THE EFFECT OF A WHEELCHAIR SPORTS PRESENTATION ON MODIFYING ATTITUDES OF JUNIOR HIGH SCHOOL STUDENTS TOWARD PHYSICALLY DISABLED PERSONS

By

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Date May 1, 1990
ABSTRACT

The Contact Hypothesis (Amir, 1969) suggests that attitudes toward a minority group can be modified. However, attitudinal change depends upon the nature of the contact. The main purpose of this study was to examine the effect of the B.C. Wheelchair Sports Demonstration Team Presentation on attitudes of junior high school students toward physically disabled persons. This was measured by the Attitudes Towards Disabled Persons Scale (ATDP) (Yuker et al., 1960) and the Modified Issues in Disability Scale (MIDS) (Makas, 1985). The treatment consisted of a one-hour structured program that included contact with physically disabled persons and information about their disabilities.

One hundred and thirty-one able-bodied students (ages 13-15) from four junior high schools in two British Columbia school districts participated in this study. Students from one school in each district attended the British Columbia Wheelchair Sports Demonstration Team Presentation. Students from the other school did not attend and were assigned to the control group.

This research used a one-group pretest-posttest design with a posttest-only control group as a follow-up, four weeks after the treatment. Subjects in the experimental group completed the ATDP prior to and immediately after the treatment. As a result of the high correlation (r=.91) between the MIDS and ATDP with a prior sample of 15-year-old students, both experimental and control groups completed only the MIDS four weeks after the treatment. All subjects completed the Social History Questionnaire (SHQ) (Makas, 1989) on each occasion. The SHQ gathered information on gender, birth date, place of residence and prior contact with physically disabled persons.
A t-test for dependent samples comparing differences between pre- and posttest MIDS scores of the experimental group was not significant (p=.112 for a 2-tailed test). However, in the follow-up portion of the study, an analysis of variance of the ATDP found a significant difference between the experimental and control groups (p=.007). There were no significant interactions of gender, age or previous contact with treatment.

The findings of this study show that able-bodied students' attitudes can be positively modified with an information plus contact program. Although the modification was not immediate, a delayed effect occurred.

Three focuses of further investigations might include the following: a need for attitude modification research related to disabled persons particularly in the junior high school age group; continued reliability and validity testing of the MIDS, and a refinement of the SHQ to more accurately assess prior contact with disabled persons.
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INTRODUCTION

Attitudes toward disabled persons are complex and multi-faceted. Many perspectives are possible. Data indicate that it is difficult to measure, change, and even understand attitudes toward disabled persons. Even though these things are difficult, they must be done in order to improve the quality of life and status of persons with disabilities (Yuker, 1988, p. v).

Over six hundred (600) articles have been published on the subject of modifying attitudes toward disabled persons. This chapter explores the theoretical and methodological weaknesses of the research in this area. It identifies the manner in which the current research may strengthen these weaknesses. In addition, a new tool measuring attitudes toward disabled persons is described. The attitude modification program which was the focus of this study was already in existence. The background, purpose and format of the British Columbia Wheelchair Sports Demonstration Team Presentation is also explained.

The majority of articles researching attitude modification programs toward disabled persons were published in the 1970's with the 1980's contributing at least fifteen literature reviews. Shaver, Curtis, Jesunthadas, and Strong (1989) reviewed 273 studies using meta-analysis and found that few studies received excellent or high ratings on any of the three types of global validity; general treatment validity, general internal validity, and adequacy of test validity. Also, none of the ratings of validity explained much of the variability in effect sizes (Shaver et al., 1989). Curtis and Shaver (1987) studied fifteen literature reviews on modifying attitudes toward persons with disabilities. They coded 143 of the 192 studies cited in these reviews for treatment and internal validity. None of the 143 studies were judged to be "excellent" in treatment validity or "high" in internal validity.
INTRODUCTION

Few studies in the attitude modification area have been based on theory. Curtis and Shaver (1987) found that the most frequently mentioned recommendation in reviews of literature pertaining to modifying attitudes toward disabled persons was to base research on theory and to design research to test competing theories of attitude change (Harth, 1973; Horne, 1985; Donaldson, 1980; Towner, 1984). Not only have few studies been based on theory, some of the methodological procedures have been questionable as well.

Research has examined the effects of specific treatments on attitudes toward disabled persons. However, methodological weaknesses in designs make interpretation of findings difficult. According to a meta-analysis on attitude modification programs toward disabled persons (Shaver et al., 1989), failure to establish amount of prior contact with disabled persons, lack of control groups, absence of follow-up procedures and gender bias were obvious weaknesses in many studies.

Few studies have measured the contact subjects have had with disabled persons prior to the study and this may have affected the results. Shaver et al., (1988) found only two studies that reported a correlation between prior contact with disabled persons and posttest attitude scores.

Another problem that research has not addressed is the length of the effect of the treatment as most procedures only included a pretest-posttest with the posttest taking place immediately after the treatment. Few included a follow-up more than one day after the treatment.

Most studies generalize about attitude change across gender although Shaver et al.'s (1988) meta-analysis found that the number of males in this research was disproportionately small when compared with female subjects. In the large number of
studies used in the meta-analysis, the mean, median and mode for male subjects were 36%, 35% and 0% respectively (Shaver et al., 1988).

There is definitely room to improve the quality of study in this area. Recommendations in Shaver et al.'s (1989) meta-analysis report might assist in doing so. The current study attempted to address some of the research flaws in the areas of theory and methodology relating to attitude change toward disabled persons.

The theoretical base that guided the current research was cognitive dissonance theory (Festinger, 1957) and the contact hypothesis (Amir, 1969). Festinger's theory of cognitive dissonance is a type of attitude change theory in which cognitions are defined as, "any knowledge, opinion, or belief about one's self or about one's behavior" (Festinger, 1957, p. 3). Festinger's theory states that dissonance occurs when an individual holds two cognitions that are inconsistent with one another. The individual can then elect to ignore the dissonance or modify his/her cognitions. When these cognitions are modified, an attitude change occurs. An effective way of bringing about this modification is based on the contact hypothesis which was founded on the premise that "intergroup contact tends to produce better intergroup attitudes and relations" (Amir, 1969, p.319).

The current study strengthened the previous methodological weaknesses in the following ways:

a) the extent of previous contact subjects had with disabled persons was identified;
b) a follow-up test was administered three weeks after the treatment. This does not infer that the treatment has a long term effect but that it lasts longer than one day as indicated in most of the research; and

c) the ratio of males to females was 67 to 62 so a more accurate generalization across gender could be made.

An additional purpose was to collect reliability and validity data for a new measurement tool and to use this measure to evaluate the treatment effects of an attitude modification program.

This research provided additional reliability and validity data for the Modified Issues in Disability Scale (Makas, 1985). The Modified Issues in Disability Scale was developed in response to the criticisms related to the aging Attitudes Toward Disabled Persons Scale (Yuker, 1960). Antonak (1982) commented that the comprehensiveness and continued reliability/validity of the Attitudes Toward Disabled Persons Scale have been questioned on the basis of extensive psychometric analysis and testing.

On a practical level, this study evaluated the effect of the British Columbia Wheelchair Sports Association Demonstration Team Presentation on modifying the attitudes of junior high school students toward physically disabled persons. The B.C. Wheelchair Sports Demonstration Team is made up of physically disabled and able-bodied athletes who play wheelchair basketball. The purpose of the Demonstration Team is to educate and increase community awareness of the value of recreation for disabled persons; to familiarize able-bodied individuals with the abilities of wheelchair athletes; to promote the concept of safety at work and play; to promote reverse integration; to increase membership and provide opportunities for
participation in sport and recreation for both disabled and able-bodied persons. One of the stated goals of the Demonstration Team is to provide the opportunity for a positive change to occur in the physical and attitudinal barriers that inhibit the integration of disabled persons into the mainstream. The Demonstration Team visits institutions, sporting events, sports camps and community events with the majority of the one hour wheelchair basketball presentations taking place at public school locations. In the present study, the effectiveness of these presentations was evaluated in the junior high school setting. The results were used to evaluate and modify the existing B.C. Wheelchair Sports Demonstration Team Presentation.

Finally, on a global level, the knowledge gained from the current study can be used to help modify the attitudinal barriers toward disabled persons as society's negative attitudes are the strongest barriers for disabled persons to overcome.

In conclusion, the purpose of the study was to investigate the effect of the B.C. Wheelchair Sports Demonstration Team presentation on attitudes of junior high school students toward physically disabled persons. It also addressed selected methodological and theoretical weaknesses in previous research, that is, theoretical base, prior contact, treatment follow-up, and gender bias. Validity and reliability data were also collected on Makas' (1985) new Modified Issues in Disability Scale.
LITERATURE REVIEW

INTRODUCTION

The literature review will focus on the following areas; theory base; the research on methods for promoting attitude change toward physically disabled persons; and relevant additional studies in the area. The studies cited will reflect pertinent research on school children aged 13-18.

THEORY BASE

Cognitive Dissonance Theory

Cognitive Dissonance Theory (Festinger, 1957) and the Contact Hypothesis (Amir, 1969) provide the theoretical foundation for this research. Festinger's (1957) theory of Cognitive Dissonance defines cognitions as, "any knowledge, opinion, or belief about one's self or about one's behavior" (p. 3). Festinger's theory states that dissonance occurs when an individual holds two cognitions that are inconsistent with one another.

The theory assumes that dissonance results in psychological discomfort, which, in turn, motivates the individual to seek to reduce the dissonance or to achieve consonance by adding or changing cognitions, or to avoid information or situations that might increase the dissonance.

In the current study, junior high school students were introduced to physically disabled persons through a sport situation. The object of the demonstration was to
reduce the cognitive dissonance not add to it. Amir (1969) suggested that one of the most successful ways by which to reduce this dissonance was through contact.

Contact Hypothesis

"Most research on the effects of personal interaction upon attitude change has been directed to racial attitudes but there is no apparent reason for the findings not to be applied to disabled persons" (Watts, 1984, p.54). In its infant state the Contact Hypothesis suggested simply that "interracial or inter-ethnic contact could reduce stereotyping and the resulting prejudice and discrimination" (Makas, 1989, p.2). However, the conditions surrounding the contact are crucial. Amir's (1969) article summarized and evaluated the studies investigating the effect of intergroup contact on changing attitudes and ethnic relations. The conditions necessary for interracial contact to have a positive effect were found to occur when:

(a) the members of each group are of equal status or
(b) the members of the minority group are of higher status than the majority group members;
(c) there is a favorable climate for group interaction;
(d) the interaction is of an intimate rather than a casual nature;
(e) the interaction is rewarding and pleasant; and
(f) the two groups have a mutual goal that requires interdependent and cooperative action (Watts, 1984, p. 54).

Conversely, some of the unfavorable conditions which tend to strengthen prejudice and to promote a negative attitude occur when:

(a) the contact is unpleasant, involuntary, tension laden;
(b) the prestige or the status of one group is lowered as a result of the contact situation;

(c) the members of the group are in a state of frustration (i.e., inadequate personality structure, recent defeat or failure, economic depression, etc.) - here contact with another group may lead to the establishment of an ethnic "scapegoat";

(d) the groups in contact have moral or ethical standards which are objectionable to each other;

(e) the members of the minority group are of a lower status or are lower in any relevant characteristic than the members of the majority group (in the case of contact between a majority and a minority group) (Amir, 1969, p. 339).

Makas (1989) noted that five constructs are particularly useful in explaining how contact with disabled individuals may be able to positively influence attitudes toward disabled persons:

1. Habituation;
2. Increased cognitive complexity in the perceptions of the target group;
3. Reduced reliance on stereotypes through the provision of individuating information;
4. Opportunity for perception of similarities; and
5. Stereotype disconfirmation.

The following paragraphs elaborate upon these constructs.

Habituation

Habituation is "a decline in the tendency to respond to stimuli that have become familiar due to repeated exposure" (Gleitman, 1986, p.88). Langer, Fiske, Taylor and Chanowitz (1976) stated that "much of the discomfort evident in interactions between handicapped persons and normals exists because one's desire to
explore a novel stimulus arouses the fear of violating a social norm against staring" (p. 452).

Reduced Salience of Deviant Characteristics

Makas suggested that:

Negative attitudes may be the result of illusory correlations between 'deviant' persons and 'deviant' behaviors. These negative attitudes, however, can be reduced through personal contact, since increased familiarity with individual group members can decrease the salience of physical differences and, thus, disrupt the illusory relationship between unique appearance and unusual behavior (Makas, 1989, p.30).

Increased Cognitive Complexity of the Target Group

Stephan (1985) has suggested that "out-groups" are conceptualized less complexly (although more negatively than "in-groups" (Makas, 1989, p. 33).

Reduced Reliance on Stereotypes Through the Provision of Individuating Information

Rose (1981) stated that this over reliance on stereotypes may be due in part to a bias in memory in which people store information by group, rather than individual, when the individual is a member of an out-group (Makas, 1989).

Opportunity for Perception of Similarity

"Stephan (1985) stated that differences between groups are amplified, and similarities within groups are minimized" (Makas, 1989, p. 37). McArthur (1982) hypothesized that prejudice can be reduced by breaking down categorizations of people which focus on dissimilarities between groups and re-categorizing persons in ways which highlight similarities (Makas, 1989).
Stereotype Disconfirmation

Finally, Deutsch and Collins (1951) stated that frequent and varied contact is likely to expose the interactants to enough nonstereotypic behaviors to break down the stereotype itself (Makas, 1989).

Cognitive Dissonance Theory (Festinger, 1957) and the Contact Hypothesis (Amir, 1969) form the theoretical foundation upon which the current study was built. The research supporting this is now discussed by reviewing the existing literature promoting attitude change toward disabled persons.

METHODS OF ATTITUDE MODIFICATION TOWARD PHYSICALLY DISABLED PERSONS

As mentioned in the introduction, over 600 studies have been completed assessing attitudes toward disabled persons. Because of the extent of the research in this area, the review of literature will consider general findings in the treatment intervention area as found by the meta-analysis of Shaver et al. (1989) and will then focus on the research relevant to children aged 13-18 years.

Treatment was defined as an intervention used to modify the attitudes of the subjects toward physically and/or mentally disabled persons. The types of treatment described in Shaver et al. (1989) and explored in this study were "information," "contact" and "information plus contact". The term attitude is defined as an affinity or aversion to situations, objects, persons, groups, or any other identifiable aspects of the environment, including abstract ideas and social policies (Bem, 1970). Attitudes have cognitive, emotional and behavioral components.
LITERATURE REVIEW

The meta-analysis approach (Glass, 1976) was developed to "provide a summary of the extant research in the form of answers to questions such as, 'What does the available research say about the effects of Treatment X? (Shaver et al, 1988, p. 5)". In this case, it is applied to the question of what is the effect of Treatment X in modifying attitudes toward disabled persons? It is important to note that this meta-analysis examined attitudes toward disabled persons. The term "disabled person" is defined by Shaver et al. as someone with physical and/or mental disabilities.

In the meta-analysis, the treatments were assigned to one of ten possible categories. An explanation of each category can be found in Appendix A. The effect sizes for these categories are also found in Appendix A.

The meta-analysis is based on effect sizes which are commonly labelled D. For their study, Shaver et al (1989), accepted values to identify low, medium and high effects as .2, .5 and .8 respectively.

Information

This technique provides information on disabilities (e.g., etiology, characteristics, problems, similarities with able-bodied, prostheses) provided by means such as speakers, films, and books (Shaver et al., 1988, p. 48). According to Shaver et al. (1988), information has a medium effect size ($D_s=.51$). Therefore, information is seen as a moderately effective technique of positively modifying attitudes toward disabled persons in general. However, a smaller mean effect size of .36 based on 43 studies was found for modifying attitudes toward physically disabled persons in which information was the sole treatment (Shaver et al., 1988, p. 59).
LITERATURE REVIEW

The technique of information took the form of audio, video and live presentations and a number of combinations of the above in the following studies.

No significant attitude change was found by Forader (1972) who studied the effects of three different modes of presentation on the change in attitude toward disabled persons of 142 high school students. The students were exposed to one of three treatment conditions where the able-bodied experimenter presented factual, educationally based persuasive material using live, video or audio modalities. Pretest-posttest differences for each modality failed to reach statistical significance.

The effects on grade 7 students of a film (Barr, 1975) and discussion about a woman born without arms, which explored her life as a wife, a mother, and a woman with a handicap was studied by Schroeder (1978). Results indicated that girls became more positive toward physically disabled persons after the presentation while boys became more negative. Interpretation of these findings are difficult as the effect may have been due to the film, the discussion or a combination of the above.

Mulkey (1980) seemed to improve upon the methodology of Schroeder (1978) by assigning the grade 6, grade 9 and grade 12 students to one of three groups: viewing a film "A Different Approach"; discussing aspects of disability with a person in a wheelchair; or no treatment (control). The research design was a modified pretest-posttest procedure with a follow-up observation after six weeks using the ATDP as the dependent measure. Retention of attitude change was not maintained over the six-week period and there was no support for the contention that one treatment was better than the other. Although not statistically significant, there was a greater retention of positive attitude with increasing grade level among students who viewed the film.
LITERATURE REVIEW

Perkins and Karniski (1978) conducted a study with grade nine children based on the premise that increased knowledge of physical disability would lead to positive attitude change as measured by personal-space behavior. An experimental group (n=20) received instruction relating to physical disability while a control group (n=28) received no instruction. The results indicated that a significant difference existed between groups on how closely the children would approach a person they believed to be disabled.

Marsh and Friedman (1972) also found a positive change in attitude toward disabled persons after the use of the Vision Education program with sighted high school students and their blind peers. However, their study did not include a control group like Perkins & Karniski (1978). Also, this treatment can arguably be classified as "information plus contact" since blind peers were present.

Contact

The "contact technique" is defined as a situation in which subjects are able to observe or interact with persons having disabilities (Shaver et al., 1988, 48). Of the three treatments reviewed in this study, the contact treatment was seen as most effective ($D_s=0.73$) in modifying attitudes toward disabled persons. The mean $D=0.73$ for contact approached a high effect size. This technique ranks second only to vicarious experience (mean $D=0.76$) when all possible attitude modification techniques are included. When looking at modifying attitudes toward physically disabled persons, the generalizability was questionable due to the small sample size. A small mean effect size of $0.26$ was found based on four studies. In addition, the results specific to the age level studied in the current research were equivocal.
Results tend to be ambiguous. Anthony (1969) reported a positive modification in attitude while Wallston et al. (1972) and Anthony & Cannon (1969) reported no change in attitude. Wallston et al. (1972) also reported a negative change in attitude toward disabled persons.

Anthony (1969) studied the attitudes of counsellors employed at a summer camp for handicapped children. The camping experience provided the adolescent counsellors with information conveyed by professionals on the camp staff as well as continuous contact. The findings indicated that at the beginning of the camping experience new counsellors had significantly lower positive attitudes than those who had worked at the camp previously, and that by the end of the summer, the new counsellors held significantly improved attitudes toward physically disabled persons ($D=0.53$).

Wallston et al (1972) found no change in attitudes toward disabled persons. They studied a group of student volunteers in a summer parks program involved with disabled children.

Anthony & Cannon (1969) also found no effect on physically normal children's attitudes toward physical disability as a result of attendance at a two week summer camp with physically disabled children. The findings indicated a tendency for children who had negative attitudes to become even more negative ($D=-0.47$).

Finally, Wallston et al. (1972) studied the effects of contact with disabled youth in a Junior Achievement Program on 42 youth and 30 advisors. The overall change in attitude toward the disabled in this study was a negative one.
Information Plus Contact

Another type of "contact" program has been investigated. This involved contact with a physically disabled person plus informational sessions relating to disabilities. Such an approach seemed to have been more successful than the contact treatment alone in bringing about positive attitude change.

The "information plus contact" treatment intervention was used in the current study. In the Shaver et al. (1989) meta-analysis, studies using this approach yielded a mean effect size of .51. Although, it is only moderately influential overall, the potency of this intervention changes as a number of factors such as age and gender are introduced. The following is a summary of results across age levels found by Shaver et al. (1988) (see Table I).

<table>
<thead>
<tr>
<th>Age level</th>
<th>Effect size (Ds)</th>
<th>Number of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades 4-6</td>
<td>.59</td>
<td>6</td>
</tr>
<tr>
<td>Undergraduates</td>
<td>.69</td>
<td>15</td>
</tr>
<tr>
<td>Graduates</td>
<td>.09</td>
<td>5</td>
</tr>
<tr>
<td>Adults</td>
<td>.22</td>
<td>5</td>
</tr>
</tbody>
</table>

(Shaver et al., 1988, p. 52)

Because of the lack of research studies in the junior high area, an effect size was not calculated. However, the mean contact treatment effect size was found to be
higher in the grade 4, 5 and 6 subjects (D=.81) than for a combination of subjects (school, university) (D=.20) and university and/or college subjects (D=.40) (Shaver et al., 1988). Due to the limited research in this area, the effectiveness of information plus contact as a treatment in the junior high school population is a good area to investigate.

In a study by Handlers and Austin, (1980), eighteen junior and senior high school students participated in activities to become more knowledgeable about handicapping conditions and handicapped people; to ease the mainstreaming of handicapped students into regular classrooms; and to develop a teaching package that could be used with other classes. Self-evaluation questions revealed that 82% felt their own attitudes became more positive and accepting of disabled people, and 62% felt that direct contact was the most effective method for improving attitudes toward the disabled.

Rusalem (1967) attempted to change the attitudes of a group of high school girls toward deaf-blind persons. The students were pre-selected from a larger group to form two groups, one with extremely positive and one with extremely negative attitudes. The students participated in six 1 hour group sessions that involved information about deaf-blindness, instruction in the manual alphabet, and the opportunity to communicate with deaf-blind individuals. Measures of attitude change were self-reports, a sentence completion test, and behavior. Results showed that the students with the most positive attitudes did not change on the self-report or the sentence completion test, probably due to the ceiling effect, but that the group with the poorest attitudes improved on both the attitude and behavioral measures. Measures of behavioral change included self-initiated volunteer work and reading.
about deaf-blindness. It was apparent that more sound methodological research was needed in this area to strengthen the results of these few studies.

Other factors have found to be important with respect to attitude modification treatments. Wetstein-Kroft and Vargo (1984) summarized the literature pertaining to children's attitudes toward physically disabled persons. They found the following factors to be important in the modification of attitudes.

1. **Time.** The failure of many studies to produce attitude change may be due to the fact that single experiences are not sufficient to produce long term change. Donaldson (1980, p. 511) has commented:

   Short, structured presentations of, or experiences with, persons who represent nonstereotypic images of disabilities and are of equally valued status in relation to participants have been particularly effective in short term attitude modification. These findings suggest that those who wish to maximize the effect of brief access to professional or lay groups should provide opportunities through live or media presentations for handicapped persons to convey information about what it is like to be handicapped, who they are as individuals, and how they expect nonhandicapped persons to relate to them.

2. **Motivation.** The motivational aspect of change must be considered if it is to be enduring. It must be extrinsically or intrinsically rewarding to the child.

3. **Equal status.** Donaldson (1980) suggested that attitudes are more likely to change if an equal status relationship is perceived, or if the disabled person is higher in status (e.g., a disabled adult is higher in status than an able-bodied child).

4. **Perceived similarity.** Differences must be addressed first and then one ceases to be aware of the handicap and reacts to other characteristics (Davis, 1969).

5. **The disabled as a vehicle for change.** Disabled persons have the power to change existing stereotypical attitudes if they do not act in a stereotypical manner.
LITERATURE REVIEW

(Donaldson, 1980) and can reduce the tension and anxiety present in interpersonal contacts to allow for positive attitude change (Evans, 1976).

6. The importance of structured interactions. Direct contact with the disabled must be structured in order to reduce stereotypical attitudes (Donaldson, 1980).

7. Developmental considerations. The proposed intervention program should recognize the cognitive, affective and behavioral level of the child (Wetstein-Kroft and Vargo, 1984).

It is interesting to note that the summary suggestions offered by Wetstein-Kroft & Vargo (1984) in their review of the literature were almost identical to those stated in Amir's (1969) Contact Hypothesis. This further strengthens the notion of "contact" as being a central focus of an effective attitude modification technique. The following section presents studies pertaining to age and gender that did not use treatment interventions.

ADDITIONAL STUDIES RELEVANT TO CHILDREN AGED 13-18 YEARS

This section reviews research relating to the attitudes of male and female adolescents (ages 13-18) toward physically disabled persons. No treatment interventions in terms of attitude modification programs were involved.

Richardson (1970) found that liking for a drawing of a wheelchair bound child increased with age from kindergarten to grade 12 and was especially strong in late elementary and adolescent males. Values gradually changed and by grade 12 the attitudes toward physically disabled persons closely resembled those of their same sex parents. Older females were found to conform more to peer values than older males.
Females showed a greater dislike for children with facial disfigurement and males showed a lower preference for children with functional handicaps.

Voeltz (1980) surveyed 2,392 children in grades 2 through 7 regarding their attitudes toward handicapped peers. They were asked to respond (agree, disagree, undecided) to 21 items related to disability taken from an Acceptance Scale for which they provided reliability and validity data. Results indicated that children were most willing to interact with a disabled child if the able-bodied child was female, in grade 5 or 6, and enrolled in a school which permitted a high degree of contact with disabled children.

Parish and Copeland (1978) administered the Personal Attribute Inventory for Children to 131 students in grades five, six and seven. The students selected 15 adjectives which best described the three groups of handicapped and normal children. Results indicated a preference for normal children first, physically disabled children second, learning disabled children third, and emotionally disturbed children last.

The following studies were based on mentally and/or physically disabled persons across different ages. Bateman (1962) explored the responses of sighted children in grades three through eight on a 50-item questionnaire concerning the abilities of blind children. Results showed an increase in favorability toward blind children until grade six and then this positive response leveled off.

Higgs (1975) examined a cross-section of grade eight students, grade twelve students, college students, vocational rehabilitation counsellors, college advisors, and parents using the Attitudes Toward Disabled Persons Scale (Yuker et al., 1960). He (1975) found that the grade twelve students had less knowledge about and less contact with the disabled. These students also displayed a significantly lower test
score on the ATDP indicating a less positive attitude toward the disabled than that of other groups studied.

Siller (1963, 1964) chose three measures to assess attitudes of junior high, high school and college students toward disabled persons. The measures used were the ATDP, a social distance scale and a Feelings Check List. This study found college students more accepting of the disabled than high school and junior high school students. The high school students reported a more aversive reaction toward the disabled on the Feelings Check List than the junior high school and college students.

Tringo (1970) used a social distance scale to measure attitudes of high school students, college students, graduate students and rehabilitation workers toward 22 deviant groups. Several disability groups were included within this category. A generally consistent rank order emerged. High school students were found to be less accepting of the disability groups than the other respondent groups. Age, however, may be confounded with education in this study. Prior contact can also be considered a confounding variable as it is very rarely taken into account.

Gosse and Sheppard (1979) used the Attitudes Toward Disabled Persons Scale-Form B (Yuker, Block and Campbell, 1966) to compare the attitudes toward physically disabled persons held by 696 male and female individuals at three educational levels (n=273 grade 7 students, n=268 grade 11 students and n=155 second-year university students) who had personal contact versus no such contact with the disabled. Results revealed that higher the educational level the more positive were the students’ attitudes. However, no significant differences were found between grade 11 and university students. Generally, students who had contact with
physically disabled persons had more favorable attitudes toward the disabled with
the exception of grade 11 contact versus non-contact groups.

Furnham and Gibbs (1984) surveyed the attitudes toward disabled persons of
135 (female=111; male=34), thirteen year old British students using a modified
version of Yuker et al.'s (1960) ATDP questionnaire. Results demonstrated that the
students' attitudes toward the physically disabled were more positive than toward
the mentally handicapped. Generally, there were very few sex differences indicating
that males felt greater negative feelings toward the handicapped than females.
Finally, those who knew or interacted with a disabled person were more positive in
their attitudes than those who had little or no contact.

The findings of these studies seem to be supported by the following research.
According to social-cognitive development, Hoffman (1981) stated that children
become more empathic with the general plight of entire classes of disadvantaged
persons, as children move from early childhood to later childhood and adolescence
(Sigelman and McGrail, 1985, p.354). Cialdini and Kendrick (1976) found that this
age group is also more likely to behave according to norms of social responsibility
and find empathy toward the needy to be rewarding (Sigelman and McGrail, 1985,
p.354). However, in later adolescence, this may change.

Finally, Donaldson (1980, p. 249) states:

The developmental trend from early childhood through the late teens
appears to form an inverted-U. Beliefs, attitudes, and behavior toward
the disabled become increasingly favorable until the late teens,
whereupon attitudes and beliefs (and perhaps behavior) again become
quite unfavorable, although apparently not as unfavorable as in early
childhood.
LITERATURE REVIEW

It is important to note that Donaldson's (1980) hypothetical view is based on a limited number of studies. Secondly, if this inverted-U does exist, the approximate age of the attitude change in the adolescent years remains unclear. However, since the adolescent years seem to be one of the most challenging periods for the modification of attitudes toward the physically disabled, it is important that effective instructional programs are developed to reach this group.

On first glance, it is easy to dismiss the fact that new research projects measuring attitude modification programs toward the disabled are essential because of the large number of studies (600) in the area. However, on closer inspection, it is clear that more research is vital in the area of "information plus contact" attitude modification programs toward physically disabled persons because of the equivocal findings in this area in general and, specifically, in the junior high school age group.

The current research addresses the information plus contact attitude modification technique. The effect of this program is evaluated on modifying attitudes of junior high school students ages (13-15) toward physically disabled persons.
METHODOLOGY

INTRODUCTION

Canadian Wheelchair Sports Association-B.C. Division

The Canadian Wheelchair Sports Association-British Columbia Division (CWSA-BC) is a charitable society dedicated to promoting and providing sport and recreation opportunities for people who use wheelchairs. CWSA-BC is the official voice for wheelchair sports in B.C. and offers direct services in the areas of competition, junior development, training and leisure counselling to its members. The Association also encourages and supports the integration of wheelchair athletes into existing community recreation programs, and promotes a general public awareness and acceptance of disabled people.

British Columbia Wheelchair Sports Demonstration Team

The purpose of the B.C. Wheelchair Sports Demonstration Team is:

(1) to educate and increase community awareness of the value of recreation and the abilities of wheelchair athletes;

(2) to promote the concept of safety at work and play;

(3) to promote reverse integration;

(4) to increase membership; and

(5) to provide opportunities for participation in sport and recreation (Canadian Wheelchair Sports Association-B.C. Division, 1988).
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The B.C. Wheelchair Sports Demonstration Team, is made up of physically disabled and able-bodied athletes who participate in the wheelchair sport program of basketball. The B.C. Wheelchair Sports Demonstration Team consisted of four disabled and three able-bodied athletes during the Spring Tour of 1989. For a profile of each athlete, refer to Appendix B. The Demonstration Team visits institutions, sporting events, sports camps and community events with the majority of the presentations taking place at public school locations.

The B.C. Wheelchair Sports Demonstration Team visited schools in the Okanagan, West Kootenays and Vancouver Island regions during their Spring Tour of 1989. The effect of their program on modifying attitudes toward physically disabled persons was investigated in the current study utilizing schools within Okanagan and Vancouver Island regions. The goals of the tour were stated as follows:

1. To increase the community's awareness of the opportunities and growth that individuals with disabilities can experience through leisure and recreation activities.

2. To provide the opportunity to positively change both physical and attitudinal barriers experienced by individuals with disabilities.

3. To encourage the independent recreation participation of individuals with disabilities within tour communities.

4. To act as a community resource to promote the development of wheelchair sport programs.

5. To promote the concept of safety during both work and play.

6. To encourage the integration of able-bodied athletes into wheelchair sport programs

(Canadian Wheelchair Sports Association-B.C. Division, 1988, p. 2).
METHODOLOGY

TREATMENT

The Demonstration Team presentation took approximately one hour. Initially, the team members representing the school and the B.C. Wheelchair Sports Demonstration Team were introduced. Then there was a brief outline of the rules and skills involved in wheelchair basketball. A twenty to thirty minute game followed. At half time, every athlete described his/her personal background and experiences. An open question period took place between the athletes, staff and students after the game. Finally, each athlete related how he/she was injured and stressed the importance of avoiding similar situations. (An outlined format of the program can be found in Appendix B).

SAMPLING

A non-probability convenience sample was used. The sample consisted of 131 (male=67, female=62) junior high school students from four B.C. secondary schools. The ages ranged from 13 to 16.

The sample consisted of two experimental (n=88; males=46, females=41, missing data=1) and two control groups (n=43; males=21, females=21, missing data=1). Students from the McNicoll Park school (n=25; males=12, females=12, missing data=1) in Penticton, B.C. and Cumberland Junior Secondary school (n=63; males=34, females=29) in Courtenay, B.C. made up the experimental group. Students from the Nkwala school (n=23; males=10, females=13) in Penticton, B.C. and Courtenay Junior High school (n=20; males=11, females=8, missing data=1) in Courtenay, B.C. made up the control group.
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The researcher obtained a schedule of the B.C. Wheelchair Sports Demonstration Team during May and June of 1989 when the Demonstration usually tours. Next, junior high schools that the team was scheduled to attend were identified as possible experimental groups. Then junior high schools in the same school district that would not attend the presentation were identified. These schools could act as possible control groups. It was also established that the control and experimental groups had not seen the B.C. Wheelchair Sports Demonstration Presentation in the past. The district superintendents and school principals of the school districts meeting the above criteria were contacted regarding the study. Those superintendents and principals agreeing to permit their schools to take part in the study confirmed their support in writing.

EXPERIMENTAL DESIGN

The selection of the appropriate research design was dependent upon several factors. The school districts included in this study were randomly selected but the classes involved were in existence prior to the initiation of the study. Therefore, random assignment of subjects to groups was not possible.

The experimental group completed the Modified Issues in Disability Scale (MIDS) (Makas, 1985) assessing attitude toward disabled persons before and immediately after the B.C. Wheelchair Sports Demonstration Presentation. They also completed the Social History Questionnaire (SHQ) (Makas, 1989) on each occasion which gathered information on age, gender, place of residence and amount of prior contact with physically disabled persons.
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A different questionnaire Attitudes Toward Disabled Persons Scale (ATDP) 
(Yuker et al., 1960) highly correlated with the ATDP in measuring attitude toward
disabled persons was administered with the SHQ four weeks after the B.C.
Wheelchair Sports Demonstration Team Presentation. The use of an alternate test
(Modified Issues in Disability Scale, Makas, 1985) lessened the learning effect of the
experimental group as they had completed the ATDP on two previous occasions.

The principals of the control group schools consented to the administration of
questionnaires on only one occasion. The most important part of the current research
was to investigate the long term effect of the B.C. Wheelchair Sports Demonstration
Team Presentation on modifying attitudes toward physically disabled persons.
Therefore, the control group responded to the ATDP and the SHQ four weeks after
the experimental group attended the B.C. Wheelchair Sports Demonstration Team
Presentation.

Two experimental designs were used in this study. A one-group pretest-
posttest design was used for the initial portion of the study measuring attitude
toward disabled persons prior to and immediately after the B.C. Wheelchair Sports
Demonstration Team Presentation. A posttest-only control group design was
implemented for the three week follow-up. In the following section, the two designs
are described and threats to internal and external validity are explored.
One-Group Pretest-Posttest Design

The name of the first design was a One-Group Pretest-Posttest Design (as described in Campbell & Stanley, 1963) (see Figure 1). Figure 1 Diagram of the One-Group Pretest-Posttest Design

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Treatment</th>
<th>Posttest</th>
</tr>
</thead>
</table>

The dependent variable used for part one was the Modified Issues in Disability Scale (MIDS) (Makas, 1985). The factors of gender, area, age and contact were also considered. (See Figure 2).

Figure 2 Factors and Levels of the Pretest - Posttest Single Group Design

Factor 1: Gender
Levels: 2
male
female

Factor 2: Age
Levels: 4
13 years of age
14 years of age
15 years of age
16 years of age
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Factor 3: Contact
Levels: 5

1. no personal contact with physically disabled persons
2. very little personal contact with physically disabled persons
3. some personal contact with physically disabled persons
4. quite a bit of personal contact with physically disabled persons
5. a great deal of personal contact with physically disabled persons

Threats to the Internal and External Validity of the One-Group Pretest-Posttest Design

Campbell & Stanley (1963) classify the One-Group Pretest-Posttest as a pre-experimental design. Possible threats to internal validity include history, maturation, testing, instrumentation, and statistical regression. Internal validity refers to the degree to which the researcher can be reasonably certain that the effects are the result of the treatment.

Other events which may have influenced the results between the time of the pretest and the posttest in addition to the B.C. Wheelchair Sports Demonstration Team Presentation treatment. This threat is termed extrasession and intrasession history. In order for the rival hypotheses to become plausible, Campbell and Stanley (1963) state that such an event should have occurred for most of the students in the group under study. Since no large scale media event such as the Man-in-Motion Tour was taking place, there is no reason to believe that history posed a threat.

The threat that maturation may cause can be discounted due to the lack of time between the pretest and posttest. The term maturation is used to cover "all
biological and social processes which systematically vary with the passage of time, independent of specific external events" (Campbell & Stanley, 1963, p. 8).

A third confounding variable is the effect of testing, or the effect of the pretest itself. It is possible that the instruments used in this study were reactive. However, this poses a problem in much of the attitude research because of the type of the self-report measures used.

Instrumentation refers to "autonomous changes in measuring instruments which may account for the pretest-posttest difference" (Campbell & Stanley, 1963, p. 9). This does not pose a threat to internal validity as self-report measures were used rather than observational or subjective measures.

Statistical regression occurs when "groups have been selected on the basis of their extreme scores" (Campbell & Stanley, 1963, p.5). This factor is not applicable as the attitudes of the students toward physically disabled persons were not previously determined and there was no reason to believe that sets of extreme scores existed.

Experimental mortality is a threat when there is reason to believe that the subjects lost from the study differ in important characteristics from the subjects who remain in the study. Since 20 of the subjects in the experimental group failed to complete the questionnaires on 3 occasions, they were dropped from the study. There was no reason to believe that these subjects differed from those who remained in the study.

External validity refers to what population, settings, treatment variables, and measurement variables the study can be generalized to. Threats to the external
validity of the One-Group Pretest-Posttest Design include interaction of testing and the treatment interaction of selection biases and treatment.

The pretest may decrease the subjects' sensitivity or responsiveness to the experimental variable and thus make the results unrepresentative of the general population (Campbell and Stanley, 1963). This may have been a factor in the current study. The subjects were not questioned as to whether or not they knew the true purpose of the measurement tools or the study.

According to Campbell & Stanley (1963, p. 19), the threat to external validity presented by the interaction of selection and the experimental variable can be minimized by exposing the treatment to a number of schools located in a variety of environments, rather than several classes from a single school. Because the schools in this study varied in size, geographic setting and location, it was assumed that the results could be generalized to classes of junior high school students who had seen the B.C. Wheelchair Sports Demonstration Team Presentation outside a large metropolitan area.

Posttest-Only Control Group Design

The second part of the experiment used a posttest-only control group design (as described in Campbell & Stanley, 1963) (see Figure 3). The Attitudes Toward Disabled Persons Scale (ATDP) (Yuker et al., 1960) was selected as the dependent variable.
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Figure 3 Diagram of the Posttest Only Design

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>1. Social History Questionnaire</td>
</tr>
<tr>
<td></td>
<td>2. Attitudes Toward Disabled Persons Scale</td>
</tr>
<tr>
<td>Control</td>
<td>1. Social History Questionnaire</td>
</tr>
<tr>
<td></td>
<td>2. Attitudes Toward Disabled Persons Scale</td>
</tr>
</tbody>
</table>

The factors of gender, area, age and contact were also considered. (See Figure 4).

Figure 4 Factors and Levels of the Posttest Only Design

<table>
<thead>
<tr>
<th>Factor 1: Group</th>
<th>Levels: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
</tr>
<tr>
<td></td>
<td>Control</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 2: Gender</th>
<th>Levels: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>male</td>
</tr>
<tr>
<td></td>
<td>female</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 3: Age</th>
<th>Levels: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13 years of age</td>
</tr>
<tr>
<td></td>
<td>14 years of age</td>
</tr>
<tr>
<td></td>
<td>15 years of age</td>
</tr>
<tr>
<td></td>
<td>16 years of age</td>
</tr>
</tbody>
</table>
METHODOLOGY

Factor 4: Contact

Levels: 5

1. no personal contact with physically disabled persons
2. very little personal contact with physically disabled persons
3. some personal contact with physically disabled persons
4. quite a bit of personal contact with physically disabled persons
5. a grat deal of personal contact with physically disabled persons

Threats to Internal and External Validity of the Posttest-Only Control Group Design

According to Campbell & Stanley (1963), the majority of threats to internal validity are controlled while threats to external validity include interaction of testing and the treatment, interaction of selection and the treatment and reactive arrangements (Campbell & Stanley, 1963).

Threats to history were minimized by selecting each experimental class and its respective control group from schools within the same school district. It was not possible to select the experimental and control group from the same school as the entire school attended the B.C. Wheelchair Sports Demonstration Team Presentation. The possibility of maturation being a threat is diminished by the fact that the experimental and control classes were selected from the same grade levels. A third confounding variable is the effect of testing. This poses a problem in the majority of attitude research studies because of the reactivity of measures used. Instrumentation does not pose a threat to internal validity as self-report questionnaire measures were used rather than observational measures. The factor of
METHODOLOGY

statistical regression is not applicable as the attitudes of the students toward physically disabled persons were not previously determined by the ATDP.

In terms of external validity, the only variable that poses a threat is the interaction of testing and the treatment. This factor did not weaken the design as a different attitude measurement tool was given to the experimental group at the third testing period.

MEASURES

Use of Self-Report Measures

Self-report measures are used throughout this study. The self-report approach includes all procedures by which a person can be asked to report his or her own attitudes. This can be administered orally in the form of interviews, surveys or polls; or written in the form of attitude rating scales, logs, journals, diaries or, in this case, questionnaires. The self-report approach is most appropriate when the people whose attitudes you are investigating are able to understand the questions asked of them, have sufficient self-awareness to provide necessary information and, thirdly, are likely to answer honestly and not deliberately falsify their responses.

The cognitive and affective components of attitude are measured by the Attitudes Toward Disabled Persons Scale (Yuker, 1969) and the Modified Issues in Disability Scale (MIDS). This represents the beliefs, perceived knowledge (cognitive) and feelings (affective) toward physically disabled persons.
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The Attitudes Toward Disabled Persons Scale (Yuker et al., 1960)

The Attitudes Toward Disabled Persons Scale (ATDP) (Yuker et al., 1960) is a Likert-type scale designed to measure attitudes toward disabled persons when administered to able-bodied individuals. It has been used in over 200 studies relating to attitude modification toward disabled persons. There are three alternate forms of the scale, the original 20-item form (Form O), and two alternative 30-item forms A and B. Each item is a statement about disabled persons to which a person responds by indicating the extent of the agreement or disagreement. Each form takes approximately 15 minutes to complete. The scores can range from 0 to 120. The original form (Form O) of the ATDP was used in this study. (see Appendix C, Figure 3).

In terms of reliability, Yuker et al. (1970) reported acceptable test-retest and split-half reliability ranging from .66 to .89 with a mean of .67 (see Table II). Stability-equivalence reliability values range from .41 to .83 with a median of .74. Reports of internal consistency have ranged from .72 to .89 (Yuker, 1970). "Yuker et al. (1970) and Block (1974) provided data which supported the construct validity based on predicted relationships with demographic variables (contact with disabled people and gender) and personality variables (body concept and nurturing)" (Makas et al, 1988, p. 22).

However, the comprehensiveness and continued reliability/validity of the ATDP has been criticized (Antonak, 1982; Kent et al., 1984; Siller and Chipman, 1964). Antonak (1982) used a Kuder-Richardson Formula-20 procedure and found a .51 reliability coefficient and extreme response tendencies for 5 of the 20 items in ATDP-Form O (Makas, 1988). In terms of construct validity, Antonak (1981) found
METHODOLOGY

a multiple correlation coefficient of only .25 for ATDP scores and the most commonly cited demographic and experiential determinants of attitudes toward persons with disabilities (age, sex, educational level, professional specialization, frequency of contact with disabled individuals, and contact intensity) (Makas et al, 1988) Finally, the multi-dimensionality of the measure has been questioned as Siller and Chipman (1964) and Antonak (1982) found that the scale clustered into two factors (see Appendix C, Figure 4).

Table II Reliability and Validity of the ATDP and the MIDS

<table>
<thead>
<tr>
<th>Instrument</th>
<th>ATDP</th>
<th>MIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal consistency</td>
<td>.72-.89</td>
<td>.79</td>
</tr>
<tr>
<td>Test-retest</td>
<td>.67</td>
<td></td>
</tr>
<tr>
<td>Validity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construct</td>
<td>&quot;good attitude&quot; subjects vs. student subjects (F = 128 p &lt; .0000)</td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td>panel of experts in the field on the panel of experts in the field (13)</td>
<td></td>
</tr>
<tr>
<td>Concurrent</td>
<td>Between ATDP and MIDS .78-.92</td>
<td></td>
</tr>
</tbody>
</table>

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The Modified Issues in Disability Scale (Makas, 1985)

The Modified Issues in Disability Scale (MIDS) (Makas, 1985) is a likert-type scale in which subjects are asked to indicate the extent of their agreement/disagreement with 37 statements about persons who have physical disabilities. The possible range in score is 37 to 259. Completion time is approximately 10-15 minutes (see Appendix C Figure 5).

Makas (1988) has attempted to develop a measure which "preserves the valuable information gathered through previous research, while taking into consideration the criticisms of prior attitudinal measures" (p. 22). Attempts were made to "represent the multidimensionality of attitude and to reduce the demand of social reliability" (Makas, 1988, p. 22).

Test items were selected from a large pool of statements generated by Makas (1985). Some of the items were drawn from existing scales (and, in many cases, reworded to reduce demand characteristics). Others were novel, resulting primarily from informal conversations with disabled individuals and/or researchers.

The initial pool of more than 140 items was narrowed down to 100 by a panel of 12 experts who were either experts on attitude measurement or attitudes toward people with disabilities. Five of the experts had disabilities.

The 37 items in the MIDS are those which showed statistical strength among 83 student subjects and high consensus as to what constitutes positive attitudes among 92 carefully selected disabled respondents ($F= 128.0$, $p<.0001$).

With respect to reliability, a Cronbach alpha test showed good internal consistency of .79 (Makas, 1989) based on the responses of 305 undergraduate student subjects ($n=170$ females, $n=135$ males) (Makas, 1989). The responses of this
sample also supported the construct validity of the MIDS. Females scored significantly higher than males (X=167.31 females, X=161.03 males, p<.01) In addition, subjects with greater personal contact with disabled individuals scored significantly higher than subjects with less personal contact (X=155.20 "no personal contact", X=179.11 "a great deal of personal contact") (Makas, 1989).

Makas (1989) administered the MIDS to 80 undergraduate students (n=40 female, n=40 male). It was found to predict two behaviors: willingness to participate in further research with disabled persons as co-subjects (F=3.18, p<.05) and proximity to a confederate who appeared to have a disability (F=6.57, p<.05).

Makas(1989) surveyed 69 nondisabled persons (n=45 females, n=24 males) who had been identified as having extremely positive attitudes toward disabled people. They scored significantly higher (F=42.89, p<.0001) than a sample of 83 randomly selected student subjects (n=45 females, n=38 males), which gave further support to the MIDS's construct validity.

Makas (1989) compared the results of the ATDP-Form O with the MIDS using 225 undergraduate students. A significant correlation was found (r=.78, p<.001) indicating strong criterion validity for the MIDS compared to the ATDP.

To ensure that this correlation existed at a younger age level, a pilot study was undertaken with 12 junior high school students (15 years of age). A significant correlation was found between the ATDP-Form O and the MIDS (r=.92, p<.0001) (see Table III below).
METHODOLOGY

Table III Pilot Study Data - Correlation of MIDS with ATDP

<table>
<thead>
<tr>
<th>ATDP</th>
<th>MIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>mean</td>
</tr>
<tr>
<td>12</td>
<td>61.88</td>
</tr>
</tbody>
</table>

Social History Questionnaire (Makas, 1989)

A social history questionnaire was used to determine the age, gender, grade, class, school, and place of residence of the subject and the extent of contact, if any, with a disabled person (see Appendix C Figure 3). Completion time is approximately 1 minute. The purpose of the social history questionnaire is to identify subjects by means of these demographics for the purposes of the repeated measures design. Another purpose is to measure the effect of the treatment on the factors of age, gender, area and previous contact that are identified by the Social History Questionnaire.

The measure used to determine previous contact was a five-point scale ranging from "no contact with disabled persons" to "a great deal of contact with disabled persons". This contact measure was a replication of one used by Makas (1990) where she found that subjects (n=305 undergraduate students) having greater personal contact with disabled persons had significantly more positive attitudes toward disabled persons than subjects with less personal contact (p < .01) using the MIDS.
DATA COLLECTION

Packages containing administration information, parental consent forms and questionnaires were sent to the school prior to the arrival of the B.C. Wheelchair Sports Demonstration Team Presentation (see Appendix C). The principals of the schools were then contacted to confirm the arrival of the questionnaires and to answer any queries regarding the administration of the questionnaires.

Letters of consent were sent to the parents of the children taking part in the study. Students returning completed consent forms prior to the administration of the questionnaires participated in the study.

The students in the experimental group completed the Social History Questionnaire and MIDS prior to the B.C. Wheelchair Sports Demonstration Team presentation. The experimental group subjects then attended the Demonstration Team presentation. The students were asked not to discuss the presentation when walking back to the classroom at which time they completed the Social History Questionnaire and MIDS. Finally, the experimental and control group subjects completed the Social History Questionnaire and ATDP-Form O four weeks after the B.C. Wheelchair Sports Demonstration Team presentation.

DELIMITATIONS

The study can be generalized to those junior high school students who attended the British Columbia Wheelchair Sports Demonstration Team Presentation in May of 1989 who reside in Courtenay or Penticton, B.C..
LIMITATIONS

Limiting conditions or restrictive weaknesses of the study include;
1. The use of self-report measures,
2. Drop-out rate of schools,
3. Drop-out rate of students, and
4. Availability of subjects on all testing dates.

HYPOTHESES

1. There will be a statistically significant short term treatment effect.

EXPERIMENTAL HYPOTHESIS: The posttest (immediately following) mean score on the Modified Issues in Disability Scale of the experimental group students will be statistically significantly greater than the pretest mean score.

2. There will be a statistically significant longer term treatment effect.

EXPERIMENTAL HYPOTHESIS: The mean score (four week follow-up) of the experimental group subjects on the Attitude Toward Disabled Persons Scale will be statistically significantly greater than the mean score of the control group subjects.

3. There will be a statistically significant age effect.

EXPERIMENTAL HYPOTHESIS:

a) Mean pretest scores of the experimental group subjects as measured by the Modified Issues in Disability Scale will be statistically significantly different at each age level with mean scores decreasing at each successive age level from 13-15 years.
METHODOLOGY

b) Mean scores of the control group subjects as measured by the Attitudes Toward Disabled Persons Scale will be statistically significantly different at each age level with mean scores decreasing at each successive age level from 13-15 years.

4. There will be a statistically significant gender effect.

EXPERIMENTAL HYPOTHESIS:

(a) Mean pretest scores of females in the experimental group will be statistically significantly greater on the Modified Issues in Disability Scale than mean pretest scores of males in the experimental group.

(b) Mean scores of females in the control group will be statistically significantly greater on the Attitudes Toward Disabled Persons Scale than mean scores of males in the control group.

5. There will be a statistically significant contact effect.

EXPERIMENTAL HYPOTHESIS:

(a) Mean pretest scores of the experimental group subjects will be statistically significantly different using Modified Issues in Disability Scale on each level of prior contact with physically disabled persons. The mean scores will increase with amount of prior contact with disabled persons.

(b) Mean scores of subjects in the control group will be statistically significantly different using the Attitudes Toward Disabled Persons Scale on each level of prior contact with physically disabled persons. The mean scores will increase with amount of prior contact with disabled persons.
ANALYSIS OF RESULTS

The immediate treatment effect (pretest versus posttest) was analyzed using a t-test for dependent samples. The level of significance used was p<.05 for a one-tailed test. The factors of age, gender and contact were analyzed using a series of multiple analyses of variance (MANOVA).

The lasting treatment effect (experimental versus control) was determined using a one-way analysis of variance (ANOVA). The level of significance used was p<.05. Factors of age, gender and previous contact were analyzed using two-way analyses of variance (ANOVA).

The effects of age, gender and previous contact on attitudes toward physically disabled persons were analyzed independently of treatment. These were calculated using a series of one-way analyses of variance (ANOVA) on the pretest portion of the one-group pretest-posttest design. and two-way analyses of variance (ANOVA) on the control group subjects of the posttest-only control group design. Post-hoc tests (Scheffe's test) were performed on statistically significant factors.

Two effect sizes or standardized mean differences were calculated with respect to the treatment on a short term (immediately after the presentation) and a longer term basis (4 weeks after the presentation).
RESULTS

INTRODUCTION

The Attitudes Toward Disabled Persons Scale (Yuker et al., 1960) and the Modified Issues in Disability Scale (Makas, 1985) are instruments used to measure attitudes toward disabled persons. A person scoring high on these instruments is seen as having a positive attitude toward disabled persons, while a low score is interpreted as a negative attitude.

This research used a one-group pretest-posttest design with a posttest-only control group as a follow-up four weeks after the treatment. Subjects in the experimental group completed the ATDP prior to and immediately after the treatment. As a result of the high correlation between the MIDS and ATDP, both experimental and control groups completed only the MIDS four weeks after the treatment. All subjects completed the Social History Questionnaire (SHQ) (Makas, 1989) on each occasion.

A t-test for dependent samples comparing differences between pretest and posttest MIDS scores of the experimental group determined the immediate treatment effect. Multiple analysis of variance (MANOVA) was used to investigate the effect of the treatment on gender, age and previous contact with disabled persons. An analysis of variance of the ATDP scores in the posttest-only control group design was used to determine a treatment effect after four weeks. Interactions with treatment as related to gender, age or previous contact were investigated by a series of two-way ANOVA's.
RESULTS

In order to provide additional information on the construct validity of the MIDS, an analysis of variance was performed on the pretest portion of the one-group pretest-posttest design. Post-hoc tests were conducted on all significant results.

**ONE-GROUP PRETEST - POSTTEST DESIGN**

The short term or immediate treatment effect was assessed using a t-test for dependent samples. The null hypothesis tested by the one-group pretest-posttest design was: There will be no statistically significant difference between the mean pretest scores and mean posttest scores of the experimental group subjects on the MIDS. The result failed to reach statistical significance (t=-1.62, df=55, p=0.112 for a 2-tailed test). However, the mean MIDS score rose from 161.38 before the B.C. Wheelchair Sports Demonstration Presentation to 165.07 immediately after the Presentation (see Table IV). A small effect size of .17 was found for the immediate treatment effect.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>df</th>
<th>mean</th>
<th>s.d.</th>
<th>t</th>
<th>p  (2-tail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pretest</td>
<td>56</td>
<td>55</td>
<td>161.3750</td>
<td>21.777</td>
<td>-1.62</td>
<td>0.112</td>
</tr>
<tr>
<td>posttest</td>
<td>165.0714</td>
<td>24.231</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table IV: T-Test for the Mean Scores of Students on the MIDS
RESULTS

Because of the positive effect size and the increase in the mean scores, a series of multiple analyses of variance (MANOVA's) were performed on the factors of gender, age, and prior contact. Gender ($F=5.45, \text{df}=1, p=.023$) was significant (see Table V) with the female mean score increasing from 166.71 ($n=31$) before the treatment to 171.72 ($n=32$) after the treatment while males remained relatively constant from 158.25 ($n=36$) before the treatment to 158.00 ($n=36$) after the treatment (see Table VII).

Age was also significant ($F=6.73, \text{df}=2, p=.003$) (see Table VIII). Scores for thirteen year old subjects rose from 153.20 ($n=20$) to 160.22 ($n=18$) after the treatment. Scores also increased for the fifteen year old subjects from 172.05 ($n=22$) to 176.87 ($n=23$). However, the opposite was true for the fourteen year old subjects with a pre-treatment mean score of 158.71 ($n=24$) that decreased to 154.83 ($n=24$) after the treatment (see Tables VIII, IX, X). The final factor of prior contact with physically disabled persons (see Tables XI, XII, XIII) was not significant.

<table>
<thead>
<tr>
<th>Table V Multiple Analysis of Variance Tests of Between-Subjects Effects on Gender on the MIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of Variation</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Within Cells</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Gender</td>
</tr>
</tbody>
</table>
Table VI Multiple Analysis of Variance Tests of Within-Subjects Effects on Gender on the MIDS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Cells</td>
<td>7847.91</td>
<td>54</td>
<td>143.33</td>
<td></td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Score</td>
<td>420.65</td>
<td>1</td>
<td>420.65</td>
<td>2.89</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>Gender by score</td>
<td>196.01</td>
<td>1</td>
<td>196.01</td>
<td>1.35</td>
<td>&gt;.10</td>
</tr>
</tbody>
</table>
Table VII Means and Standard Deviations for Gender on the MIDS for the Pretest and Posttest

<table>
<thead>
<tr>
<th>Gender</th>
<th>MIDS PreTest</th>
<th>MIDS Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>s.d.</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>36</td>
<td>20.77</td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>22.19</td>
</tr>
<tr>
<td>Combined</td>
<td>68</td>
<td>21.70</td>
</tr>
</tbody>
</table>
### Table VIII Multiple Analysis of Variance Tests of Between-Subjects Effects on Age on the MIDS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Cells</td>
<td>39983.74</td>
<td>52</td>
<td>762.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2837991.55</td>
<td>1</td>
<td>2837991.6</td>
<td>3690.89</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Age</td>
<td>10345.95</td>
<td>2</td>
<td>5172.98</td>
<td>6.73</td>
<td>&lt;.05</td>
</tr>
</tbody>
</table>

### Table IX Multiple Analysis of Variance Tests of Within-Subjects Effects on Age on the MIDS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Cells</td>
<td>7453.67</td>
<td>52</td>
<td>143.34</td>
<td>2.59</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>Score</td>
<td>370.76</td>
<td>1</td>
<td>370.76</td>
<td>2.59</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>Age by Score</td>
<td>570.02</td>
<td>2</td>
<td>285.01</td>
<td>1.99</td>
<td>&gt;.10</td>
</tr>
</tbody>
</table>
Table X Means and Standard Deviations for Age on the MIDS for the Pretest and Posttest

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>s.d.</th>
<th>mean</th>
<th>n</th>
<th>s.d.</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>22</td>
<td>25.90</td>
<td>172.05</td>
<td>23</td>
<td>23.78</td>
<td>176.87</td>
</tr>
<tr>
<td>14</td>
<td>24</td>
<td>14.65</td>
<td>158.71</td>
<td>24</td>
<td>22.03</td>
<td>154.83</td>
</tr>
<tr>
<td>13</td>
<td>20</td>
<td>23.18</td>
<td>153.20</td>
<td>18</td>
<td>16.65</td>
<td>160.22</td>
</tr>
</tbody>
</table>
### Table XI Multiple Analysis of Variance
Tests of Between-Subjects Effects on Contact on the MIDS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Cells</td>
<td>48114.63</td>
<td>50</td>
<td>962.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2324412.20</td>
<td>1</td>
<td>2324412.2</td>
<td>2415.49</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>Contact</td>
<td>762.06</td>
<td>4</td>
<td>190.52</td>
<td>.20</td>
<td>&gt;.10</td>
</tr>
</tbody>
</table>

### Table XII Multiple Analysis of Variance Tests of Within-Subjects Effects on Contact on the MIDS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Cells</td>
<td>7534.58</td>
<td>50</td>
<td>150.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>527.08</td>
<td>1</td>
<td>527.08</td>
<td>3.50</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Contact x score</td>
<td>498.11</td>
<td>4</td>
<td>124.53</td>
<td>.83</td>
<td>&gt;.05</td>
</tr>
</tbody>
</table>
RESULTS

POSTTEST-ONLY CONTROL GROUP DESIGN

A one-way ANOVA comparing the experimental and control groups in the posttest-only design resulted in a significant treatment effect ($F=7.419$, df=1, $p=.007$) (see Table XIII). The effect size of the treatment follow-up one month later was found to be 0.52. The experimental group ($n=70$, $X=81.39$) scored significantly higher on the Attitudes Toward Disabled Persons Scale than the control group ($n=42$, $X=73.70$) (see Table XIV). A series of two-way ANOVA's were performed on treatment versus gender, age and prior contact with none of the factors reaching significance (gender $F=1.146$, df=1, $p=.287$ - see Table XV; age $F=0.619$, df=1, $p=.433$ - see Table XVI; prior contact $F=1.072$, df=4, $p=.374$ - see Table XVII).
Table XIII Analysis of Variance of Treatment for the Mean Scores of the Students on the ATDP

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>1574.415</td>
<td>1</td>
<td>1574.415</td>
<td>7.419</td>
<td>.007</td>
</tr>
<tr>
<td>Treatment</td>
<td>1574.415</td>
<td>1</td>
<td>1574.415</td>
<td>7.419</td>
<td>.007</td>
</tr>
<tr>
<td>Explained</td>
<td>1574.415</td>
<td>1</td>
<td>1574.415</td>
<td>7.419</td>
<td>.007</td>
</tr>
<tr>
<td>Residual</td>
<td>23555.655</td>
<td>111</td>
<td>212.213</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25130.071</td>
<td>112</td>
<td>224.376</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18 cases (13.7%) were missing

Table XIV Means and Standard Deviations for Treatment on the ATDP for the Experimental and Control Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>s.d.</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>70</td>
<td>13.35</td>
<td>81.39</td>
</tr>
<tr>
<td>Control</td>
<td>43</td>
<td></td>
<td>73.70</td>
</tr>
<tr>
<td>Combined</td>
<td>113</td>
<td>14.98</td>
<td>78.46</td>
</tr>
</tbody>
</table>
### RESULTS

Table XV Analysis of Variance of Treatment by Gender for the Mean Scores of the Students on the ATDP

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>2421.142</td>
<td>2</td>
<td>1210.571</td>
<td>5.819</td>
<td>0.004</td>
</tr>
<tr>
<td>Gender</td>
<td>1551.423</td>
<td>1</td>
<td>1551.423</td>
<td>7.457</td>
<td>0.007</td>
</tr>
<tr>
<td>2-way interactions</td>
<td>837.713</td>
<td>1</td>
<td>837.713</td>
<td>4.027</td>
<td>0.047</td>
</tr>
<tr>
<td>TreatmentxGender</td>
<td>238.462</td>
<td>1</td>
<td>238.462</td>
<td>1.146</td>
<td>0.287</td>
</tr>
<tr>
<td>Explained</td>
<td>2659.604</td>
<td>3</td>
<td>886.535</td>
<td>4.261</td>
<td>0.007</td>
</tr>
<tr>
<td>Residual</td>
<td>22466.316</td>
<td>108</td>
<td>208.040</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25127.920</td>
<td>111</td>
<td>226.378</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19 cases (14.5%) were missing
Table XVI Analysis of Variance of Treatment by Age for the Mean Scores of the Students on the ATDP

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>3314.702</td>
<td>4</td>
<td>828.676</td>
<td>4.014</td>
<td>.005</td>
</tr>
<tr>
<td>Treatment</td>
<td>1601.202</td>
<td>1</td>
<td>1601.202</td>
<td>7.756</td>
<td>.006</td>
</tr>
<tr>
<td>Age</td>
<td>1637.249</td>
<td>3</td>
<td>545.750</td>
<td>2.644</td>
<td>.053</td>
</tr>
<tr>
<td>2-way interactions</td>
<td>127.772</td>
<td>1</td>
<td>127.772</td>
<td>.619</td>
<td>.433</td>
</tr>
<tr>
<td>TreatmentxAge</td>
<td>127.772</td>
<td>1</td>
<td>127.772</td>
<td>.619</td>
<td>.433</td>
</tr>
<tr>
<td>Explained</td>
<td>3442.474</td>
<td>5</td>
<td>688.495</td>
<td>3.335</td>
<td>.008</td>
</tr>
<tr>
<td>Residual</td>
<td>21262.921</td>
<td>103</td>
<td>206.436</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24705.394</td>
<td>108</td>
<td>228.754</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22 cases (16.8%) were missing.
### Table XVII Analysis of Variance of Treatment by Contact for the Mean Scores of the Students on the ATDP

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>1804.682</td>
<td>5</td>
<td>360.936</td>
<td>1.610</td>
<td>.165</td>
</tr>
<tr>
<td>Contact</td>
<td>1416.485</td>
<td>1</td>
<td>1416.485</td>
<td>6.318</td>
<td>.014</td>
</tr>
<tr>
<td></td>
<td>150.607</td>
<td>4</td>
<td>37.652</td>
<td>.168</td>
<td>.954</td>
</tr>
<tr>
<td>2-way interactions</td>
<td>961.532</td>
<td>4</td>
<td>240.383</td>
<td>1.072</td>
<td>.374</td>
</tr>
<tr>
<td>TreatmentxContact</td>
<td>961.532</td>
<td>4</td>
<td>240.383</td>
<td>1.072</td>
<td>.374</td>
</tr>
<tr>
<td>Explained</td>
<td>2766.214</td>
<td>9</td>
<td>307.357</td>
<td>1.371</td>
<td>.212</td>
</tr>
<tr>
<td>Residual</td>
<td>21970.777</td>
<td>98</td>
<td>224.192</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24736.991</td>
<td>107</td>
<td>231.187</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RESULTS

COMBINATION OF DESIGNS

The effects of gender, age, and previous contact on attitudes toward physically disabled persons were investigated by Attitudes Toward Disabled Persons Scale (ATDP) and the Modified Issues in Disability Scale (MIDS). The subjects who had yet to or did not attend the B.C. Wheelchair Sports Demonstration Presentation comprised the sample. MIDS scores were used from the pretest portion of the one-group pretest-posttest design and the ATDP scores of the control group of the posttest-only control group design (ATDP).

MIDS scores were taken from the pretest portion of the One-Group Pretest-Posttest design. A significant effect was found in the area of age ($F=5.273$, df=2, $p=.008$) (see Table XVIII) with the mean score increasing at each age level (13 years old, $X=153.20$; 14 years old, $X=158.71$; and 15 years old, $X=172.05$) (see Table XIX). A post-hoc analysis using Scheffe's test found a significant difference between the scores of those 13 and 15 years of age ($p<.05$). However, gender ($F=2.503$, df=1, $p=.112$) (see Table XX) and contact effects ($F=.060$, df=4, $p=.993$) (see Table XXI) were not significant. Also, there were no significant interaction effects.

Gender ($F=3.465$, df=1, $p=.070$ - see Table XXII), age ($F=3.242$, df=1, $p=.079$ - see Table XXIII) and previous contact ($F=.500$, df=4, $p=.736$ - see Table XXIV) did not emerge as significant factors when the Attitudes Toward Disabled Persons Scale (Yuker et al., 1960) was used. Again, there were no significant interaction effects.
Table XVIII Analysis of Variance of Age on the MIDS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>4011.372</td>
<td>2</td>
<td>2005.686</td>
<td>5.273</td>
<td>.008</td>
</tr>
<tr>
<td>Age</td>
<td>4011.372</td>
<td>2</td>
<td>2005.686</td>
<td>5.273</td>
<td>.008</td>
</tr>
<tr>
<td>Residual</td>
<td>23965.113</td>
<td>63</td>
<td>380.399</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27976.485</td>
<td>65</td>
<td>430.407</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

23 cases (25.8%) were missing
Table XIX Means and Standard Deviations for Age on the MIDS

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>s.d.</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIDS Pretest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>22</td>
<td>25.90</td>
<td>172.05</td>
</tr>
<tr>
<td>14</td>
<td>24</td>
<td>14.65</td>
<td>158.71</td>
</tr>
<tr>
<td>13</td>
<td>20</td>
<td>16.13</td>
<td>153.20</td>
</tr>
<tr>
<td>Combined</td>
<td>66</td>
<td>23.18</td>
<td>164.12</td>
</tr>
</tbody>
</table>
Table XX Analysis of Variance of Gender on the MIDS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>1192.057</td>
<td>1</td>
<td>1192.057</td>
<td>2.593</td>
<td>.112</td>
</tr>
<tr>
<td>Gender</td>
<td>1192.057</td>
<td>1</td>
<td>1192.057</td>
<td>2.593</td>
<td>.112</td>
</tr>
<tr>
<td>Explained</td>
<td>1192.057</td>
<td>1</td>
<td>1192.057</td>
<td>2.593</td>
<td>.112</td>
</tr>
<tr>
<td>Residual</td>
<td>29881.137</td>
<td>65</td>
<td>459.710</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>31073.194</td>
<td>66</td>
<td>470.806</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21 cases missing

Table XXI Analysis of Variance of Contact on the MIDS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>118.736</td>
<td>4</td>
<td>29.684</td>
<td>.060</td>
<td>.993</td>
</tr>
<tr>
<td>Contact</td>
<td>118.736</td>
<td>4</td>
<td>29.684</td>
<td>.060</td>
<td>.993</td>
</tr>
<tr>
<td>Explained</td>
<td>118.736</td>
<td>4</td>
<td>29.684</td>
<td>.060</td>
<td>.993</td>
</tr>
<tr>
<td>Residual</td>
<td>30203.748</td>
<td>61</td>
<td>495.143</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30322.485</td>
<td>65</td>
<td>466.500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22 cases were missing.
RESULTS

Table XXII Analysis of Variance of Gender on the ATDP

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>896.095</td>
<td>1</td>
<td>896.095</td>
<td>3.465</td>
<td>.070</td>
</tr>
<tr>
<td>Gender</td>
<td>896.095</td>
<td>1</td>
<td>896.095</td>
<td>3.465</td>
<td>.070</td>
</tr>
<tr>
<td>Explained</td>
<td>896.095</td>
<td>1</td>
<td>896.095</td>
<td>3.465</td>
<td>.070</td>
</tr>
<tr>
<td>Residual</td>
<td>10345.810</td>
<td>40</td>
<td>258.193</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11241.905</td>
<td>41</td>
<td>274.193</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 case (2.3%) was missing

Table XXIII Analysis of Variance of Age on the ATDP

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>828.043</td>
<td>1</td>
<td>828.043</td>
<td>3.242</td>
<td>.079</td>
</tr>
<tr>
<td>Age</td>
<td>828.043</td>
<td>1</td>
<td>828.043</td>
<td>3.242</td>
<td>.079</td>
</tr>
<tr>
<td>Explained</td>
<td>828.043</td>
<td>1</td>
<td>828.043</td>
<td>3.242</td>
<td>.079</td>
</tr>
<tr>
<td>Residual</td>
<td>10215.600</td>
<td>40</td>
<td>255.390</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11043.643</td>
<td>41</td>
<td>269.357</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 case (2.3%) was missing
### Table XXIV Analysis of Variance of Contact on the ATDP

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>562.145</td>
<td>4</td>
<td>140.536</td>
<td>.500</td>
<td>.736</td>
</tr>
<tr>
<td>Contact</td>
<td>562.145</td>
<td>4</td>
<td>140.536</td>
<td>.500</td>
<td>.736</td>
</tr>
<tr>
<td>Explained</td>
<td>562.145</td>
<td>4</td>
<td>140.536</td>
<td>.500</td>
<td>.736</td>
</tr>
<tr>
<td>Residual</td>
<td>10690.925</td>
<td>38</td>
<td>281.340</td>
<td>.500</td>
<td>.736</td>
</tr>
<tr>
<td>Total</td>
<td>11253.070</td>
<td>42</td>
<td>267.930</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 case (2.3%) was missing
SUMMARY OF RESULTS

This section summarizes the results of this research. It addresses the hypotheses stated at the conclusion of the Methodology chapter.

The short term treatment effect (pre- to immediately after the presentation) was not significant (p=.112 for a 2-tailed test). Subjects exposed to the B.C. Wheelchair Sports Demonstration Team Presentation did not have statistically significantly greater mean scores on the Modified Issues in Disability Scale following the presentation than preceding it. However the mean scores did increase from the pretest to the posttest period immediately after the presentation. In addition, the effect size though small was, nevertheless, positive.

The longer term treatment effect (tested one month after presentation vs. control group) was significant (p=.007). Subjects exposed to the B.C. Wheelchair Sports Demonstration Team Presentation had significantly greater scores on the Attitudes Toward Disabled Persons Scale) one month after the presentation than those not exposed to the presentation.

There was a statistically significant age effect (p=.008) as measured by the Modified Issues in Disability Scale with scores becoming statistically significantly greater at each successive age level from 13-15 years of age. However, age was not statistically significant when measured by the Attitudes Toward Disabled Persons Scale (p=.079). Mean scores from ages 13 to 14 decreased.

The effect of gender was not statistically significant. Females did not have statistically significantly greater scores than males as measured by the Modified Issues in Disability Scale (p=.112) and the Attitudes Toward Disabled Persons Scale (p=.070). However, the mean scores for females was higher than males.
The effect of prior contact with physically disabled persons was not significant. There was no significant difference between the level of prior contact with physically disabled persons and attitudes toward disabled persons as measured by the Modified Issues in Disability Scale ($p=.993$) and the Attitudes Toward Disabled Persons Scale ($p=.736$). No trend emerged in this area.

The next chapter expands on these results and offers possible explanations for these findings.
DISCUSSION

This chapter discusses the effect of treatment on both a short term (immediately after the presentation) and a longer term (one month after the presentation) basis. The factors associated with this treatment such as namely age, gender and previous contact with physically disabled persons are considered. These three factors are also discussed independently of treatment in their relation to attitudes toward disabled persons.

TREATMENT

There was no significant difference in the attitudes of junior high school students toward physically disabled persons immediately after the B.C. Wheelchair Sports Demonstration Team Presentation when compared with data collected in a pretest using the Modified Issues in Disability Scale ($t=-1.62$, df=55, $p=0.112$ for a 2-tailed test). However, mean MIDS score rose from $X=161.38$ before the B.C. Wheelchair Sports Demonstration Presentation to $X=165.07$ immediately after the Presentation (see Table IV). In addition, a positive effect size ($D=0.17$) was found for the scores immediately after the presentation as compared to the pretest scores.

The treatment effect, however, was significant one month after the presentation. Subjects exposed to the B.C. Wheelchair Sports Demonstration Team Presentation had a statistically significant greater score on the Attitude Toward Disabled Persons Scale than those not exposed to the presentation ($F=7.419$, $p=.007$; experimental $n=70$, $X=81.39$; control $n=42$, $X=73.70$ - see Table XIV). A medium effect size ($D=0.51$) was found for the comparison of scores of the experimental group subjects with the control group subjects one month after the presentation.
DISCUSSION

The effect of the information plus contact treatment modification technique seemed to vary over the testing period. The treatment effect was not significant (p=.112) immediately after the presentation but significant (p=.007) four weeks after the presentation.

Cognitive Dissonance Theory (Festinger, 1957) offers an explanation as to the delayed treatment effect. In addition, the two groups may have just been different. Festinger's (1957) theory of cognitive dissonance is a type of attitude change theory in which cognitions are defined as, "any knowledge, opinion, or belief about one's self or about one's behavior" (p. 3). Festinger's theory states that dissonance occurs when an individual holds two cognitions that are inconsistent with one another. The theory assumes that dissonance results in psychological discomfort, which, in turn, motivates the individual to seek a reduction of the dissonance or an achievement of consonance by adding or changing cognitions, or by avoiding information or situations that might increase the dissonance.

In the current study, junior high school students were introduced to physically disabled persons through a sport situation. The object of the demonstration was to reduce the cognitive dissonance by changing cognitions toward disabled persons. It is assumed that most of the subjects had positive attitudes toward athletes. It is also assumed that the majority of the subjects do not consider disabled persons as athletes. By attending the demonstration and viewing the skills of the disabled athletes, the subjects' cognitions or attitudes toward disabled persons are challenged. If the disabled person is considered an athlete by the subject after viewing the presentation, the disabled athlete is equated with the already existing positive attitude toward athletes and thus the subject must modify his/her attitude toward
DISCUSSION

disabled persons to be more positive. By positively modifying the attitude toward the disabled individual, cognitive dissonance is reduced.

Since the posttest measuring the attitude modification took place immediately after the presentation attitude modification may have not yet taken place due to the small amount of time between the presentation and the testing period. In this study, the follow-up testing period one month after the presentation is probably a better measure of the effect of the attitude modification technique. At the end of one month the subjects have had the opportunity to process the information and challenge their existing attitudes.

In terms of the long term treatment effect, social learning theory (Bandura, 1956) suggests that children learn attitudes by observing how significant others around them evaluate people and situations. Children will then adapt their attitudes to be similar to those expressed by the important role models (Brigham, 1986).

If the students identified the physically disabled athletes participating in the B.C. Wheelchair Sports Demonstration Team Presentation as positive role models, the subjects' attitudes toward the physically disabled may have been positively influenced. This is based on the perceived credibility of the athletes.

The credibility, or believability, of a source depends mainly on two factors: expertise and trustworthiness. Expertise is the extent of knowledge that a source appears to have; trustworthiness refers to the source's intentions (Brigham, 1986). "A trustworthy source appears sincere and has no personal gain stemming from any attitude change that may occur" (Brigham, 1986, p. 84). The greater a source's perceived expertise and trustworthiness, the greater the attitude change produced (Aronson et al., 1963; Cooper and Croyle, 1984). If the subjects perceived the
DISCUSSION

members of the B.C. Wheelchair Sports Demonstration Team as being experts in their field, i.e. wheelchair basketball, then an attitude change should have occurred. This should have been the case when considering the world-class calibre of the athletes involved.

Amir's (1969) contact hypothesis article summarized and evaluated the studies investigating the effect of intergroup contact on changing attitudes and ethnic relations. The B.C. Wheelchair Sports Demonstration Team Presentation seemed to meet most of the important conditions necessary for contact to have a positive effect - the minority group members should be of an equal or higher status than the members of the majority group; a favorable climate is necessary; the interaction should be of an intimate rather than casual nature; the interaction must be pleasant and rewarding; and the two groups should have a mutual goal that requires interdependent and cooperative action.

For positive attitude modification to occur, Amir (1969) suggested that the minority group should be of an equal or higher status than the members of the majority group. It is assumed that the members of the B.C. Wheelchair Sports Demonstration Team were perceived by the students as having equal status or higher status than the students who acted as subjects in the current research. Judging by the age, biographies (see Appendix B) and the demonstrated athletic abilities of the team members, they should have been perceived as having higher status than the junior high school subjects.

A favorable climate is also necessary (Amir, 1969). The presentation should not be perceived as threatening to the members of the majority group. The B.C. Wheelchair Sports Demonstration Team Presentation provides a favorable climate for
group interaction. The audience is encouraged to ask the Team members questions on any topic during a question period after the wheelchair basketball game.

The interaction needs to be intimate in nature. Although only a few students who participated in this study had an opportunity to play wheelchair basketball with the team, it is assumed that all of the subjects considered the contact to be intimate because of the candid nature of the discussion that took place during and after the presentation between the athletes and the subjects in the audience. The types of questions asked have been related to dating, marriage, etc.,

For positive attitude modification to occur, the contact hypothesis states that the interaction must be rewarding and pleasant (Amir, 1969). Due to the large amount of positive fan mail received by the B.C. Wheelchair Sports Association regarding the Demonstration Team Presentation, it is assumed that the interaction was rewarding and pleasant to the majority of the participants involved.

Finally, the contact hypothesis (Amir, 1969) assumes that a positive attitude change is likely if the two groups have a mutual goal that requires interdependent and cooperative action. The wheelchair basketball game was competitive. The B.C. Wheelchair Sports Demonstration Team athletes challenged a team of students to a game of wheelchair basketball. This condition of the Contact Hypothesis may have been better met if the members of the B.C. Wheelchair Sports Demonstration Team were on each of the opposing teams with students comprising remaining team positions. In this case, the wheelchair athletes and students would have cooperated with each other to challenge the other team.

Wetstein-Kroft and Vargo (1984) also commented on the conditions necessary for an improvement in attitude of children toward physically disabled persons. The
DISCUSSION

factors included length of interaction, motivation, equal status, perceived similarity, the disabled as a vehicle for change, and the importance of structured interactions. The factors of motivation, equal status, the disabled as a vehicle for change and importance of structured interactions have already been discussed in conjunction with the contact hypothesis. Therefore, only the factors related to length of interaction and perceived similarity will be discussed.

The length of the B.C. Wheelchair Sports Demonstration Team Presentation was approximately 1 hour. This may lead one to question the effectiveness of an attitude modification treatment that is of such short duration. However, Donaldson (1980) suggested that even if the interaction is brief, a positive attitude change is possible if handicapped persons convey information about what it is like to be handicapped, who they are as individuals, and how they expect non-handicapped persons to relate to them. This information is included in the B.C. Wheelchair Sports Demonstration Team Presentation (see Appendix B). Similarities and differences between disabled and able-bodied persons are also addressed. Davis (1969) suggested that once these similarities and differences are discussed, one ceases to be aware of the disability and responds to other characteristics.

The B.C. Wheelchair Sports Demonstration Team Presentation also recognized the cognitive, affective and behavioral level of the child with a separate format being used for the elementary and the junior/senior high schools. "Drinking and driving" is included in the format for the junior/senior high schools as well as a more detailed etiology of spinal-cord injury.

The following sections discuss the relationship of age, gender and previous contact with attitudes toward disabled persons. These results are examined both
DISCUSSION

dependent upon treatment and independent of treatment. The immediate treatment
effect was not significant (p=.112 for a 2-tailed test). However, multiple analyses of
variance (MANOVA) were performed because of the rise in mean scores and the
positive effect size. The effect of the treatment one month after the presentation on
gender, age, and previous contact were analyzed using two-way analyses of variance
(ANOVA). Finally the effects of age, gender and previous contact on the MIDS
(pretest subjects) and the ATDP (control group subjects) were investigated
irrespective of treatment. The subjects used for this part of the analysis had not yet
seen the presentation and completed the MIDS. The rest of the subjects were taken
from the control group who did not view the B.C. Wheelchair Sports Demonstration
Team Presentation but had completed the ATDP.

AGE

Dependent Upon Treatment

Age emerged as a significant factor in the MANOVA ($F=6.73$, df=2, p=.003 -
see Table VIII). Mean scores for thirteen year old subjects rose from 153.20 (n=20) to
160.22 (n=18). Mean scores also increased for the fifteen year old subjects from
172.05 (n=22) to 176.87 (n=23). However, the opposite was true for the fourteen year
old subjects with a pre-treatment mean score of 158.71 (n=24) that decreased to
154.83 (n=24) after the treatment (see Tables VIII, IX, X).

Age ($F=0.619$, df=1, p=.433 - see Table XVI) was not significant in a two-
way interaction between age and treatment. This ANOVA measured the effect of the
presentation on attitude modification one month after the presentation. As a result,
the mean scores of each age group on the ATDP were similar to the distribution of
the posttest MIDS scores. The mean score for the fourteen year old age group
(X=77.14) was lower than for the thirteen (X=83.19) and fifteen year old groups
(X=85.55), and exhibited the same distribution over a longer period of time.

Such a result is interesting. Donaldson (1980) stated that a developmental
trend in relation to age occurs from early childhood through the late teens and it
appears to form an inverted-U. Beliefs, attitudes, and behavior toward the disabled
become increasingly favorable until the late teens, whereupon attitudes and beliefs
(and perhaps behavior) again become quite unfavorable (Donaldson, 1980). However,
attitudes are not as unfavorable as in early childhood (Donaldson, 1980).

It is possible that attitudes become increasingly favorable until the age of
fourteen at which time they become more negative. This could be related to a
negative self-concept or self-esteem. Antonak and Livneh (1988) found that the
ATDP was positively correlated with level of self-concept. This also may be true for
the MIDS since it is highly correlated with the ATDP and is a self-report measure.
Simmons et al. (1979) found that some 12-14 year olds experience a decline in self-
esteeem as they leave elementary school being the oldest and revered pupils and enter
junior high, where they are the youngest and least competent. The structure of the
school settings in relation to grade level needs further investigation. The grade 7
students may be in a separate building from the grade 8 and 9 students. In this case,
the grade 8 (14 year old) students would be the youngest students in the school and
may experience a decline in self-esteem.
DISCUSSION

Independent of Treatment

Attitudes toward physically disabled persons as measured by the Modified Issues in Disability Scale ($F=5.273$, df=2, $p=.008$) became more positive at each successive age level (13 years old, $X=153.20$; 14 years old, $X=158.71$; and 15 years old, $X=172.05$). A post-hoc analysis using Scheffe's test found a significant difference between the scores of those who were 13 and 15 years of age ($p<.050$). This finding is consistent with Hoffman (1981) who stated that children become empathic with the general plight of entire categories of people as they move from early childhood to later childhood and adolescence (Sigleman & McGrail, 1985).

Although age did not emerge as a significant factor ($F=3.242$, df=1, $p=.079$ - see Table XXII), subjects' attitudes toward physically disabled persons as measured by the ATDP were more negative at 14 years of age than 13 years of age. It is interesting to note that the scores of the MIDS subjects increased at each age level (13 years old, $X=153.20$; 14 years old, $X=158.71$; and 15 years old, $X=172.05$) whereas the mean scores of the ATDP subjects decreased at each age level (13 years old, $X=73.46$; 14 years old, $X=63.43$) (Appendix D Table VII). This could be due to the small number of experimental group respondents in the fourteen year old category ($n=7$) as compared to the thirteen year old category ($n=35$). The seven respondents in the 12 year old category may not be typical.

Another possible explanation is the reactivity of the measure. Yuker et al. (1970) have presented limited data suggesting that responses to the ATDP-Form O cannot be faked. On the other hand, Cannon & Szuhay (1986), Scott & Rohrbach (1977) and Vargo & Semple (1984) argue that the ATDP may be susceptible to
faking. The arguments are based on the assumption that since the ATDP is a self-report measure, it can be faked.

Education may also be a factor. Fourteen year old subjects may be able to determine the intent of the questions on the attitude measures better than the 13 year old subjects due to a higher level in reading and comprehension. Therefore, the responses of the fourteen year old subjects may be more susceptible to being faked.

However, the faking of responses may not be in a positive direction due to increasing adolescent peer group pressure. Although, Yuker et al. (1970) provided some data that the ATDP-Form O was not significantly correlated with the Edwards (1957) Social Desirability Scale or the Crowne-Marlowe (1960) Social Desirability Scale, Siller et al. (1967) claim that the ATDP is influenced by social desirability (Antonak & Livneh, 1988). It may be socially desirable to have a negative attitude toward disabled persons, therefore the student would attempt to respond to the ATDP with the intention of portraying a negative attitude.

Finally, when the self-concepts of respondents were associated with the ATDP Scale scores, Antonak & Livneh (1988) reported that people with high self-concepts had a positive attitude toward disabled persons. It is possible that fourteen year old subjects have a lower self-concept than thirteen year old subjects because of the pressures and changes associated with the adolescent period. This may cause their attitudes toward disabled persons to be more negative than the thirteen year old subjects.
DISCUSSION

GENDER

Dependent Upon Treatment

Gender ($F=5.45$, $df=1$, $p=.023$ - see Table V) emerged as a significant factor reported in the treatment effect measured immediately after the presentation. The female mean score on the MIDS increased from 166.71 ($n=31$) before to 171.72 ($n=32$) immediately after treatment while males remained relatively constant from 158.25 ($n=36$) before to 158.00 ($n=36$) after treatment - see Table VII). This finding is in agreement with Horne (1985) who stated that "females are more likely to have more positive attitudes toward persons with disabilities and that they may be more likely to change attitudes in a positive direction" (Shaver et al., 1989, p. 53).

However, the gender effect may have been influenced by age because 28 of the experimental group respondents were in the 14 year old age category (males=17; females=11). Since the fourteen year old category was seen as having the most negative attitudes toward disabled persons, the lack of improvement in attitudes of the males may have been confounded by their age.

Gender was not significant in the longer term treatment effect ($F=1.146$, $df=1$, $p=.287$ - see Table XV) measured one month after the B.C. Wheelchair Sports Demonstration Team Presentation. This is consistent with Shaver et al. (1989) who found negligible gender differences as a result of their meta-analysis.

Independent of Treatment

No significant difference emerged between males and females on attitudes toward physically disabled persons as measured by the MIDS in the pretest portion
DISCUSSION

of the experiment ($F=2.503$, df=1, $p=.112$ - see Table XX). Also, no significant gender difference occurred in the control group subjects using the Attitudes Toward Disabled Persons Scale ($F=3.465$, df=1, $p=.070$ - see Table XXII). However, in both cases the mean female score ($X=166.71$ MIDS; $X=78.24$ ATDP) was higher than the mean male score ($X=158.25$ MIDS; $X=69.00$ ATDP).

This finding is consistent with Furnham & Gibb's (1984) study of 135 thirteen year old British students. No significant gender differences were found in that study. However, like the current research, there was a trend indicating that males felt greater negative feelings than females toward disabled persons.

PREVIOUS CONTACT WITH DISABLED PERSONS

Dependent Upon Treatment

Prior contact with physically disabled persons was not significant as measured by the MIDS on the one-group pretest-posttest design ($F=.20$, df=4, $p=.938$ - see Tables XI, XII, XIII). A two-way ANOVA of treatment versus contact was also not significant as measured by the ATDP on the posttest-only control group design ($F=1.072$, df=4, $p=.374$ - see Table XVII). This result may have been due to the nature of the questionnaire.

The lack of a significant effect between prior contact and attitude toward disabled persons throughout the experiment may be due to the unidimensionality of the instrument used to determine prior contact - the Social History Questionnaire (SHQ) (Makas, 1989). Makas' (1989) results, however, were significant when she used the SHQ as a measure to determine prior contact with disabled persons. Those
undergraduate students (n=305) having "quite a bit" or "a great deal" of contact with disabled persons had significantly more positive attitudes toward disabled persons than those indicating "very little" or "no" contact as measured by the Modified Issues in Disability Scale ($F=3.54$, df=4, $p<.05$).

However, younger students may not be able to determine the extent of their contact based only on a 5 point unidimensional scale. This concept may be too abstract for them to comprehend. Instead a concrete measure of contact such as length of contact or number of contacts with a disabled person, may be more appropriate to this age group. Indeed, Makas (1989) has suggested that the relationship between contact and attitude seems to be positively related to the complexity of the contact measure used.

Makas (1989) found significant positive relationships between ATDP scores and a number of contact variables - number of contacts, length of contact, intimacy, pleasantness and relative status. A positive relationship that approached significance was found between ATDP scores and frequency of contact (Makas, 1989). Finally, pleasantness and intimacy of contact were discovered to be the highest and second highest predictors, respectively, of attitudes toward disabled persons as measured by the ATDP (Makas, 1989). If the junior high school subjects in the current study had been asked to determine the extent of contact with physically disabled persons based on the number of different factors stated above, a significant positive relationship may have been found between prior contact and attitudes toward physically disabled persons.
DISCUSSION

Independent of Treatment

No statistically significant difference was found between amount of prior contact with disabled persons and mean scores of the subjects on the MIDS in the pretest of the one-group pretest-posttest design ($F=0.060$, $df=4$, $p=0.993$ - see Table XXI). This was also found for the control group subjects in the posttest-only control group design and the ATDP ($F=0.500$, $df=4$, $p=0.736$ - see Table XXIV). The explanation regarding the relationship between the contact measure used in this study to attitudes toward physically disabled persons has already been presented in the preceding section.

RECOMMENDATIONS FOR FURTHER RESEARCH

This section presents recommendations for further research in the following areas: experimental design, instrumentation, and contact plus information treatment programs.

In terms of experimental design, a pretest-posttest control group design could be used with a follow-up taking place one month after the treatment. The researcher could also administer both the ATDP and MIDS at each testing period to investigate the response differences across time. In addition, this procedure would provide data for the criterion validity between the ATDP and MIDS as it would be administered to a number of age groups.

It would be interesting to investigate the effect of the B.C. Wheelchair Sports Demonstration Team Presentation on modifying attitudes of junior high school students toward physically disabled persons in a number of different rural and urban centers. The effect of the presentation may differ depending on the population base.
One could also examine the aspects of the presentation that are most effective and ways in which the presentation could be made more effective.

Different age groups should also be investigated. The difference in attitude toward disabled persons across age levels (ages 13-18) could be studied using the MIDS in a number of schools in the same district. This could support or challenge Donaldson's (1980) concept of the inverted-U hypothesis related to attitudes toward disabled persons from childhood to late adolescence. More importantly, the current research found that attitudes toward disabled persons seemed to be most negative at 14 years of age. Further research is needed to examine this age as being the period when attitudes toward disabled persons are perhaps most negative.

The instrumentation discussed in this section includes the Modified Issues in Disability Scale (MIDS) (1985) and the Social History Questionnaire (SHQ) (1989). In terms of the MIDS, further research should include factor analytic techniques to investigate the underlying dimensionality of attitudes toward disabled persons. This will reveal possible subdomains of assessing attitudes toward disabled persons.

Secondly, the scores on the ATDP have been positively correlated to the Edwards (1957) Social Desirability Scale and the Crowne-Marlowe (1960) Social Desirability Scale. The MIDS should be administered in conjunction with either the Edwards (1957) Social Desirability Scale or the Crowne-Marlowe (1960) Social Desirability Scale to determine levels of social desirability. This would determine whether or not children would be influenced to give socially acceptable responses on the MIDS.

A more precise measure than the SHQ to determine the relationship between prior contact and attitudes toward disabled persons should be given to subjects at
DISCUSSION

the junior high school age level. The contact measure should provide subjects with a means for accurately recording number of contacts, length of contact, intimacy of contact, pleasantness of contact and relative status of contact with physically disabled persons. By measuring prior contact with disabled persons in this manner, a more accurate assessment of the relationship between prior contact with physically disabled persons and attitudes toward disabled persons can be made.
CONCLUSION

The purpose of this investigation was to evaluate the effect of the B.C. Wheelchair Sports Demonstration Team Presentation on the modification of the attitudes of junior high school students toward physically disabled persons. The presentation consisted of a one hour structured program that included contact with physically disabled persons and information about their disabilities.

One hundred and thirty-one able-bodied students (ages 13-15) from four junior high schools in two British Columbia school districts participated in this study. Students from one school in each district attended the British Columbia Wheelchair Sports Demonstration Team Presentation. Students from the other school did not attend and were assigned to the control group. A possible confounding variable in both of the experimental designs used was the effect of testing. However, this is a problem common to attitude change research. The measures used are usually of the self-report nature and clearly indicate the intent of the measure.

The current research findings can be generalized to those students who attended the British Columbia Wheelchair Sports Demonstration Team Presentation in May, 1989 and reside in the Penticton or Courtenay areas of the province. This study is limited by the use of self-report measures, drop-out rate of schools, drop-out rate of students, and availability of subjects on all testing dates.

A one-group pretest-posttest design was used with a posttest-only control group as a follow-up four weeks after the treatment. Subjects in the experimental group completed the ATDP prior to and immediately after the treatment. As a result of the high correlation (r = .91) between the MIDS and ATDP, both experimental and control groups completed only the MIDS four weeks after the
CONCLUSION

treatment. All subjects completed the Social History Questionnaire (SHQ) (Makas, 1989) on each occasion. The SHQ gathered information on gender, birth date, place of residence and prior contact with physically disabled persons.

The immediate treatment effect was determined by using a t-test for dependent samples on a one-group pretest posttest design. A t-test for dependent samples comparing differences between pre- and posttest MIDS scores of the experimental group was not significant (p=.112 for a 2-tailed test). However, in the follow-up portion of the study, an analysis of variance of the ATDP found a significant difference between the experimental and control groups (p=.007). This part of the experiment used a posttest-only control group design.

Since the immediate treatment effect approached significance, a series of multiple analyses of variance (MANOVA’s) were performed to investigate the effect of treatment on the factors of age, gender and prior contact with disabled persons. A number of two-way analyses of variance (ANOVA’s) were performed on the factors of age, gender and prior contact related to the follow-up treatment effect one month after the presentation.

Age as related to short term treatment (immediately after the presentation) emerged as a significant factor (p=.008). While the mean scores of the 13 and 15 year old age groups on the MIDS increased immediately after the presentation, the mean of the 14 year old age group decreased immediately after the presentation. Secondly, this trend continued in the follow-up segment of the study with the distribution of mean scores on the ATDP being similar to those expressed for each age group on the MIDS. However, the two-way analysis of variance between age and treatment was not significant (p=.079).
CONCLUSION

Gender (p=.023) emerged as a significant factor in the short term treatment effect but not in the long term treatment effect (p=.287). The mean female score rose higher than the mean male score immediately after the presentation but the effect seemed to plateau in the follow-up one month after when no significant difference between the scores was found.

Finally, prior contact with physically disabled persons was not significant with treatment on either a short (p=.938) or longer term basis(p=.374). This result may have been due to the nature of the questionnaire. If the contact measure had asked information on number of contacts, length of contact, intimacy of contact, pleasantness of contact and relative status of contact with physically disabled persons, a significant positive relationship may have been found between attitudes toward physically disabled persons and prior contact.

The factors of age, gender and prior contact with disabled persons were also investigated independently of treatment. An analysis of variance using the MIDS found a significant age effect in the pretest portion of the one-group pretest-posttest design (p=.008). A post-hoc analysis using Scheffe's test revealed a significant difference (p<.05) between those subjects 13 and 15 years of age with the fifteen year old group displaying a statistically significant greater mean scores on the MIDS than the thirteen year old group. However, age did not emerge as a significant factor (as measured by the ATDP) in the control group subjects of the posttest only control group design. This was probably due to the fact that only 13 and 14 year old subjects made up the control group.

No significant difference emerged between males and females on attitudes toward physically disabled persons as measured by the MIDS (p=.112) and the
CONCLUSION

ATDP (p=.070). However, in both cases the mean female score (X=166.71 MIDS; X=78.24 ATDP) was higher than the mean male score (X=158.25 MIDS; X=69.00 ATDP).

No statistically significant differences occurred between amount of prior contact and attitudes towards disabled persons as measured by the MIDS (p=.993) and the ATDP (p=.736). No trends emerged.

Three focuses of further investigations might include the following: a need for attitude modification research related to disabled persons particularly in the junior high school age group; continued reliability and validity testing of the MIDS; and a refinement of the SHQ to more accurately determine prior contact with physically disabled persons.

In conclusion, the British Columbia Wheelchair Sports Demonstration Team Presentation appears to be a valuable instrument in positively modifying the attitudes of junior high school students toward physically disabled persons. Although the positive attitude change did not occur immediately after the British Columbia Wheelchair Sports Demonstration Team Presentation it was apparent in the follow-up portion of the study one month after the Presentation (p<.007). The success of the program in achieving this goal is probably due to satisfying the conditions described by the contact hypothesis (Amir, 1969) which if followed appears to positively modify attitudes toward minority groups. Finally, the B.C. Wheelchair Sports Demonstration Team Presentation is an effective tool breaking the attitudinal barriers toward disabled persons as society's negative attitudes are the strongest barriers for disabled persons to overcome.
BIBLIOGRAPHY


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BIBLIOGRAPHY


APPENDIX A ATTITUDE MODIFICATION TECHNIQUES AND RESULTS
## Figure A 1 Brief Descriptions of Attitude Modification Techniques

<table>
<thead>
<tr>
<th>Technique</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>Information on disabilities (e.g. etiology, characteristics, problems, similarities with nondisabled, prostheses) provided by means such as speakers, films, and books</td>
</tr>
<tr>
<td>Contact</td>
<td>Ss in situations where they observe or interact with persons with disabilities</td>
</tr>
<tr>
<td>Vicarious Experience</td>
<td>Ss put in situations to help them experience what it is like to have disabilities</td>
</tr>
<tr>
<td>Persuasive Message</td>
<td>An argument presented via persons or printed or electronic media to convince Ss that they should have positive attitudes toward persons with disabilities</td>
</tr>
<tr>
<td>Persuasive Message, Contrast</td>
<td>Different messages or media used with treatment groups to investigate relative effectiveness</td>
</tr>
<tr>
<td>Systematic Desensitization</td>
<td>Thinking about disabled persons in relaxed, nonthreatening settings to extinguish negative attitudes</td>
</tr>
<tr>
<td>Positive</td>
<td>Use of classical or operant conditioning to modify behavior assumed to reflect attitudes</td>
</tr>
</tbody>
</table>
Any combination of techniques other than Information Plus Direct Contact or Information Plus Vicarious Experience, which are coded separately.
Table A I Effect Sizes of Attitude Modification Techniques

<table>
<thead>
<tr>
<th>Rank</th>
<th>Technique</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
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<td>.67</td>
<td>.56</td>
</tr>
<tr>
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<td>Information Plus Contact</td>
<td>100</td>
<td>.51</td>
<td>.56</td>
</tr>
<tr>
<td>3.</td>
<td>Contact</td>
<td>93</td>
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<td>.73</td>
</tr>
<tr>
<td>4.</td>
<td>Vicarious Experience</td>
<td>58</td>
<td>.40</td>
<td>.76</td>
</tr>
<tr>
<td>5.</td>
<td>Other</td>
<td>71</td>
<td>.39</td>
<td>.64</td>
</tr>
<tr>
<td>6.</td>
<td>Systematic Desensitization</td>
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<td>.32</td>
<td>.44</td>
</tr>
<tr>
<td>7.</td>
<td>Information</td>
<td>203</td>
<td>.29</td>
<td>.51</td>
</tr>
<tr>
<td>8.</td>
<td>Information Plus Vicarious</td>
<td>62</td>
<td>.20</td>
<td>.36</td>
</tr>
</tbody>
</table>

(Shaver et al, 1988, p. 50-51)
APPENDIX B ATHLETE PROFILES AND PRESENTATION
FORMAT
Figure B 1 Athlete Profiles

1. Indy Batth - Tour Coordinator/Manager

As the Tour Coordinator and the Assistant Program Coordinator with CWSA-BC, Indy is eager to help the Demo Team reach as many communities as possible providing education and awareness.

2. Don Alder

Don is employed as a musician and also as a wheelchair technician. When he is not working, he is a valuable volunteer for CWSA-BC programs. He has travelled around the world with Rick Hansen's Man-In-Motion Tour as the equipment manager. As an able-bodied athlete, he looks forward to promoting integration of able-bodied individuals into wheelchair sports.

3. Cody Stiles

Although Cody is fairly new to wheelchair sports, he shows great potential. Having been injured less than a year ago, he has accepted his disability and set his sights on possibly furthering his education. He would also like to try his hand at wheelchair track and road racing. With such a positive outlook on life, he is guaranteed to succeed.

4. Mike McMurray

Mike is a member of the Canadian Wheelchair Basketball League (CWBL). He has attended the BC Winter Games for the past two years and came away with a gold medal in 1988. Currently, he is a student in Vanderhoof.

5. Cyril Kinakin

Cyril has also played basketball at eh BC Winter Games for the past two years. In addition, he has been involved in numerous wheelchair basketball exhibition games as well as being a veteran Demo Team member. Currently, he resides in Kelowna where he is attending college. His winning smile captivates the audience as he sets his sights on a bright future.

6. Jim Miller

Jim owns a business selling sports products for the physically challenged. In addition to playing basketball, he is an avid tennis player and monoskier. He also enjoys teaching individuals with disabilities how to monoski and water-ski. He looks forward to generating public awareness of wheelchair sports.
7. Colette Pilloud

Colette is presently in process of completing her Education Degree at UBC. Recently, she got involved with the BC Women's Wheelchair Basketball team. As a varsity basketball player at University of British Columbia for five years, she contributes an enormous amount of skill and expertise to wheelchair basketball.
1. Introduction
   a) Demo Team
      School Team
   b) Short explanation of demo format
   c) Brief outline of rules and skills

2. 10-15 minute Game

3. Break
   a) Corporate involvement: Worker's Compensation Board
      Toyota Canada
   b) Athlete background
   c) Personal experience
   d) Safety
   e) Reverse integration

4. 10-15 minute game

5. Open
   a) Questions from students, staff, general public.
   b) Each athlete will relate how he/she was injured
      and stressing the importance of avoiding similar
      situations. At junior and senior high schools,
      drinking and driving will also be discussed.

6. Close
   a) Thank-you
   b) Stay Safe
APPENDIX C ADMINISTRATION PACKAGE
Dear Parent;

The B.C. Wheelchair Sports Demonstration Team will be visiting your school on _________________. We would like to evaluate an aspect of our program which is increasing the awareness of physically disabled persons. Your child will be asked to complete a 15-minute questionnaire on three occasions. Participation is voluntary and refusal to participate will not reflect on your child's mark in any way.

Thank-you for your cooperation.

Please return by _________________.

I consent/do not consent (circle one) to my child ________________ participating in the B.C. Wheelchair Sports Demonstration Team evaluation.

Parent/Guardian signature _________________.

______________________________
Figure C 3 Social History Questionnaire (Makas, 1989)

GENERAL INFORMATION

1. Date: ____________________
2. Time: ____________________
3. School: ____________________
4. Home Room Teacher: ____________________
5. Gender:  Male _____  Female _____
6. Birth Date: Month _____  Day _____  Year _____
7. Overall, would you say that you have had:
   (please choose ONE)
   __ no personal contact with disabled people
   __ very little personal contact with disabled people
   __ some personal contact with disabled people
   __ quite a bit of contact with disabled people
   __ a great deal of contact with disabled people
**Figure C 4 Attitudes Toward Disabled Persons Scale (Yuker et al., 1960)**

Instructions: Please place an X in the blank below the number that best describes your agreement or disagreement with the following statements. There are no correct answers. The best answers are those that honestly reflect your feelings.

<table>
<thead>
<tr>
<th>Scale:</th>
<th>I agree very much</th>
<th>I agree pretty much</th>
<th>I agree a little</th>
<th>I disagree a little</th>
<th>I disagree pretty much</th>
<th>I disagree very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>+3</td>
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<tr>
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<td>-2</td>
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<tr>
<td>-3</td>
<td></td>
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</tbody>
</table>

| 1. Parents of disabled children should be less strict than other parents. | — — — — — |
| 2. Physically disabled persons are just as intelligent as nondisabled persons. | — — — — — |
| 3. Disabled people are usually easier to get along with than other people. | — — — — — |
| 4. Most disabled people feel sorry for themselves. | — — — — — |
| 5. Disabled people are the same as anyone else. | — — — — — |
| 6. There shouldn’t be special schools for disabled children. | — — — — — |
| 7. It would be best for disabled persons to live and work in special circumstances. | — — — — — |
| 8. It is up to the government to take care of disabled persons. | — — — — — |
9. Most disabled people worry a great deal.

10. Disabled people should not be expected to meet the same standards as non-disabled people.

11. Disabled people are as happy as non-disabled ones.

12. Severely disabled people are no harder to get along with than those with minor disabilities.

13. It is almost impossible for a disabled person to live a normal life.

14. You should not expect too much from disabled people.

15. Disabled people tend to keep to themselves much of the time.

16. Disabled people are more easily upset than non-disabled people.

17. Disabled persons cannot have a normal social life.

18. Most disabled people feel that they are not as good as other people.

19. You have to be careful of what you say when you are with disabled people.

20. Disabled people are often grouchy.
INSTRUCTIONS

The purpose of this study is to gather information from a wide range of people on disability-related issues. Some people will have had a great deal of contact with these issues, others will have had virtually no contact.

Please indicate, using the scale below, your opinion on each of the 37 statements which follow. Although some of these items may appear to be factual, there are really no "right" or "wrong" answers. We are simply looking for your opinion (i.e., whether you personally agree or disagree with each statement). Therefore, even though you can respond "don't know/no opinion", you should use this response only when you have no idea at all what your answer should be.

Here is how you should rate the items.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Disagree</td>
<td>3 Don't Know/ No opinion</td>
<td>5 Agree</td>
<td>7</td>
</tr>
</tbody>
</table>

If you feel that the statement is completely true, put a "7" in the blank before that particular statement.

If you feel that the statement is completely false, put a "1" in the blank before the statement.

All of the other numbers indicate partial agreement or partial disagreement with these statements. For example, if you consider a statement to be quite true (but not completely true), you should rate it a "6". (A "2" means that it is quite false.) If you feel that it is somewhat true (but not neutral), you should rate it "5". (A "3" means it is somewhat false.) Use a "4" only if you have absolutely no opinion on the statement or absolutely no idea whether it is factually true or false.
Please rate all the items. Also, please make a separate judgement for each item. Do not look back and forth through the statements or try to remember how you rated similar items before.

1 - strongly agree
2 - disagree
3 - somewhat disagree
4 - don’t know/no opinion
5 - somewhat agree
6 - agree
7 - strongly agree

1. The majority of physically disabled adolescents should attend special schools which are specifically designed to meet their needs.

2. Certain jobs should be set aside for blind persons so that they don’t have to compete directly with sighted persons.

3. Disabled children should not have to compete academically with nondisabled children.

4. Most people who have physical disabilities expect no more love and reassurance than anyone else.

5. If you are walking with a blind person, it is easier for him/her to take your arm than for you to take his/her arm.

6. Physically disabled drivers should pay more for their automobile insurance than nondisabled drivers.

7. It is more humane to allow a child with a severe disability to die at birth than for him/her to live as a severely disabled person.

8. Efforts to place physically disabled people who have been institutionalized back in the community are really pressing them to do more than they are capable of doing.

9. If a person with epilepsy becomes angry with people over little things, it should be overlooked because of his/her disability.

10. Disabled people are generally easier to get along with than nondisabled people.

11. Parents of disabled teenagers should be as strict as any other parents.

12. Sheltered workshops (noncompetitive factory work exclusively for disabled people) cannot adequately solve the employment problems of people who happen to be disabled.
13. People with physical disabilities should be expected to meet the same vocational standards as other people.

14. Physically disabled people are usually easy going and seldom get angry.

15. One should avoid asking disabled people questions about their disabilities.

16. Disabled people don't have enough influence in politics.

17. Income from taxes paid by an employed disabled person is greater than the amount of money spent to put that person back to work.

18. Wheelchair users frequently have bowel or bladder "accidents" (i.e., they can't get to the bathroom in time).

19. Educational programs for physically disabled students are very expensive in relation to what the physically disabled child gains from them.

20. You have to be especially careful what you say when you are with people who are physically disabled.

21. Disabled people are generally no more anxious or tense than nondisabled people.

22. Adequate housing for disabled people is neither too expensive or too difficult to build.

23. Teachers should not expect students to who have epilepsy to participate fully in physical education activities.

24. Trained workers who use wheelchairs are no more likely to have accidents on the job than equally trained nondisabled workers.

25. Disabled people are no more likely than nondisabled people to be churchgoers.

26. Since a physical disability interferes with certain activities, the disability is foremost in a disabled person's mind practically all the time.

27. Blind people tend to get a more accurate first impression of others than most people do.

28. A man or a woman with a physical disability is much more likely than a nondisabled person to have a child who will also have a disability.
29. For a severely disabled person, the kindness of others is more important than any educational program.

30. Disabled people are more accident prone than nondisabled people.

31. Most disabled people would rather socialize with other disabled people than with nondisabled people.

32. Employers' attitudes are a greater handicap to a disabled person than lack of ability.

33. A physically disabled high school student will probably feel inadequate in a regular classroom.

34. Physically disabled drivers have more automobile accidents than nondisabled drivers.

35. Disabled people should be expected to fit into our competitive society.

36. It would be much easier for disabled people if they lived in residential units (e.g., apartment buildings) with other disabled people.

37. It is logical for a woman who uses a wheelchair to consider having a baby.
APPENDIX D SUPPLEMENTARY TABLES OF RESULTS
Table D I Means and Standard Deviations for Contact on the MIDS for the Pretest and Posttest

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>s.d.</th>
<th>mean</th>
<th>n</th>
<th>s.d.</th>
<th>mean</th>
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<tr>
<td></td>
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<td>Posttest</td>
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<td>163.00</td>
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<td>24.46</td>
<td>162.16</td>
</tr>
<tr>
<td>Some</td>
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<td>18.60</td>
<td>162.18</td>
<td>17</td>
<td>20.47</td>
<td>165.18</td>
</tr>
<tr>
<td>Quite a Lot</td>
<td>6</td>
<td>10.26</td>
<td>161.17</td>
<td>9</td>
<td>29.50</td>
<td>161.11</td>
</tr>
<tr>
<td>A Great Deal</td>
<td>9</td>
<td>31.18</td>
<td>165.89</td>
<td>7</td>
<td>24.26</td>
<td>174.29</td>
</tr>
<tr>
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<td>162.85</td>
<td>67</td>
<td>22.68</td>
<td>164.88</td>
</tr>
</tbody>
</table>
### Table D II Means and Standard Deviations for Age on the ATDP for the Experimental and Control Groups

<table>
<thead>
<tr>
<th></th>
<th>ATDP Experimental</th>
<th>ATDP Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>s.d.</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>16</td>
<td>15.98</td>
</tr>
<tr>
<td>14</td>
<td>28</td>
<td>10.72</td>
</tr>
<tr>
<td>15</td>
<td>22</td>
<td>13.99</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Combined</td>
<td>67</td>
<td>13.48</td>
</tr>
<tr>
<td></td>
<td>ATDP Experimental</td>
<td>ATDP Control</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------</td>
<td>--------------</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>s.d.</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>34</td>
<td>12.39</td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>14.20</td>
</tr>
<tr>
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<td>13.35</td>
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</table>
Table D IV Means and Standard Deviations for Contact on the ATDP for the Experimental and Control Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
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<th>mean</th>
<th>n</th>
<th>s.d.</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
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<td>5</td>
<td>16.35</td>
<td>70.20</td>
</tr>
<tr>
<td>Very Little</td>
<td>25</td>
<td>14.11</td>
<td>79.08</td>
<td>24</td>
<td>14.98</td>
<td>74.75</td>
</tr>
<tr>
<td>Some</td>
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<td>14.76</td>
<td>81.11</td>
<td>8</td>
<td>17.96</td>
<td>77.88</td>
</tr>
<tr>
<td>Quite a Lot</td>
<td>9</td>
<td>12.11</td>
<td>86.89</td>
<td>4</td>
<td>24.14</td>
<td>64.75</td>
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<td>16.37</td>
<td>73.70</td>
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</table>
Table D V Means and Standard Deviations for Gender on the MIDS

<table>
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<th>Gender</th>
<th>n</th>
<th>s.d.</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>36</td>
<td>20.77</td>
<td>158.25</td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>22.19</td>
<td>166.71</td>
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Table D VI Means and Standard Deviations for Contact on the ATDP

<table>
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<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>5</td>
<td>16.35</td>
<td>70.20</td>
</tr>
<tr>
<td>Very Little</td>
<td>24</td>
<td>14.98</td>
<td>74.75</td>
</tr>
<tr>
<td>Some</td>
<td>8</td>
<td>17.96</td>
<td>77.88</td>
</tr>
<tr>
<td>Quite a Lot</td>
<td>4</td>
<td>24.14</td>
<td>64.75</td>
</tr>
<tr>
<td>A Great Deal</td>
<td>2</td>
<td>16.37</td>
<td>73.70</td>
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</table>
Table D VII Means and Standard Deviations for Gender on the ATDP

<table>
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<th>mean</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
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<td>69.00</td>
</tr>
<tr>
<td>Female</td>
<td>21</td>
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<td>78.24</td>
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<td>Combined</td>
<td>42</td>
<td>16.56</td>
<td>73.62</td>
</tr>
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</table>

1 case (2.3%) was missing
Table D VIII Means and Standard Deviations for Age on the ATDP

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>s.d.</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14</td>
<td>7</td>
<td>17.85</td>
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<td>35</td>
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</table>
Table D IX Means and Standard Deviations for Contact on the ATDP

<table>
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<th>Variable</th>
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<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATDP Control</td>
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</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Contact</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>5</td>
<td>16.35</td>
<td>70.20</td>
</tr>
<tr>
<td>Very Little</td>
<td>24</td>
<td>14.98</td>
<td>74.75</td>
</tr>
<tr>
<td>Some</td>
<td>8</td>
<td>17.96</td>
<td>77.88</td>
</tr>
<tr>
<td>Quite a Lot</td>
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<td>24.14</td>
<td>64.75</td>
</tr>
<tr>
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<td>73.70</td>
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<tr>
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<td>16.37</td>
<td>73.70</td>
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</table>