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Effects of Contact on Thoughts About Interaction with Students Who Have a Physical Disability

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This investigation explored the effects of previous contact with people who have a physical disability on the thoughts of ablebodied students concerning interaction with their disabled peers. Results show (a) that college students who had had contact with individuals who have a physical disability are more comfortable during interaction and more at ease with their disabled peers and (b) that students with and without contact have different patterns of thoughts concerning interaction with such individuals. People with previous contact were shown to have a higher ratio of positive to negative thoughts than individuals who had had no contact; this was true for both self-referent and other-referent thoughts, with the findings being most clear cut concerning thoughts about the person with a disability. The findings suggest (a) that contact may exert its beneficial effects by altering the thoughts that people have concerning interaction with individuals who have a disability, and (b) that in future research it is the ratio of positive to negative thoughts, rather than the frequency of each type of thought, which should be evaluated. The implications of the findings for rehabilitation professionals are discussed.

Studies exploring the effects of contact between ablebodied people and those who have a physical disability have provided ambiguous results. While most studies have found that contact has beneficial effects on ablebodied individuals' attitudes and behaviors (e.g., Anthony & Carkhuff, 1970; Antonak, 1981; Minnes & Tsuk, 1986; Robillard & Fichten, 1983; Rounds & Neubauer, 1986; Semmel & Dickson, 1966; Weinberg, 1978; Yuker, Block, & Campbell, 1960), some investigations have found either no relationship (e.g., Fichten & Amsel, 1986; Fichten, Compton, & Amsel, 1985; Rowlett, 1982) or even deterioration (e.g., Emerton & Rothman, 1978). Contact, per se, does not appear to be a powerful means of changing attitudes, fostering social exchange, or reducing prejudice and discrimination.

The goal of a number of recent investigations has been to explore the interaction between personality characteristics and the extent and nature of the contact that ablebodied people have with individuals who are disabled (cf. Yuker, in press). While this development is laudable, it is also important to examine the variables that mediate changes and the mechanisms by which contact exerts beneficial effects. An appreciation of the mechanisms by which contact causes changes is necessary both for a better understanding of the dynamics of attitude and behavior change as well as for the design of contact interventions that maximize the likelihood of benefit.

In a recent series of studies it was shown that the nature of the thoughts that ablebodied people have concerning interaction with a person who has a physical disability is related to their level of comfort in the interaction situation, ease with people who have a disability, and self-efficacy beliefs (Fichten, 1986; Fichten & Amsel, in press; Fichten, Bourdon, Amsel, & Fox, 1987). Therefore, the intention of the present investigation was to explore the thoughts of people who have had and who have not had contact with individuals who have a physical disability.

Method

Measures

General Information Form. This measure contains questions about sex, age, absence or presence of a disability, and previous contact with people who have a physical disability (relative, volunteer, friend, acquaintance).

Ease with Students. Ease with ablebodied students and with students who have a physical disability was assessed using 6-point scales (1 = very uncomfortable, 6 = very comfortable).

College Interaction Self-Statement Test (CISST).[1] This 40 item inventory measure of thoughts about interaction with ablebodied and with physically disabled college students has two dimensions: focus of attention (on the self/on the other person) and valence (positive/negative). A brief description of a hypothetical interaction situation between students in the college context is provided. Subjects are asked to imagine that they are involved in the interaction and to indicate, on a 6-point scale, how comfortable they would feel in such a situation. Subjects then rate, using a 5-point scale, how often they would have each of 40 thoughts. Item content of the CISST is based on thoughts, listed in an open-ended manner, concerning interaction between ablebodied college students and between ablebodied students and their wheelchair user peers (cf. Fichten, 1986). The CISST yields five scores: a Comfort Interacting score (6-point scale) and four thought frequency scores which are based on the summed ratings for the 10 items contained

in each of the following four scales: Self-Referent Positive, Self-Referent Negative, Other-Referent Positive, and Other-Referent negative thoughts. The CISST has been shown to have reasonable reliability and validity (Fichten & Amsel, in press; Fichten, Amsel, & Robillard, 1988).

Subjects

One hundred and eighty volunteer nondisabled college students enrolled in eight sections of general psychology, 86 males and 94 females, participated. Mean age was 18. Subjects were participating in a larger investigation.

Procedure

All subjects completed the General Information Form and the Ease with Students measure. They were then randomly assigned to one of two experimental conditions: an ablebodied and a wheelchair user stimulus person. The 88 subjects in the wheelchair user condition completed the CISST with reference to hypothetical interaction with a same-sex wheelchair use student, while the 92 subjects in the ablebodied condition completed this measure with reference to a same-sex ablebodied student.

In both experimental conditions, subjects completed the CISST twice. The first time, the original hypothetical interaction situation was specified: "Imagine that you are sitting with some friends in the cafeteria. A [wheelchair user] student (of the same sex as you) whom you don't know well comes and joins the group. You are introduced and shortly thereafter everyone else leaves. You have 15 minutes before class." The second time that subjects completed the CISST the following moderately difficult situation was specified: "Imagine that you and a classmate (of the same sex as you) [in a wheelchair/who has a plaster cast] are having a deep discussion about your lives. You want to find out what is wrong with him/her and how it feels to be in a [wheelchair/plaster cast]."

Due to the requirements of the larger study, subjects completed the CISST four weeks after they completed the General Information Form and the Ease with Students measure. Thus, some of the subjects have missing data and the sample sizes in various analyses are slightly different.

Results

Ease and Comfort Interacting

Ablebodied/disabled comparison. Results show that subjects were more at ease with Ablebodied than with Disabled students, $t\ (101) = 5.90$, $p < .001$. While the means were in the same direction as the Ease results, the comparison on CISST Comfort Interacting scores was not significant.

Effects of contact. Sixty-six percent of the subjects in the disabled experimental condition had had previous contact with people who have a physical disability (relative, friend, acquaintance, or volunteer experience). Comparison of the scores of students who had had contact and those who did not showed that subjects With Contact were more at ease with disabled students than those who had had No Contact, $t\ (50) = 2.94$, $p < .01$. Similarly, subjects With Contact had higher Comfort Interacting scores than those who had had No Contact, $t\ (65) = 3.61$, $p < .001$.

Thoughts

CISST scores used in data analyses are the mean of scores for the two hypothetical interaction tasks.

Ablebodied/disabled comparison. Thoughts concerning interacting with ablebodied or with wheelchair user students were evaluated in a 3-way mixed design analysis of variance (ANOVA) comparison. Results showed that significantly more thoughts about interacting occurred in the Disabled than in the Ablebodied experimental condition, $F\ (1,174) = 29.36$, $p < .001$; in both conditions, significantly more Self-Referent than Other-Referent thoughts were indicated, $F\ (1,174) = 149.13$, $p < .001$; and more Positive than Negative thoughts were elicited, $F\ (1,174) = 65.53$, $p < .001$. In addition, all interactions were either significant or approached significance.

To better understand the interactions, 2-way ANOVA comparisons were made separately on Self-Referent and on Other-Referent thoughts. Results on both Self and Other-Referent thoughts show the same significant main effects as those found in the 3-way ANOVA comparison. In addition, the interaction of Experimental Condition X Valence was also significant for both Self and Other-Referent thoughts, $F\ (1,174) = 12.10$, $p < .001$; $F\ (1,174) = 7.02$, $p < .01$, respectively. As the means in Table 1 and Tukey hsd tests show, there were no significant differences in the number of positive thoughts between the Disabled and the Ablebodied conditions. Negative thoughts in the Ablebodied condition, however, were significantly fewer than all other types of thoughts in both experimental conditions ($p < .01$); this was true for Self-Referent as well as for Other-Referent thoughts.

Table 1
Thoughts in the Ablebodied and Disabled Conditions

	Thoughts			
	Self-Referent		Other-Referent	
Experimental Condition	Positive	Negative	Positive	Negative
Disabled	35.41 (6.04)	34.21 (7.44)	33.54 (5.43)	29.35 (7.36)
Ablebodied	34.91 (5.59)	28.95 (6.74)	31.19 (6.02)	23.91 (5.14)

Note. Values are means. Numbers in parentheses are standard deviations.

Contact. Two-way mixed design ANOVA comparisons on the Self-Referent and on the Other-Referent thought scores of With Contact and No Contact subjects in the Disabled condition were made. Data on Self-Referent thoughts, presented in Table 2, show that there were no significant differences between the two contact groups on the total frequency of thoughts or on the number of Positive and Negative thoughts. The interaction of Contact X Valence, however, showed a trend toward significance, $F\ (1,65) = 3.41$, $p = .07$, suggesting relatively more Negative

and fewer Positive thoughts in the No Contact than in the With Contact group. On Other-Referent thoughts, again there was no difference between the two contact groups on the total number of thoughts. Here, however, there were significantly more Positive than Negative thoughts indicated, $F(1,65) = 11.28$, $p < .001$. In addition, the interaction of Contact X Valence was significant, $F(1,65) = 6.76$, $p < .05$; the pattern of this finding was the same as that for Self-Referent thoughts and shows that, while students With Contact had significantly more Positive than Negative thoughts ($p < .01$), this was not the case for those with No Contact. In addition, No Contact subjects had significantly more Negative thoughts than did subjects With Contact ($p < .05$).

Table 2
Thoughts of People With and Without Previous Contact

	Thoughts			
	Self-Referent		Other-Referent	
Group	Positive	Negative	Positive	Negative
With Contact	36.17	33.95	34.20	27.88
	(5.20)	(7.19)	(5.29)	(7.56)
No Contact	33.63	36.09	32.72	31.91
	(6.99)	(7.07)	(5.62)	(7.08)

Note. Values are means. Numbers in parentheses are standard deviations.

The results on both Self and Other-Referent thoughts suggested that, rather than their absolute number, it may be the ratio of Positive to Negative thoughts which is particularly important. Tests on the Positive:Negative ratio scores of subjects With Contact and No Contact suggest that this may, indeed, be the case. The comparison on Self-Referent ratio scores ($M = 1.122$, $SD = .287$; $M = .985$, $SD = .321$, respectively) approached significance, $t(65) = 1.72$, $p < .10$, and the test on Other-Referent ratio scores ($M = 1.328$, $SD = .515$; $M = 1.075$, $SD = .280$, respectively) was significant, $t(65) = 2.64$, $p < .05$. These results demonstrate that the Positive:Negative ratio scores of subjects who had had previous contact were higher than those of subjects who had not had such contact.

Relationship Between Ratio Scores and Comfort and Ease with People

To evaluate the relationship between Positive:Negative ratio scores in the Disabled condition and Ease With Disabled Students and Comfort Interacting With Disabled Students scores, Pearson product-moment correlation coefficients were computed. Results indicate that both the Self-Referent and the Other-Referent ratio scores were significantly related to Comfort Interacting and to Ease With Disabled Students ($p < .01$). Since the correlation between Self-Referent and Other-Referent ratios was also high, $r(65) = .71$, $p < .01$, Table 3 presents the correlation matrix for combined ratio scores in the Disabled experimental condition. Correlation coefficients are also reported for the Ablebodied condition. Results indicate that, generally, ratio scores were better predictors of Comfort Interacting and Ease than were Positive or Negative thought frequency scores.

In addition, subjects with relatively high Positive:Negative thought ratios, compared to those with low ratios were, as Table 4 shows, significantly more at Ease with Disabled Students, $t(50) = 3.64$, $p < .001$ (although this is not true with Ablebodied students). Furthermore, those with high ratios were more Comfortable Interacting with both Disabled, $t(86) = 2.60$, $p < .05$, and with Ablebodied students, $t(82) = 2.68$, $p < .01$.

Discussion

The results of this investigation indicate that students who have had contact with individuals who have a physical disability were more comfortable during interaction and more at ease with their disabled peers. More importantly, the results suggest that contact may exert its beneficial effects by altering the pattern of thoughts that people have concerning interaction with people who have a disability.

Comparisons of ablebodied students' thoughts concerning interaction with ablebodied and with disabled peers replicate previous findings (Fichten, 1986; Fichten & Amsel, in press; Fichten, Amsel, & Robillard, 1988) and show that (a) people have more thoughts about interacting with a person who has a disability than about interacting with a nondisabled individual, (b) that interaction with a disabled person elicits more negative thoughts, and relatively fewer positive ones, than interaction with an ablebodied individual, (c) that the largest differences occur in the realm of negative thoughts, and (d) that this is particularly true of other-referent thoughts.

The scores of students with and without previous contact indicate results similar to those found on comparisons of nondisabled students' thoughts concerning interaction with ablebodied and with disabled students, respectively; relatively more positive and fewer negative thoughts were indicated by people who had had contact than by those who did not. Again, results were clearest on other-referent thoughts: students with no previous contact with individuals with disabilities were shown to have significantly more negative other-referent thoughts than did students who had had previous contact.

The results prompted a post hoc exploration of the importance of the ratio of positive to negative thoughts. The data suggest that it was indeed this ratio that was both more clearly related to ease with people who have a disability and to comfort interacting with such individuals. When the thoughts of students concerning interaction with ablebodied and with disabled peers were evaluated, the results showed significant differences in ratio scores; furthermore, the ratio scores of people with and without previous contact with individuals who have disabilities also differed in the expected direction.

Practical Applications

This investigation's findings suggest that contact with people who have a disability may alter the relative frequency of people's positive and negative thoughts; while this also appears to be true of self-referent thoughts, the results

Table 3
Relationship Between Ratio Scores and Other Variables

			Thoughts				
			Self-Referent		Other-Referent		
Variable	Ease[1]	Comfort Interacting	Positive	Negative	Positive	Negative	Pos:Neg Ratio
Ease[1]		.55***	.58***	-.45***	.27*	-.44***	.61***
Comfort	.39***		.23*	-.39***	.24*	-.37***	.45***
Self-Positive	.30*	.22*		--	.71***	--	.52***
Self-Negative	--	-.22*	--		--	.70***	-.73***
Other-Positive	.20	.23*	.62***	--		--	.47***
Other-Negative	--	-.19*	--	.38***	.34***		-.73***
Pos:Neg Ratio	.25*	.34***	.45***	-.68***	.40***	-.49***	

Note. Pearson r values. Disabled condition above the diagonal, ablebodied below. -- indicates nonsignificant correlation coefficient. In the disabled condition n ranges from 52 to 88 and in the ablebodied condition n ranges from 47 to 87.

[1]Ease with disabled students above and with ablebodied students below the diagonal.

$p < .10$
$^{*}p < .05$
$^{**}p < .01$
$^{***}p < .001$

Table 4
Ratio, Comfort Interacting and Ease Scores

	Positive:Negative Thoughts Ratio	
Variable	Low Ratio Group	High Ratio Group
Ease With:		
Disabled Students	3.44	4.56
	(1.16)	(1.05)
Ablebodied Students	4.83	4.87
	(.90)	(.83)
Comfort Interacting With:		
Disabled Students	3.51	4.02
	(.95)	(.91)
Ablebodied Students	3.79	4.44
	(1.00)	(1.10)

Note. Mean splits were used to assign subjects to high and low ratio groups. Values are means. Numbers in parentheses are standard deviations. The higher the score the better; maximum score = 6.

are most clear cut concerning differences in thoughts about the other person (i.e., the individual with a disability). If this is the case, then contact may have beneficial effects when it provides opportunities for changes in the nature of the thoughts that ablebodied people have concerning persons who have a disability.

As noted earlier, the literature shows that (a) contact between ablebodied people and those who have a disability has highly variable effects, and (b) that contact, per se, does not appear to be a powerful means of making people more comfortable or reducing prejudice and discrimination.

Many rehabilitation researchers have suggested that the ambiguous results can be attributed to differences in the extent and type of contact studied. They argue that the best method to increase understanding, reduce prejudice, enhance comfort, and facilitate interaction between people who are ablebodied and those who have a disability is to have them experience **extended close contact on an equal status basis.** A number of studies provide evidence to support this view (e.g., Rowlett, 1982; Weinberg, 1978). In the area of race relations also, contact, as equals, has long been known to reduce prejudice (cf. Wrightsman, 1972). Such contact can not only promote comfort during interaction, but can also provide opportunities to alter the ratio of positive to negative thoughts about interacting as well as to challenge stereotypes, shed misconceptions, and enhance self-efficacy expectations about one's ability to interact effectively.

There are many opportunities in colleges and universities for exposure in the form of equal status contact between ablebodied students and their disabled peers. For example, counselors and other professionals who are trying to encourage contact between students with a disability and their ablebodied peers should ensure that such contact include reciprocity (i.e., that the relationship is not one-sided, with the ablebodied student helping the student with a disability, who only receives). Group or team projects which require collaboration between students could be devised since it has been shown that a "cooperative set" is particularly effective both in changing attitudes and encouraging interaction (cf. Aronson & Osherow, 1980; Johnson, Johnson, & Maruyama, 1983). For example, students in discussion or project groups could each be made responsible for a portion of the group's task which they must teach to other students in the group (e.g., all students read different articles on which they report to the group; each student carries out different aspects of a team project). Because extended contact appears to be particularly effective in changing attitudes and behavior (Weinberg, 1978) and because longer interactions are related to positive thoughts about the other person (Hope, Heimberg, Zollo,

Nyman, & O'Brien, 1986), groups should be formed at the beginning of each academic year and should continue until the end of the semester.

Above all, those who work to facilitate contact between ablebodied students and their disabled peers should ensure that the nature of the contact encourages changes in the ways that ablebodied students think, both about themselves and about their disabled peers. Ample opportunity in such encounters should exist for students with a disability to demonstrate their competencies and abilities rather than merely their limitations (Wright, 1983). There should also be opportunities for ablebodied students to establish a sense of mastery and to develop strong self-efficacy beliefs about their ability to interact comfortably and effectively with students who have a disability. In addition, since many ablebodied students stereotype those with disabilities (Fichten & Amsel, 1986), contact experiences should be structured so that ablebodied students come to appreciate the similarities, rather than the differences, between themselves and their disabled classmates. The present findings suggest that, in research on the effects of programs designed to foster attitude and behavior change which involve contact experiences between ablebodied individuals and people who have disabilities, the ratio of positive to negative thoughts may be a particularly important index of change.

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Footnotes

[1]The full text of the CISST is available from the authors.

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