly designed to tap attitude change of a cognitive nature; information is geared toward changing the cognitive component of the attitude. Perhaps, with techniques that examine only the emotional component of the attitude, information would not have been as effective in producing attitude change. For example, would information be an effective attitude modification treatment for subjects in real life, as opposed to fantasized interactions with disabled persons?

The group that received desensitization showed almost no significant changes on the 13 scales used to measure attitudes toward disabled persons. Desensitization, although successfully allaying anxiety, did not improve subjects' attitudes toward disabled persons when these attitudes were measured by the ATDP, the SDS, or by the two factors, Potency and Evaluation, on the SD. For the Understandability factor on the SD, for one concept (Peer in a wheelchair) subjects receiving desensitization demonstrated significantly more understanding after treatment. This one significant result, in light of the nine possible significant scores that may have been realized on the SD, has, at best, limited implications. It suggests that desensitization successfully improves only one's understanding of the concept Peer in a wheelchair, and may have no effect at all on how one views disabled people in general. If this were the case, then desensitization should not be considered as a treatment for improving attitudes toward the disabled. However, the contention of this paper remains that desensitization is a viable treatment for the modification of attitudes.

There are three possible explanations why the desensitization group failed to demonstrate attitude change. One, which seems unlikely, is that desensitization as a treatment did not work effectively by itself; in fact, it only worked in combination with information to produce the predicted results (attitude change). While the results on attitudes in the combination group have not yet been discussed, it can briefly be mentioned here that these results are not that much more impressive than the results in the group receiving information alone. If the effects of desensitization were being picked up at all, they would have made a more substantial showing in this combination group. This, however, was not the case. Subjects in the combination group demonstrated no significant attitude change above and beyond those in the information only group, toward disabled people. A second interpretation, and hopefully a more fruitful line of pursuit in explaining why desensitization may still be a viable treatment in the modification of attitudes, is that this particular study employed no measure which successfully tapped the effect of desensitization on attitude change. There are a few reasons why this seems to be so. For one, the results of the SUDS clearly indicate that desensitization was successful in reducing subjects' anxiety toward the physically disabled. In the case of anxiety, therefore, desensitization did what it was supposed to do. Why did it fail in the case of attitude change? Perhaps measures like the ATDP, the SDS, and the SD do not tap effects of desensitization on attitudes. These measures are geared, as stated earlier, to measure the cognitive aspects of attitudes, and are not necessarily designed to examine the emotional component of the attitude. Therefore, the group that received information, which was designed to alter the cognitive component of the attitude, demonstrated significant attitude improvement on all three attitude measures. However, desensitization is designed to change the

emotional component of the attitude. An attitude shift which may have been in the emotional rather than the cognitive sphere was not measured by the ATDP, SDS or SD. The results of desensitization were reported as negligible in producing attitude change.

One wonders what the results would have been had the measure of attitude change been some form of real life interaction with physically disabled individuals, for this is the kind of interaction that systematic desensitization is clearly designed to enhance. If this were the measure of attitude change, one would hypothesize that the group receiving desensitization would demonstrate the most significant improvement in attitudes toward the disabled; the group receiving information would probably remain uncomfortable and anxious in such a situation--their attitudes would remain unaltered. Further discussion of the use of other measures for emotionally based attitude change will be found in the section on Clinical Implications and Suggestions for Future Research.

There is a third reason, yet unexamined, why systematic desensitization may not have been effective in producing attitude change. There is some evidence to suggest that the length of the treatment period allotted for desensitization was not adequate to produce results. While the allotted four weeks was long enough to produce anxiety reduction, it may not have allowed enough time to produce attitude change. In Wolpe's analysis of successful results produced by systematic desensitization (1973), he noted that the mean number of sessions per patient was 11.2, as opposed to the four desensitization sessions used in this study. One of the factors in obtaining a high rate of success was therefore the number of desensitization sessions per individual. Had the number of sessions in this study been tripled, perhaps the treatment would have been

more effective in sustaining both anxiety reduction and producing significant attitude change.

The combination group in this study--those subjects receiving desensitization and information--remains to be discussed. The results indicate that the combination of these two treatments did not have a significant effect, over and above the effect of information alone, on attitudes toward the physically disabled. (There was, however, as stated earlier, significant anxiety reduction in this group.) In fact, when the interaction did prove significant (i.e., on the ATDP), the analysis provided by the simple effects test revealed that it was desensitization alone on groups that had no information that caused the significant improvement in attitudes. There were no significant interactions reported on the SDS, and on the nine scales derived from the SD, only one interaction was found to be significant--that for the factor Understandability on the concept Amputee. While for this specific scale on the SD the results are significant--desensitization and information worked in combination to improve understanding toward the concept Amputee--one can not assume a general statement of significance from such a meager showing. Rather, the conclusion to be reached is that there was no greater attitude improvement as a result of the combination treatment of desensitization and information than as a result of the attitude improvement that was derived from information alone.

It appears that even if information alone is successful in improving attitudes in general, the effect of its success is not enhanced when used in combination with desensitization. However, unlike its effect on attitudes, the effect of desensitization and information on anxiety is additive. The two in combination produced significantly more

anxiety reduction than either of them alone. Once again, the question persists, if anxiety was reduced, why wasn't there, as predicted, an improvement in attitudes? The suggestion raised earlier provides a suitable explanation. It seems that with the possible exception of the understandability factor on the SD, there was no measure in this study designed to accurately assess the effects of desensitization on attitudes. Responding to the understandability factor, unlike responding to the other attitude measures on the study, required intimate, personal and emotionally based reactions. In fact, desensitization alone and in combination with information was successful in increasing subjects' understanding of one of the three concepts representing disabled persons. However, all other attitude measures in the study tapped cognitive, objective evaluations of disabled people. Perhaps desensitization as a technique to improve attitudes is most effective for people who will be in regular, intimate contact with the physically disabled, and is also most effectively measured in these real life contact situations. For the general public, whose contact with the disabled is surely less intense and emotionally demanding, information would be the preferred method of attitude change.

CLINICAL IMPLICATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The physically disabled are today a recognized, viable minority group in society. They have, in a sense, become politicized. The more vocal among them are demanding their right to live in an economically and socially barrier free society. In a majority of cases, the government is recognizing, through legislation, that these rights should exist. Mainstreaming in the classroom, for example, is now a reality; architectural alternatives to accomodate the handicapped are growing in number; physically disabled are being hired in high level positions in all areas of employment.

It has been the contention of this paper that adverse attitudes can act as powerful barriers, despite all legal and governmental intervention, to the advancement of the physically disabled. Such attitudes serve to keep the disabled person locked in a small, limited world, despite growing opportunities that may now be available to him. However, positive attitudes can surely help that same disabled person enter a society that is just beginning to open up to him.

The general public, while not having intimate contact with the physically disabled, is in a tangential way, affected by and affects their success in society. One of the major findings of this research is that for these people, attitudes can be improved simply by providing them with information about people with physical disabilities. When this study was initiated, subjects were screened on the basis of the amount of previous contact with physically disabled people. The vast majority of the subjects

screened had little or none, and only a very small percentage had a great deal of previous contact with the physically disabled. It is believed that with some changes, these percentages probably reflect those in society at large. Most people have not had a great deal of contact with the physically disabled. The lack of contact suggests a lack of information about this group. The lack of information raises fears about interacting with the disabled--people may wonder, what are they like, what should I do, if they need any special attention? Providing information reduces these fears and enables the non-disabled to feel more comfortable in their interactions with the physically disabled.

Providing information, on a large scale basis, should then be an effective means of improving the general public's attitudes toward the physically disabled. This information should appeal emotionally as well as cognitively to the listener. The receiver should not only be given facts about the physically disabled, but the understanding that the physically disabled are neither different, unique nor inhuman creatures. The disabled are human beings who experience most of the same successes, failures, accomplishments and defeats as those not similarly afflicted.

However, for those people in society who will inevitably come into more than tangential contact with the physically disabled, information alone may not be effective in improving attitudes. For example, the elementary school teacher who is now faced with a handicapped child in her classroom, when just last year all handicapped children were taught by specialized teachers in specialized schools, may not demonstrate significant attitude change after four short informative lectures on the disabled (Wyder, Wilson & Frumkin, 1967; Semmel, 1959; Merz & Pearlin, 1957). For people like these, school teachers, rehabilitation counselors, physical therapists,

family members of recently disabled kin, a technique is required that directly reduces their anxiety about interacting with the disabled individual. It appears that for these people, a technique like systematic desensitization would be most effective in creating favorable attitudes.

The theory of attitude structure that describes attitudes as comprised of three unique components--cognitive, behavioral, affective--may explain the realized improvement of attitudes through information, and the expected improvement of attitudes through desensitization (Mann, 1960; Katz & Stotland, 1959). Both are based on the belief that the emotional component of the attitude must be addressed before attitude change can take place. In the case of attitudes toward disabled persons, the emotional component of the adverse attitude is often a composite of fear and anxiety. Anxiety is diminished somewhat by providing information--especially by providing information that has some emotional appeal. However, for people who are required to be in regular contact with the disabled, the amount of anxiety that is aroused by the anticipation and experience of the contact is greater than to be alleviated by information alone. For these people, it is suggested, the kind of anxiety that they will experience, in the kind of situations that they will meet, must be addressed directly in order for it to dissipate. This can be accomplished by having such people imagine, over a period of time, different interactions with disabled people and to learn, in the process of that fantasy, to associate a feeling of relaxation with the interaction. This, in essence, is a description of systematic desensitization.

While it is true that this study did not find systematic desensitization to be particularly effective in improving attitudes, the treatment may still be viable toward that end. Perhaps too few sessions were

allotted to allow for attitude change as well as anxiety reduction. Additionally, the measurement of desensitization itself is in question. The technique of desensitization was designed to counter anxiety in real life situations. This was not the case in the current study. Only fantasized interactions were examined--attitudes during a real life social interaction were not measured.

To test the above suggestions, a study could be designed similar to this one in all but two respects: 1) subjects would receive 12 weeks as opposed to four weeks of prolonged systematic desensitization and 2) behavior during real life interactions with disabled persons would be the criteria for attitude change. Since physiological measures of anxiety have, in the past, been used successfully in such real life situations (Vanderkolk, 1976; Marinelli & Kelz, 1973; Kleck, Haroshi & Hastorf, 1966; Kaiser & Moosbrucker, 1960) comparison of heart rate and/or galvanic skin response before and after treatment may be used to measure anxiety reduction. Objective, independent observations of behavior, as well as self-rating scales, could aid in the measurement of attitude change.

Some other limitations of the current study should be pointed out. The use of college undergraduates, for example, raises questions as to the generalizability of the results. There is no reason to assume that the general population would behave in a similar study like typical college freshmen and sophomores. However, it is important to remember that finding a population outside of a university setting, for a study requiring initially 200 subjects, is at best, difficult.

Age is also a factor lending question to the generalizability of results, for research suggests that middle aged persons (25-45) have less favorable attitudes toward the physically disabled than people in their

teens or twenties. Therefore, additional difficulties may be encountered with this older population, as compared to the relatively young population used in this study, when attempting to improve attitudes toward the disabled.

An additional limitation to the current study may be the disproportionality of subjects within the four groups. While the unequal number of subjects per group (control=16; desensitization=20; information=21; desensitization and information=17) was not considered significantly disproportionate to warrant correction, a replication of this study should certainly attempt to equalize subjects across groups.

It is expected that the findings of the current research will generate interest in the necessity for further research in non-disabled reactions to the physically disabled, as well as to other exceptional groups. There is no doubt that adverse attitudes create barriers to the adjustment of all minorities in society, and that it is important to find effective means of altering these attitudes.

APPENDIX A

Hierarchy

1. Reading a book about physical disabilities
2. Listening to a discussion about physical disabilities
3. Sitting in a class beside a physically disabled person
4. Working side by side a physically disabled person
5. Entertaining a physically disabled person in your home
6. Visiting a hospital exclusively for the physically disabled
7. Dining in a public restaurant with a physically disabled person
8. Being stuck in an elevator with a physically disabled person
9. Having a physically disabled person as an intimate friend
10. Talking to a physically disabled person about his/her disability
11. Spending the evening at the home of a physically disabled person
12. Being seen at a dance with a physically disabled person
13. Leaving your child with a baby sitter who is physically disabled
14. Finding out your blind date is physically disabled
15. Having a nightmare about becoming physically disabled

APPENDIX B

PLEASE COMPLETE THE FOLLOWING:

NAME: _____

M _____ F _____

AGE: _____

DATE OF BIRTH: _____

COLLEGE MAJOR: _____

LAST GRADE COMPLETED IN SCHOOL BY:

MOTHER:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17+

FATHER:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17+

HOW MUCH PREVIOUS CONTACT HAVE YOU HAD WITH PHYSICALLY DISABLED* PERSONS?
(CHECK ONE)

_____ LITTLE OR NO CONTACT: Casually met, saw or was introduced to one or more persons who are physically disabled; never met anyone who is physically disabled.

_____ SOME CONTACT: Friend, relative, neighbor, etc. who you see and speak to at least twice a week is physically disabled.

_____ GREAT DEAL OF CONTACT: Live or lived with one or more persons who are physically disabled. See person almost every day who is physically disabled.

*For the purpose of this study, physically disabled is defined as a person in a wheelchair or a person with either one or both limbs missing.

IF YOU DO NOT THINK YOU WILL BE INTERESTED IN PARTICIPATING FURTHER IN A RESEARCH STUDY, PLEASE DO NOT COMPLETE THE FOLLOWING QUESTIONNAIRE.

ADTP

Mark each statement in the left margin according to how much you agree or disagree with it. Please mark every one. Write +1, +2, +3, or -1, -2, -3: depending on how you feel in each case.

+3: I AGREE VERY MUCH

+2: I AGREE PRETTY MUCH

+1: I AGREE A LITTLE

-1: I DISAGREE A LITTLE

-2: I DISAGREE PRETTY MUCH

-3: I DISAGREE VERY MUCH

PLEASE ANSWER EVERY QUESTION

- _____ 1. Disabled persons are usually friendly.
- _____ 2. People who are disabled should not have to pay income taxes.
- _____ 3. Disabled people are no more emotional than other people.
- _____ 4. Disabled persons can have a normal social life.
- _____ 5. Most physically disabled persons have a chip on their shoulder.
- _____ 6. Disabled workers can be as successful as other workers.
- _____ 7. Very few disabled persons are ashamed of their disabilities.
- _____ 8. Most people feel uncomfortable when they associate with disabled people.
- _____ 9. Disabled people show less enthusiasm than non-disabled people.
- _____ 10. Disabled people do not become upset any more easily than non-disabled people.
- _____ 11. Disabled people are often less aggressive than normal people.
- _____ 12. Most disabled persons get married and have children.
- _____ 13. Most disabled persons do not worry any more than anyone else.
- _____ 14. Employers should not be allowed to fire disabled employees.
- _____ 15. Disabled people are not as happy as non-disabled ones.
- _____ 16. Severely disabled people are harder to get along with than are those with minor disabilities.
- _____ 17. Most disabled people expect special treatment.
- _____ 18. Disabled persons should not expect to lead normal lives.
- _____ 19. Most disabled people tend to get discouraged easily.

- ___ 20. The worst thing that could happen to a person would be for him to be very severely injured.
- ___ 21. Disabled children should not have to compete with non-disabled children.
- ___ 22. Most disabled people do not feel sorry for themselves.
- ___ 23. Most disabled people prefer to work with other disabled people.
- ___ 24. Most severely disabled persons are not as ambitious as other people.
- ___ 25. Disabled persons are not as self-confident as physically normal persons.
- ___ 26. Most disabled persons don't want more affection and praise than other people.
- ___ 27. It would be best if a disabled person would marry another disabled person.
- ___ 28. Most disabled people do not need special attention.
- ___ 29. Disabled persons want sympathy more than other people.
- ___ 30. Most physically disabled persons have different personalities than normal persons.

SDS

Listed below are 6 kinds of relationships one may have with another person. At the top of each is a member of a particular group in society.

Put an "X" in as many of the 6 columns as you feel, in all candor, denotes a relationship that would be acceptable to you for that person.

You are urged to be as honest as possible.

PERSON IN A WHEELCHAIR
PARALYZED FROM THE WAIST DOWN

I would marry	_____
I would date	_____
I would have as a close friend	_____
I would have as a fellow worker	_____
I would have as my neighbor	_____
I would have live in a nearby neighborhood	_____

PERSON WITH ONE OR BOTH
LIMBS MISSING

I would marry	_____
I would date	_____
I would have as a close friend	_____
I would have as a fellow worker	_____
I would have as my neighbor	_____
I would have live in a nearby neighborhood	_____

PEER IN A WHEELCHAIR
PARALYZED FROM THE WAIST DOWN

I would marry	_____
I would date	_____
I would have as a close friend	_____
I would have as a fellow worker	_____

I would have as my neighbor

I would have live in a nearby neighborhood

SD

In their daily life people form impressions of other people from many different kinds of information. On the following pages you will find a name or a concept at the head of a list of adjectives. Please try to form an image of the person or concept listed below and rate him (her) on each of the following adjectives by making a check mark (:____:) at the point on the line which best describes how much of the characteristic you believe that he (or she) possesses. Please work as quickly as possible and give your first impression.

PERSON IN A WHEELCHAIR
PARALYZED FROM THE WAIST DOWN

Understandable	: : : : : : : : :	Mysterious
Unpredictable	: : : : : : : : :	Predictable
Familiar	: : : : : : : : :	Strange
Simple	: : : : : : : : :	Complicated
Sharp	: : : : : : : : :	Dull
Weak	: : : : : : : : :	Strong
Happy	: : : : : : : : :	Sad
Relaxed	: : : : : : : : :	Tense
Serious	: : : : : : : : :	Humorous
Bitter	: : : : : : : : :	Sweet
Static	: : : : : : : : :	Dynamic
Masculine	: : : : : : : : :	Feminine
Pleasant	: : : : : : : : :	Unpleasant
Ugly	: : : : : : : : :	Beautiful
Bad	: : : : : : : : :	Good
Cruel	: : : : : : : : :	Kind
Grateful	: : : : : : : : :	Ungrateful
Unsuccessful	: : : : : : : : :	Successful
Easy to get along with	: : : : : : : : :	Hard to get along with
Self Reliant	: : : : : : : : :	Dependent

PEER IN A WHEELCHAIR
PARALYZED FROM THE WAIST DOWN

Understandable : : : : : : : : : Mysterious

Unpredictable : : : : : : : : : Predictable

Familiar : : : : : : : : : Unfamiliar

Simple : : : : : : : : : Complicated

Sharp : : : : : : : : : Dull

Weak : : : : : : : : : Strong

Happy : : : : : : : : : Sad

Relaxed : : : : : : : : : Tense

Serious : : : : : : : : : Humorous

Bitter : : : : : : : : : Sweet

Static : : : : : : : : : Dynamic

Masculine : : : : : : : : : Feminine

Pleasant : : : : : : : : : Unpleasant

Ugly : : : : : : : : : Beautiful

Bad : : : : : : : : : Good

Cruel : : : : : : : : : Kind

Grateful : : : : : : : : : Ungrateful

Unsuccessful : : : : : : : : : Successful

Easy to get along with : : : : : : : : : Hard to get along with

Self Reliant : : : : : : : : : Dependent

SUDS

Listed below are 40 hypothetical interactions with physically disabled persons. Try to visualize, as vividly as possible, yourself as being in each situation. When you read the words "physically disabled" imagine either a person (or peer) in a wheelchair paralyzed from the waist down, or a person with one or both limbs missing. In the space below each sentence, rate each situation by the following criteria:

Make a slash mark (/) at the point on the line which indicates how anxious the statement makes you feel. (0) is the least anxious you have ever felt. (50) is an average amount of anxiety for you. (100) is the most anxious you have ever felt.

Meeting a physically disabled person on a busy sidewalk.

0 50 100

Helping a physically disabled person onto a bus.

0 50 100

Introducing a physically disabled person to a friend.

0 50 100

Working side by side with a physically disabled person.

0 50 100

Spending an evening at the home of a physically disabled person.

0 50 100

Being seen at a dance with a physically disabled person.

0 50 100

Talking about sex with a physically disabled person of the same sex.

0 50 100

Having a physically disabled person as an intimate friend.

0 50 100

Holding hands with a physically disabled person of the opposite sex.

Talking to a physically disabled person about his/her disability.

Sitting quietly beside a physically disabled person in an airplane.

Dining in a public restaurant with a physically disabled person.

Interviewing a physically disabled person for one hour.

Finding out that your blind date is physically disabled.

Sitting in a class beside a physically disabled person.

Reading a book about physical disabilities.

Listening to a discussion about physical disabilities.

Attending a lecture by a physically disabled person.

In a restaurant a physically disabled person tries to talk to you about his/her problems.

Entertaining a physically disabled person in your home.

0 50 100

Being stuck in an elevator with a physically disabled person.

0 50 100

Finding out your fiancé has become physically disabled.

0 50 100

Leaving your child with a baby sitter who is physically disabled.

0 50 100

Sitting with a rehabilitation counselor talking to a physically disabled person.

0 50 100

Participating in a discussion about a physically disabled person.

0 50 100

Finding out that your child has become physically disabled.

0 50 100

Seeing a TV program about physical disabilities.

0 50 100

Eating in a restaurant where the cashier is physically disabled.

0 50 100

You are approached by a physically disabled person asking for a charity donation.

0 50 100

One of your college professors is physically disabled.

0 50 100

Finding out that your new neighbor is physically disabled.

0 50 100

Having a nightmare about becoming physically disabled.

0 50 100

Discovering your boyfriend's/girlfriend's father is physically disabled.

0 50 100

Sitting alone in a hospital room talking to a physically disabled person.

0 50 100

Discovering your sister/brother is about to marry a physically disabled person.

0 50 100

Visiting a hospital exclusively for the physically disabled.

0 50 100

You volunteer for hospital work and get assigned to the floor exclusively for physically disabled persons.

0 50 100

Writing a paper about a physically disabled person you have met.

0 50 100

Going swimming in a pool where there is a physically disabled person.

0 50 100

APPENDIX C

Summary Tables for Analysis of Covariance

Analysis of Covariance for SUDS Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	674112.00	1	674112.00	7.18**
D	1480015.00	1	1480015.00	15.76***
1D	34095.00	1	34095.00	.36
Covariate	4683007.00	1	4683007.00	49.86***
Error	6480867.00	69	9392556.00	

Analysis of Covariance for ATDP Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	6594.77	1	6594.77	30.02***
D	761.69	1	761.69	3.47
1D	2957.84	1	2957.84	13.46***
Covariate	11420.72	1	11420.72	51.99***
Error	15158.59	69	219.69	

Analysis of Covariance for SDS/PERSON/W/C Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	2.20	1	2.20	4.37*
D	0.08	1	0.08	0.16
1D	0.14	1	0.14	0.27
Covariate	29.05	1	29.05	57.60***
Error	34.80	69	0.50	

Analysis of Covariance for SDS/PEER/W/C Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	2.09	1	2.09	5.10*
D	0.77	1	0.77	1.88
1D	0.04	1	0.04	0.10
Covariate	48.08	1	48.08	117.39***
Error	28.26	69	0.41	

Analysis of Covariance for SDS/AMP Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	5.37	1	5.37	7.73**
D	0.02	1	0.02	0.03
1D	0.22	1	0.22	0.32
Covariate	26.63	1	26.63	38.33***
Error	47.93	69	0.69	

Analysis of Covariance for SD/POT/PERS Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	155.49	1	155.49	5.64*
D	81.02	1	81.02	2.94
1D	26.80	1	26.80	0.97
Covariate	195.37	1	195.37	7.09**
Error	1900.72	69	27.55	

Analysis of Covariance for SD/POT/PEER Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	111.66	1	111.66	4.80*
D	36.25	1	36.25	1.56
1D	2.89	1	2.89	0.12
Covariate	522.62	1	522.62	22.48***
Error	1604.26	69	23.25	

Analysis of Covariance for SD/POT/AMP Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	75.99	1	75.99	2.95
D	16.24	1	16.24	0.63
1D	33.13	1	33.13	1.29
Covariate	463.90	1	463.90	18.01***
Error	1776.93	69	25.75	

Analysis of Covariance for SD/EVAL/PERS Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	46.46	1	46.46	1.66
D	22.42	1	22.42	0.80
1D	0.00	1	0.00	0.00
Covariate	1140.89	1	1140.89	40.77**
Error	1930.82	69	27.98	

Analysis of Covariance for SD/EVAL/PEER Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	284.34	1	284.34	6.73*
D	167.00	1	167.00	3.95
1D	8.96	1	8.96	0.21
Covariate	1649.64	1	1649.64	39.07***
Error	2913.35	69	42.22	

Analysis of Covariance for SD/EVAL/AMP Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	143.77	1	143.77	3.00
D	49.82	1	49.82	1.04
1D	10.76	1	10.76	0.22
Covariate	653.43	1	653.43	13.63***
Error	3308.64	69	47.95	

Analysis of Covariance for SD/UND/PERS Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	61.00	1	61.00	4.96*
D	27.07	1	27.07	2.20
1D	7.35	1	7.35	0.60
Covariate	312.10	1	312.10	25.39***
Error	848.16	69	12.30	

Analysis of Covariance for SD/UND/PEER Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	46.05	1	46.05	3.08
D	160.07	1	160.07	10.71**
1D	12.38	1	12.38	0.83
Covariate	219.65	1	219.65	14.70***
Error	1031.31	69	14.95	

Analysis of Covariance for SD/UND/AMP Data

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
1	22.94	1	22.94	1.03
D	41.77	1	41.77	1.87
1D	133.99	1	133.99	6.02*
Covariate	238.14	1	238.14	10.69**
Error	1536.64	69	22.27	

REFERENCES

- Altrocchi, J. & Eisdorfer, C. Changes in attitudes toward mental illness. Mental Hygiene, 1961, 45, 563-570.
- Anthony, W. A. The relationship between contact with the physically disabled, cognitive attitude, and overt behavior. Rehabilitation Counseling Bulletin, 1969, 12, 168-171.
- Anthony, W. A. & Carkhuff, R. R. The effects of rehabilitation counselor training upon trainee functioning. Rehabilitation Counseling Bulletin, 1970, 13, 333-342.
- Arnholter, E. G. Attitudes toward the disabled. American Psychologist, 1962, XVII, 338.
- Asher, N. W. Manipulating attraction toward the disabled: An application of the similarity-attraction model. Rehabilitation Psychology, 1973, 20(4), 156-164.
- Bandura, A., Blanchard, E. & Ritter, B. Relative efficacy of desensitization and modeling approaches for inducing behavioral affective and attitudinal changes. Journal of Personality and Social Psychology, 1969, 13(3), 173-199.
- Barker, R. G., Wright, B. A., Meyerson, L. & Ganick, M. R. Adjustment to Physical Handicap and Illness: A Survey of the Social Psychology of Physique and Disability. New York Social Science Research Council, 1953.
- Barsch, R. H. The handicapped ranking scale among parents of handicapped children. American Journal of Public Health 1964, 54, 1561-1567.
- Bateman, B. Sighted children's perceptions of blind children's abilities. Exceptional Children, 1962, 29(1), 42-46.
- Billings, H. K. An exploratory study of the attitudes of non-crippled children toward crippled children in three selected elementary schools. Journal of Experimental Education, 1963, 31, 383-387.
- Block, J. R. Recent research with the ATDP Scale: Some research abstracts. Albertson, N. Y.: OMA Institute at the Human Resources Center, 1974.
- Bogardus, E. S. A social distance scale. Sociology and Social Research, 1933, 17, 265-271.

- Brooks, B. L. & Bransford, L. A. Modification of teachers' attitudes toward exceptional children. Exceptional Children, 1971, 38, 259-260.
- Buchout, R. & Rosenberg, M. Verbal reinforcement and attitude change. Psychological Reports, 1966, 18, 691-694.
- Campbell, D. T. The social distance scale. In O. K. Buros (ed.) 4th Mental Measurements Yearbook, New Jersey: The Gryphon Press, 1953, 88-89.
- Cautela, J. R., Walsh, K. J. & Wish, P. A. The use of covert reinforcement in the modification of attitudes toward the mentally retarded. Journal of Psychology, 1971, 77(2), 257-260.
- Cautela, J. R. & Wisocki, P. A. The use of imagery in the modification of attitudes toward the elderly: A preliminary report. Journal of Psychology, 1969, 73(2), 193-199.
- Centers, L. & Centers, R. Peer group attitudes toward the amputee child. Journal of Social Psychology, 1963, 61, 127-132.
- Chigier, E. & Chigier, M. Attitudes to disability of children in the multi-cultural society of Israel. Journal of Health and Social Behavior, 1968, 9 (Dec), 310-317.
- Chinsky, J. M. & Rappoport, J. Attitude change in college students and chronic patients: A dual perspective. Journal of Consulting and Clinical Psychology, 1970, 35, 388-394.
- Coet, L. J. & Thornton, L. W. Age and sex factors in defining the term "handicap." Psychological Reports, 1975, 37(1), 103-106.
- Colbert, J. N., Kalish, R. A. & Chang, P. Two psychological portals of entry for disadvantaged groups. Rehabilitation Literature, 1973, 34(7), 194-202.
- Comer, R. C. & Piliavin, J. A. As others see us: Attitudes of physically handicapped and normals toward own and other groups. Rehabilitation Literature, 1975, 36(7), 206-221.
- Costin, F. & Kerr, W. D. The effects of an abnormal psychology course on attitudes toward mental illness. Journal of Educational Psychology, 1962, 53, 214-218.
- Cowen, E. L., Underberg, R. P. & Verillo, R. T. The development and testing of an attitude to blindness scale. Journal of Social Psychology, 1958, 48, 297-304.
- Culbertson, F. M. Modifications of emotionally held attitudes through role playing. Journal of Abnormal and Social Psychology, 1957, 54, 230-233.
- Davis, F. Deviance Disavowal: The management of strained interaction by the visibly handicapped. Social Problems, 1961, 9, 120-132.

- Dibner, A. S. Semi-integrated camping for the physically handicapped child. Rehabilitation Psychology, 1973, 20(2), 84-93.
- Dixon, J. K. Self evaluation and attitudes toward disability groups in normal and disabled populations. Dissertation Abstracts International, 1973, 34(5A), 2383-2384.
- Donaldson, J. Channel variations and effects on attitudes toward physical-ly disabled individuals. AV Communication Review, 1976, 24(2), 135-144.
- Dow, T. E. Optimism, physique and social class reaction to disability. Journal of Health and Human Behavior, 1966, 7, 14-19.
- Duntzman, G. H., Anderson, H. E. & Barry, J. R. Characteristics of students in the health related professions. University of Florida Rehabilitation Research Monograph Series #2, 1966.
- Early, J. Attitude learning in children. Journal of Educational Psychology, 1968, 59, 176-180.
- Elsberry, N. L. Attitudes toward persons with physical disabilities. Dissertation Abstracts International, 1974, 34(7A), 4403.
- English, R. W. & Oberle, J. B. Toward the development of new methodology for examining attitudes toward disabled persons. Rehabilitation Counseling Bulletin, 1971, 12, 88-96.
- Evans, J. H. Attitudes of adolescent delinquent boys. Psychological Reports, 1974, 34(3,Pt2), 1175-1178.
- Felton, G. S. Changes in attitudes toward disabled persons among allied health para-professional trainees in an interdisciplinary setting. Perceptual and Motor Skills, 1975, 40(1), 118.
- Festinger, L. Behavioral support for opinion change. Public Opinion Quarterly, 1964, 28, 404-417.
- Frazier, R. S. Changing attitudes toward mental illness through systematic desensitization and information. Unpublished Doctoral Dissertation, University of Rhode Island, 1975.
- Gaier, E. L., Linkowski, D. G. & Jacques, M. E. Contact as a variable in the perception of disability. Journal of Social Psychology, 1968, 74(1), 117-126.
- Gellman, W. Roots of prejudice against the handicapped. Journal of Rehabilitation, 1959, 25, 4-25.
- Goffman, E. Stigma: Notes on the Management of Spoiled Identity. New Jersey: Prentice Hall, 1963.
- Goldstein, K. M. & Blackman, S. Generalizations regarding deviant groups. Psychological Reports, 1975, 37(1), 278.

- Goodman, N., Dornbusch, S. M., Richardson, S. A. & Hastorf, A. H. Variant reactions to physical disabilities. American Sociological Review, 1963, 28, 429-435.
- Granofsky, J. Modification of attitudes toward the visibly disabled: An experimental study of the effectiveness of social contact producing a modification of the attitudes of non-disabled females toward visibly disabled males. Unpublished Doctoral Dissertation, Yeshiva University, 1955.
- Greer, B. On being the parent of a handicapped child. Exceptional Children, 1975, 41(8), 519.
- Grigg, A. E. A validity study of the semantic differential technique. Journal of Clinical Psychology, 1959, 15, 179-181.
- Haddle, H. W. The efficacy of automated group systematic desensitization as a strategy to modify attitudes toward disabled persons. Unpublished Doctoral Dissertation, Georgia State University, 1973.
- Harasymiw, S. J. & Horne, M. D. Integration of handicapped children: Its effect on teacher attitudes. Education, 1975, 96(2), 153-158.
- Hartley, E. L. Problems in Prejudice. New York: King's Crown Press, 1946.
- Hebb, D. O. On the nature of fear. Psychological Review, 1946, 53, 259-276.
- Heisler, V. Dynamic group psychotherapy with parents of cerebral palsied children. Rehabilitation Literature, 1974, 35(11), 329-330.
- Hicks, J. M. & Spanner, F. E. Attitude change and mental hospital experience. Journal of Abnormal and Social Psychology, 1962, 65, 112-120.
- Holzberg, J. & Gewirtz, H. A method of altering attitudes toward mental illness. Psychiatric Quarterly, 1963, 37, 56-61.
- Ingwell, N. A. A simulated handicapping experience as it effects attitudes, awareness and responses to counseling problems. Dissertation Abstracts International, 1973, 34(3A), 1081.
- Jaffe, J. Attitudes and interpersonal contact: Relationships between contact with the mentally retarded and dimensions of attitude. Journal of Counseling Psychology, 1967, 14, 482-484.
- Janis, I. & King, B. T. The influence of role playing on opinion change. Journal of Abnormal and Social Psychology, 1954, 2, 211-218.
- Jordon, J. & Cessna, W. A comparison of attitudes of four occupational groups toward education and toward physically disabled persons in Japan. Journal of Social Psychology, 1969, 78, 283-284.
- Jordon, J. E. & Friesen, E. W. Attitudes of rehabilitation personnel toward physically disabled persons in Columbia, Peru and the United States. Journal of Social Psychology, 1968, 74, 151-161.

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- Kagan, J. A., Henker, A., Hentor, A., Levine, J. & Lewis, M. Infants' differential reactions to familiar and distorted faces. Child Development, 1966, 37, 519-532.
- Kaiser, P. & Moosbrucker, J. The relationship between attitudes toward disabled persons and galvanic skin response. Unpublished Manuscript, New York: Human Resources Center, 1960.
- Katz, D., Katz, G. & Cohen, R. White children's attitudes toward blacks and the physically handicapped: A developmental study. Journal of Educational Psychology, 1976, 68(1), 20-24.
- Katz, D., Sarnoff, I. & McClintock, C. Ego defense and attitude change. Human Relations, 1956, 9, 27-45.
- Katz, D. & Stotland, E. A preliminary statement to a theory of attitude structure and change. In S. Koch (Ed.) Psychology: A Study of a Science. Vol. 3: Formulations of the Person and the Social Context. New York: McGraw Hill, 1959, 423-475.
- Keith-Spiegel, P. & Spiegel, D. E. Effects of mental hospital experience on attitudes of teenage students toward mental illness. Journal of Clinical Psychology, 1970, 26, 387-388.
- Kennedy, J. P. & Anthony, W. A. The impact of experience and training in rehabilitation on the counseling relationship with a physically disabled client. Rehabilitation Research and Practice Review, 1972, 3(2), 31-34.
- Kiernan, W. E. Attitude change in beginning education students resulting from exposure to the vocational and social capabilities of the disabled adult. Dissertation Abstracts International, 1974, 35(3A), 1532.
- Kleck, R. Emotional arousal in interactions with stigmatized persons. Psychological Reports, 1966, 19, 1226.
- Kleck, R., Haroshi, O. & Hastorf, A. The effects of physical deviance upon face to face interaction. Human Relations, 1966, 19, 425-436.
- Koch, A. S. Changing attitudes toward blindness: A role-playing demonstration for service clubs. New Outlook for the Blind, 1975, 69(9), 407-409.
- Kulik, J. A., Martin, R. A. & Scheibe, K. E. Effects of mental hospital volunteer work on students' conceptions of mental illness. Journal of Clinical Psychology, 1969, 25, 326-329.
- Lazar, A. L., Gensley, J. T. & Orpet, R. E. Changing attitudes of young mentally gifted children toward handicapped persons. Paper presented at the California Educational Research Association Meeting, 1970.

- Lazar, A. L., Orpet, R. E., & Revie, V. A. Sex differences in attitudes of young male and female gifted youngsters toward handicapped individuals. Paper presented at the California Educational Research Meeting, 1971.
- Lazarus, A. A. Group therapy of phobic disorders by systematic desensitization. Journal of Abnormal and Social Psychology, 1961, 63, 504-510.
- Lewis, I. L. & Cleveland, S. E. Nursing students' attitudinal changes following a psychiatric affiliation. Journal of Psychiatric Nursing, 1966, 4, 223-231.
- Likert, R. A Technique for the Measurement of Attitudes. Archives of Psychology No. 140. New York: Archives of Psychology, Columbia University Press, 1932.
- Lindowski, D. C. & Dunn, M. A. Self-concept and acceptance of disability. Rehabilitation Counseling Bulletin, 1974, 18(1), 28-32.
- Maglione, W. G. Attitudes toward the handicapped among rehabilitation students and college undergraduates. Unpublished Manuscript, Human Resources Library, New York, 1965.
- Mann, J. H. The differential nature of prejudice reduction. Journal of Social Psychology, 1960, 52, 339-343.
- Marinelli, R. P. State anxiety in interactions with visibly disabled persons. Rehabilitation Counseling Bulletin, 1974, 18(2), 72-77.
- Marinelli, R. P. & Kelz, J. Anxiety and attitudes toward disabled persons. Rehabilitation Counseling Bulletin, 1973, 16(4), 198-205.
- Marsh, V. & Friedman, R. Changing public attitudes toward blindness: Visual education program. Exceptional Children, 1972, 38, 426-428.
- Matovu, H. L. Changing community attitudes toward epilepsy in Uganda. Social Science and Medicine, 1974, 8(1), 47-50.
- McDonald, K., Friedman, M. & Weinberg, S. The blindfold experience. Education of the Visually Handicapped, 1973, 5(3), 84-86.
- McGinnies, E., Laná, R. & Smith, C. The effects of sound films on opinions about mental illness in community discussion groups. Journal of Applied Psychology, 1958, 42, 40-46.
- Merz, L. E. & Pearlin, L. I. The influence of information on three dimensions of prejudice toward negroes. Social Forces, 1957, 35, 344-351.
- Mordkoff, A. M. An empirical test of the functional antonymy of semantic differential scales. Journal of Verbal Learning and Verbal Behavior, 1963, 2, 504-508.

- Moseley, M. R. Attitude difference toward disabled persons as a function of educational integration. Dissertation Abstracts International, 1973, 34(4A), 1740
- Moses, H. A., Rubin, S. E. & Turner, J. Relationship of attitudes toward the disabled with demographic information and personality measures. Paper presented at the Arkansas Rehabilitation Research and Training Center, University of Arkansas, undated.
- Murphy, G. & Likert, R. Public Opinion and the Individual: A Psychological Study of Student Attitudes on Public Questions, with a Retest 5 Years Later. New York: Harper & Brothers, 1938.
- Mussen, P. H. & Barker, R. G. Attitudes toward cripples. Journal of Abnormal and Social Psychology, 1944, 39, 351-355.
- Noonan, J. R., Barry, J. R. & Davis, H. C. Personality determinants in attitudes toward visible disability. Journal of Personality, 1970, 38, 1-15.
- Nunnally, J. Popular Conceptions of Mental Health. New York: Holt, Rinehart & Winston, 1961.
- Olsen, S. O. Rehabilitation education: Knowledge, evaluation and attitude change in families. Unpublished Doctoral Dissertation, University of Utah, 1968.
- Osgood, C. E., Suci, G. J. & Tannenbaum, P. H. The Measurement of Meaning. Urbana: University of Illinois Press, 1957.
- Palmerton, K. U. & Frumkin, R. M. Contact with disabled persons and intensity of counselor's attitude. Perceptual and Motor Skills, 1969, 28, 434.
- Palmerton, K. U. & Frumkin, R. M. Type of contact as a factor in attitudes of college counselors toward the physically disabled. Perceptual and Motor Skills, 1969, 28, 489-490.
- Palmerton, K. U. & Frumkin, R. M. College counselor knowledge about and attitude toward disabled persons. Perceptual and Motor Skills, 1969, 28, 657-658.
- Paul, G. L. Two-year follow-up of systematic desensitization in therapy groups. Journal of Abnormal Psychology, 1968, 73, 119-130.
- Paul, G. L. & Shannon, D. T. Treatment of anxiety through systematic desensitization in therapy groups. Journal of Abnormal Psychology, 1966, 71, 124-135.
- Peak, H. & Morrison, H. W. The acceptance of information into attitudinal structure. Journal of Abnormal and Social Psychology, 1958, 57, 127-135.

- Prochaska, J. O. Symptoms and dynamic cues in the implosive treatment of test anxiety. Journal of Abnormal Psychology, 1971, 77(2), 133-142.
- Richardson, S. A. Age and sex differences in values toward physical handicaps. Journal of Health and Social Behavior, 1970, 11, 207-214.
- Richardson, S. A. Handicap, appearance and stigma. Social Science and Medicine, 1971, 5, 621-628.
- Richardson, S. A. & Emerson, P. Race and physical handicaps in childrens' preference for other children: A replication in a southern city. Human Relations, 1970, 23, 31-36.
- Richardson, S. A., Goodman, N., Hastorf, A. H. & Dornbusch, S. M. Cultural uniformity in reaction to physical disabilities. American Sociological Review, 1961, 26, 241-247.
- Richardson, S. A. & Royce, J. Race and physical handicap in childrens' preference for other children. Child Development, 1968, 39, 467-480.
- Roeher, G. A. The significance of public attitudes in the rehabilitation of the disabled. Rehabilitation Literature, 1961, 22, 66-72.
- Rusalem, H. Engineering changes in public attitudes toward a severely disabled group. Journal of Rehabilitation, 1967, 33(3), 26-27.
- Samerotte, G. C. & Harris, M. B. Some factors influencing helping: The effects of a handicap, responsibility and requesting help. Journal of Social Psychology, 1976, 98(1), 39-45.
- Schilder, P. & Heider, F. Sources of attitudes toward persons with atypical physique. In B. A. Wright Physical Disability: A Psychological Approach. New York: Harper & Row, 1960.
- Semmel, M. I. Teacher attitudes and information pertaining to mental deficiency. American Journal of Mental Deficiency, 1959, 63, 566-574.
- Semmel, M. I. & Dickson, S. Connotative reactions of college students to disability labels. Exceptional Children, 1966, 32, 443-450.
- Shaw, S. F. & Gillung, T. B. Efficacy of a college course for regular class teachers of the mildly handicapped. Mental Retardation, 1975, 13(4), 3-6.
- Siller, J. Personality determinants of reaction to the physically disabled. American Foundation for the Blind Research Bulletin, 1964, 7, 37-52.
- Siller, J. & Chipman, A. Factorial structure and correlates of the attitudes toward disabled persons scale. Educational and Psychological Measurement, 1964, 24(4), 831-840.
- Siller, J. & Chipman, A. Personality determinants of reaction to the physically handicapped: II. Projective techniques. Unpublished Manuscript, Human Resources Library, 1965.

- Siller, J., Ferguson, L. T., Chipman, A. & Vann, D. H. Studies in Reactions to Disability XI: Attitudes of the Non-disabled Toward the Physically Disabled. New York University School of Education, 1967.
- Smith, J. J. Psychiatric hospital experience and attitudes toward mental illness. Journal of Consulting and Clinical Psychology, 1969, 33, 302-306.
- Stone, S. K. Emotional reactions to alterations in body image. Journal of Practical Nursing, 1976, May, 24-26.
- Stotland, E., Katz, D. & Patchen, M. The reduction of prejudice through the arousal of self-insight. Journal of Personality, 1959, 27, 507-531.
- Urie, R. M. & Smith, A. H. The effects of peer contact on attitudes toward disabled college students. Journal of Applied Rehabilitation Counseling, 1970-71, 1(4), 24-32.
- Vanderkolk, C. Physiological measures as a means of assessing reactions to disabled. New Outlook for the Blind, 1976, 70(3), 101-103.
- Vincente, A. R. Law enforcement student attitudes toward handicapped children. Dissertation Abstracts International, 1975, 35(7A), 4291.
- Warren, S. A., Turner, D. R. & Broady, D. S. Can education students' attitudes toward the retarded be changed? Mental Retardation, 1964, 2(4), 235-242.
- Whiteman, M. & Lukoff, I. F. Public attitudes toward blindness. New Outlook for the Blind, 1962, 56(5), 153-158.
- Whiteman, M. & Lukoff, I. F. Attitudes toward blindness and other physical handicaps. Journal of Social Psychology, 1965, 66, 135-145.
- Wolpe, J. The Practice of Behavior Therapy. New York: Pergamon, 1969.
- Wolpe, J. & Lazarus, A. A. Behavior Therapy Techniques. New York: Pergamon, 1969.
- Worthington, M. E. Personal space as a function of the stigma effect. Environment and Behavior, 1974, 6(3), 289-294.
- Wright, B. A. Physical Disability: A Psychological Approach. New York: Harper & Row, 1960.
- Wyder, F. T., Wilson, M. E. & Frumkin, R. M. Information as a factor in perception of the blind by teachers. Perceptual and Motor Skills, 1967, 25(1), 188.
- Yuker, H. E., Block, J. R. & Young, J. H. The Measurement of Attitudes Toward Disabled Persons. New York: INA Mend Institute, 1970.