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# Research in Developmental Disabilities



## Attitudes of children and adolescents toward persons who are deaf, blind, paralyzed or intellectually disabled

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### ABSTRACT

This study aimed to explore Dutch students' attitudes toward deaf, blind, paralyzed or intellectually disabled persons and to determine whether age, self-esteem, gender, religion and familiarity with a disabled person have a significant effect on these attitudes. The attitudes of 200 high school and 144 university students were determined with two questionnaires, the CATCH and MAS. Only the CATCH was applicable with all four disabled groups. Two factors were found: behavior–positive affect and cognition–negative affect. With regard to the first factor respondents had more positive attitudes toward deaf, blind and paralyzed persons than toward intellectually disabled persons. The cognition and negative affect factor showed that respondents had more positive attitudes toward deaf and blind persons than toward paralyzed and intellectually disabled persons. Being older and familiarity with a disabled person had a significant positive effect on attitudes, while self-esteem and gender had only a partial effect and having religious beliefs was not a significant predictor in this study.

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### 1. Introduction

Attitudes toward children with disabilities are an important aspect of integrating them into regular classrooms or in other social activities (Bossart, Colpin, Pijl, & Petry, 2011; Vignes et al., 2009). When children have a positive attitude toward disabled peers it can facilitate the inclusion of disabled children, while a negative attitude can hinder inclusion (Vignes et al., 2009). For instance, Siperstein, Bak, and Gotlieb (1977) have shown that children show more positive attitudes toward competent, normal appearing children than incompetent abnormal appearing children (e.g. children with Down syndrome). Even though several studies have assessed attitudes toward disabled children, few studies have focused on different groups of disabled children. Most studies cover disabilities in general, without referring to a specific group. Given the large differences, both within and between groups of children with disabilities, in cognition, adaptive skills, language and communication it seems logical to expect that certain disabled groups will encounter more difficulties in their attempts to integrate than other groups. Group characteristics will maybe also evoke different emotions, thoughts and reactions from people who meet disabled people. If non-disabled children have these perceptions too, irrespective of whether they are true or false, we should know them in order to be able to improve social and scholarly inclusion of children with disabilities.

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### 1.1. Attitudes

Eagly and Chaiken (2007) gave the following abstract or umbrella definition of an attitude: “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor (p. 582)”. Key features in this definition are tendency, entity or attitude object and evaluation. In the current study the entity is children with disabilities, the evaluation whether their tendencies are positively or negatively expressed. The tendency part of attitudes is mostly regarded as a multidimensional concept consisting of three components originally proposed by Triandis (1971). There is an affective component, a behavioral component and a cognitive component. The affective component involves a person's feelings and emotions toward others (or at least their own reports on their feelings), the behavioral component consists of a person's actual or intended behavior toward others, and the cognitive component involves a person's beliefs and knowledge of disabilities and disabled persons (Rosenbaum, Armstrong, & King, 1986). According to Eagly and Chaiken (2007) one has to distinguish between an inner tendency that is attitude and the evaluative responses by which these inner tendencies are expressed. It is not entirely possible to see emotions and cognitions as part of this inner tendency and behavior as the evaluative responses. Once measured or made explicit, for instance by means of questionnaires, all components might belong to both the inner and expressive aspect of attitudes. The three levels of attitudes are also not necessarily in accordance with each other. You might treat children with disabilities as any other child, think highly of them but still feel uncomfortable or embarrassed in their presence.

Vignes, Coley, Grandjean, Godeau, and Arnaud (2008) found 19 instruments for measuring children's attitudes toward disabled peers. Sixteen instruments measured only one component of attitudes, one two components and only two instruments measured three components. The latter are the Chedoke-McMaster Attitudes Toward Children with Handicaps (CATCH) scale and The Multidimensional Attitudes Scale toward Persons with Disabilities (MAS). Although the MAS and CATCH intend to measure all three of Triandis' components of attitudes, the three components are not always found in psychometric analyses of the scales. Note for instance that Rosenbaum et al. (1986) found after factor analysis that the affective and behavioral components in their CATCH-scale are related and might be considered as one component. It is assumed that the two or three components appear regardless of the kind of disability and differ only in the level of the scores per item and component. According to Rosenbaum et al. (1986) it is a conceptual issue whether a single attitude measure can identify children's responses to various disability groups. CATCH statements refer to handicapped children in general. In administering the questionnaire the children are told to interpret the word handicapped as they understand it, and no specific stimulus condition is presented. The idea is that: “no matter what the generic description of the disability, a disabled child elicits similar, though perhaps quantitatively different, attitudes from able-bodied peers” Rosenbaum et al. (1986, p. 51). Rosenbaum et al. (1986) admit that this proposition has not been adequately tested but they stated that it is consistent with observations of emotional problems and family difficulties of children with various disabilities that show that they have more in common with each other than they have differences. Because the proposition mentioned before has not been tested and because from a psychometric point of view one cannot extrapolate the factor solution of a questionnaire from one group of respondents to another once the items in the questionnaire have been changed both in language and in content, we feel it is necessary to check the factor structure of the questionnaires before analyzing the data any further.

### 1.2. Disability specific attitudes

The above mentioned studies measured attitudes toward peers with disabilities in general and not toward a specific disability. Nikolarazi and De Reybekiel (2001) did compare specific disabilities, namely blind children, deaf children and children in a wheelchair. However, they focused on the difference between attitudes in Greece and the UK and not on the difference between the three disability groups within the two countries. There is no consistent picture between the results of those researchers that did compare groups of different disabilities. On the one hand Furnham and Gibbs (1984) found that peers with an intellectual disability were viewed in a more negative way than peers with a physical disability. On the other hand, Vignes et al. (2009) found no significant differences between children's attitudes regarding physical and cognitive disabilities.

Several studies dealt with attitudes toward one specific disability, such as deaf (Berkay, Gardner, & Smith, 1995; Nikolarazi & De Reybekiel, 2001; Nikolarazi & Makri, 2004), blind (Nikolarazi & De Reybekiel, 2001) and intellectually disabled (ID) persons (Weiss, 1994). Unfortunately these researches often used different definitions of the term 'attitude', different subject groups and different instruments, and so their conclusions are not easily comparable with each other. Moreover recent studies are lacking and the cited publications are rather old. As a result it is hard to compare attitudes toward the different disabilities and to judge whether they are still valid. Attitudes do and will change over time. For instance the introduction of the ICF-CY (WHO, 2007) changed the professional perspective on disabilities and might also have affected public opinion and attitudes.

### 1.3. Factors affecting attitudes

Several factors were found to affect one's attitudes toward disabled people. Since an attitude can be defined as a multidimensional concept involving affection, behavior and cognition it is susceptible to change and variation. On a personal level variables that can influence attitude can be age, culture, gender, religion, self-esteem and knowing a disabled person or

not. The effect of age on attitude does not yield a consistent picture. On the one hand some authors claim that the older a child, the more positive their attitude (Brook & Galili, 2000; Findler, Vilchinsky, & Werner, 2007; Weiss, 1994), while other authors did not find such an effect (Rosenbaum, Armstrong, & King, 1988; Vignes et al., 2009).

Previous research has shown that able-bodied children have a less positive and prejudiced view toward their disabled than able-bodied peers (Rosenbaum et al., 1988), and that there are also cultural differences in those attitudes (Bossaert et al., 2011). The attitudes of French (Vignes et al., 2009), Canadian (Rosenbaum et al., 1986) and Belgian adolescents (Bossaert et al., 2011) are fairly positive toward their disabled peers, but these attitudes are lower than those of Israeli children (Bossaert et al., 2011). Also, Greek children were more positive toward disabled peers than their UK counterparts, while both had positive attitudes toward deaf peers, blind peers and peers in a wheelchair (Nikolarazi & De Reybekiel, 2001).

In several studies, boys are found to have a less positive attitude toward their disabled peers than girls (Bossaert et al., 2011; Findler et al., 2007; Rosenbaum et al., 1986). Nikolarazi and De Reybekiel (2001) found that girls in Greece and the UK have a more positive attitude toward peers who are deaf, blind and peers in wheelchairs than boys. However, other studies have not found such a gender effect (see Scior, 2011). According to Scior (2011) this inconsistency could be accounted for by the number of socio-demographic predictors used in the statistical analyses. She reported that an initial apparent effect of gender seems to disappear when more predictors were accounted for (Scior, Kan, McLoughlin, & Sheridan, 2010; Scior, 2011).

Self-esteem is expected to influence a student's attitude as well. Vignes et al. (2009) have found that the better a child's view of his or her own life, the better their attitude toward peers with a disability. In line with these findings Findler et al. (2007) found that the better a person's self-esteem, the more positive their attitudes with regard to affection, behavior and cognition. Religion is hardly ever studied as a personal variable affecting attitudes toward disabled persons. The one study we found is from Findler et al. (2007) who did study the effect of religious beliefs and found no difference in the attitudes of religious, traditional and secular Jewish Israelites.

The final personal factor that might influence a person's attitude is whether one has had any previous or ongoing contact with a person with a disability. In general, people who were in contact with someone with a disability were found to have more positive attitudes toward persons with an intellectual disability (see Scior, 2011). Important to notice is that these results are only about the attitudes toward persons with an intellectual disability and not with physical or sensory impairments. In studies of Bossaert et al. (2011) on attitudes toward persons with a physical disability and with Autism Spectrum Disorder and of Findler et al. (2007) on attitudes toward persons in a wheelchair no effect of acquaintance and frequency of contact with a person with a disability emerged. In contrast, Rosenbaum et al. (1988), without making the distinction between physical and intellectual disabilities, found that children who were in contact with a disabled schoolmate or had a disabled friend had more positive attitudes toward disabled peers. Vignes et al. (2009) made a distinction between knowing someone with a disability and having a disabled friend. They found that only children with a disabled friend had a more positive attitude and not children with other types of contact with disabled persons. Important to notice is that Bossaert et al. (2011) found an almost similar result. The item 'having a good friend with a disability' was a near significant predictor ( $p = .051$ ), that is explained some of the variation in attitudes.

#### 1.4. Research questions

In this research, we try to find out if the three components of attitude toward disabled people still suffice when we focus on specific disabilities and not disabilities in general. For this purpose a factor analysis is conducted after adapting the CATCH-scale and the MAS so that the items are about persons who are blind, deaf, paralyzed and intellectually disabled instead of disabled people in general. Furthermore, we try to determine whether there is a significant discrepancy between the participants' attitude toward different disabilities. Lastly, we will study whether age, religion, gender and familiarity with someone with a disability are significant predictors of the respondents' attitudes toward the above mentioned four distinct groups of children with disabilities.

## 2. Methods

### 2.1. Participants

A total of 344 questionnaires were administered to 200 high school students in the Nijmegen area and 144 students in special Education of the Radboud University Nijmegen. Of the high school students 95 were male and 105 female and their age ranged from 13 to 17 years (median = 14). The university students consisted of 7 males and 137 females and their age ranged from 19 to 26 years (median = 21). Respondents were recruited by the second and third author. The high school children were contacted at the high school where the second author fulfilled her internship. Informed and written consent was given by the local school authorities of the high school students. The second author wrote her master thesis on her study with the children and reported her results to the school authorities. The university students participated as part of a course in developmental disabilities given by the third author. Filling in the questionnaires was voluntary and anonymous and did not affect their grades or participation in the course. Data were collected and stored anonymously. For short anonymous surveys without intervention goals ethical approval is not obligatory in the Netherlands and therefore not applied for. All potential respondents that were asked to participate filled in the questionnaires in class and handed them in to the administrators personally.

## 2.2. Materials and procedure

To measure the attitudes of our participants toward disabled peers the Chedoke-McMaster Attitudes Toward Children with Handicaps (CATCHs) and the Multidimensional Attitudes Scale toward Persons with Disabilities (MAS) were used. To determine the participants' self-esteem, the Rosenberg Self-Esteem Scale was administered.

The first questionnaire the participants had to fill out was a Dutch translation of the Chedoke-McMaster Attitudes Toward Children with Handicap Scale (CATCH scale) (Rosenbaum et al., 1986) that was translated and also used by Bossaert et al. (2011). This self-report questionnaire consists of 36 items that are scored on a 5-point Likert scale with values ranging from 1 (strongly disagree) to 5 (strongly agree). According to Bossaert et al. (2011) the CATCH has been used in several countries and possesses very good psychometric properties (Vignes et al., 2008). In the study of Bossaert the CATCH was translated into Dutch by three certified English – Dutch translators using a translation – back translation procedure and they reached an internal consistency (Cronbach's alpha) of 0.92 for the affective/behavioral item score, 0.77 for the cognitive item scores, and 0.93 for the total scale, respectively. The participants had to score each item of the CATCH four times for each of the handicapping conditions: 'Blindness', 'Deafness', 'Paralyzed' and 'Intellectually disabled' before they could continue with the next item. Examples of questions can be found in Appendix. In the written introduction to the questionnaires a blind person was described as "a person who is totally blind and is not able to see shapes and light", a deaf person as "a person who is totally deaf and is not able to hear anything", a paralyzed person as "a person in a wheelchair who is paralyzed from the waist down" and an intellectually disabled person as "a person with Down-syndrome". These short vignettes were chosen because of their familiarity to most people, reducing the amount of inter-individual subjectivity.

The second questionnaire was a Dutch translation by the second and third author of the MAS (Findler et al., 2007). This scale consists of 34 items of which 16 questions about affection, 10 about cognition and 8 about behavior toward disabled persons. Participants had to fill out this 5-point Likert scale based on a small story about either meeting a deaf, a blind, a paralyzed or an intellectually disabled person in a coffee shop. As a result of this procedure data samples of the MAS were four times smaller than samples of the CATCH, because the latter was filled in by every respondent four times for each handicap group. Filling in the MAS four times was left undone because of time constraints.

A translation of the Rosenberg Self-Esteem Scale (Rosenberg, 1989) was used to determine the participants' self-esteem. This self-report scale consists of 10 items that are scored on a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). Sample questions are: (1) "On the whole, I am satisfied with myself"; (2) "At times, I think I am no good at all"; and (3) "I feel that I have a number of good qualities". The scale ranges from 0 to 30. The Rosenberg Self-Esteem Scale has been used extensively and is available in 28 different translations. The factor structure proved to be the same across all translations (see Schmitt & Allik, 2005). Internal consistency ranges from .77 to .88 and Test–Retest reliability from .82 to .85 (Rosenberg, 1965).

Background variables such as age, gender, religion and whether the subject was familiar with a disabled person were also asked for. Questionnaires were filled in at the start of a class. If necessary, questions could be explained by one of the administrators. The second author administered the paper and pen questionnaires to the high school students, the third author to the university students.

## 2.3. Analyses

Before the main analyses were performed missing values were replaced by group means, for the high school and university students separately, and the items of the questionnaires were recoded where necessary so that high scores meant a positive attitude. To account for asymmetrically distributed items, items were checked for extreme skewness, which is scores lower than  $-2$  or higher than  $+2$ , which turned out to be none. The first step was a principal component analysis using a Varimax rotation for both the CATCH- and the MAS-questionnaires separately, to see whether the factor structure was the same when questions concerned the four different disabled conditions. Principal component analysis is a data reduction technique to look for unobserved latent variables by searching for joint variation in groups of variables. Rotation makes the outcome more understandable. The Varimax rotation is an orthogonal rotation (allowing the factors not to correlate) of the factor axes to maximize the variance. As a result each variable will tend to load either high or low on any particular factor. Ideally a Varimax solution yields results which identify each variable with a single factor. Secondly, ANOVA analyses were done using a sum-variable to compare the attitudes toward people with the four disabled conditions. Post hoc multiple comparisons with Bonferroni correction for chance capitalization were performed to see which attitudes toward which group differed significantly. Lastly, linear regressions were performed to determine whether age, religion, self-esteem, gender or familiarity with a disabled person were significant predictors of one's attitude toward any of the four groups.

## 3. Results

### 3.1. Factor analysis

Principal component analyses were conducted using a Varimax rotation for the CATCH-questionnaire. After an exploratory factor analysis three items were removed, namely item 5, 16 and 22. These items did not load higher than .3 in at least two of the disability-groups or did not score highest on the same factor in at least 3 of the disability groups. The removal

of these items did not change the factor structure itself, only the loadings within these factors. After the removal of these items, the sample was sufficiently large with Kaiser–Meyer–Olkin measures of .91 (deaf), .92 (blind), .90 (paralyzed) and .92 (intellectually disabled). Bartlett's test of sphericity showed that there was enough correlation between items to conduct a principal component analysis,  $\chi^2(528) = 3691.62$  (deaf),  $\chi^2(528) = 3861.76$  (blind),  $\chi^2(528) = 3569.82$  (paralyzed) and  $\chi^2(528) = 3903.79$  (intellectually disabled), all with  $p < .001$ .

Scree-plot criteria suggested 2-factor solution structures for each disability. These two factors accounted for 34.8% (deaf), 35.6% (blind), 33.7% (paralyzed) and 35.6% (intellectually disabled) of the totally explained variance. The results for the factor analyses of the CATCH-questionnaire are shown in Appendix. Loadings less than .3 are not shown. Factor 1 consists mainly of behavioral and affective items and accounts after rotation for respectively 19.2%, 19.4%, 20.1% and 20.4% of the totally explained variance. The affective items in this factor are all statements regarding positive emotions, like enjoying (item 31), liking (item 13) and being happy (item 15). The only exception is item 18 (“*I would not like a . . . friend as much as my other friends*”). This factor was called behavior and positive affect. Factor 2 consists mainly of cognitive and affective items and, after rotation, accounts for respectively 15.6%, 16.2%, 13.5% and 15.2% of the totally explained variance. The affective items in this factor are all statements regarding negative emotions, like being scared (item 26), feeling upset (item 34) and feeling embarrassed (item 28). This factor was called cognition and negative affect.

Principal component analyses were also conducted using a Varimax rotation for the MAS-questionnaire. The sample was sufficiently large with Kaiser–Meyer–Olkin measures of .72 (deaf), .78 (blind), .72 (paralyzed) and .76 (intellectually disabled). Bartlett's test of sphericity showed that there was enough correlation between items to conduct a principal component analysis,  $\chi^2(561) = 1681.96$  (deaf),  $\chi^2(561) = 2396.16$  (blind),  $\chi^2(561) = 1879.27$  (paralyzed) and  $\chi^2(561) = 1986.29$  (intellectually disabled), all with  $p < .001$ . Scree-plot criteria suggested 2-factor structures for each disability. However, after theoretical inspection, the two factors within the deaf and blind groups could not be interpreted clearly. For the paralyzed group the first factor consisted of only affective items and the second factor consisted of behavioral and cognitive items. For the Intellectually disabled group the first factor consisted of only affective and behavioral items and the second factor consisted mainly of cognitive items. Since there was no clear factor structure that applied to all four handicapping conditions, no further analyses were conducted for the MAS-questionnaire.

### 3.2. Group differences

ANOVA analyses were done for the CATCH-questionnaire using a variable that was the sum for each factor. Only the items that were used for the factor analysis were used to compute this variable, meaning that item 5, 16 and 22 were not included. Repeated-measures designs were used to see whether students had different attitudes toward people with different disabilities. Per factor a post hoc Bonferroni test was used with a significance level of .05. Mauchly's test showed a violation in the assumption of sphericity for both factor 1,  $\chi^2(5) = 232.45$ ,  $p < .001$ , and factor 2,  $\chi^2(5) = 171.52$ ,  $p < .001$ . Because of this violation new degrees of freedom were used, consistent with the Greenhouse–Geisser correction.

The results showed that the students had a significantly different attitude toward different disabilities, with regard to factor 1 (behavior and positive affection),  $F(2.32, 795.53) = 89.26$ ,  $p < .001$ ,  $n_p^2 = .21$ . Post hoc analysis showed that for factor 1 the attitudes toward the ID-group ( $M = 40.8$ ) were significantly less positive than the attitudes toward the other three groups,  $t(343) = 11.59$  (deaf–intellectually disabled),  $t(343) = 11.55$  (blind–intellectually disabled),  $t(343) = 11.95$  (paralyzed–intellectually disabled), all at  $p < .001$ .

Factor 2 (cognition and negative affect items) had a main effect for group,  $F(2.45, 840.22) = 37.77$ ,  $p < .001$ ,  $n_p^2 = .21$ . Post hoc analysis showed that both the attitudes toward the deaf ( $M = 40.7$ ) and the blind ( $M = 40.7$ ) groups were significantly more positive than the attitudes toward the paralyzed ( $M = 39.1$ ) and the ID ( $M = 38.6$ ),  $t(343) = 6.05$  (deaf–paralyzed),  $t(343) = 7.95$  (deaf–intellectually disabled),  $t(343) = 6.67$  (blind–paralyzed),  $t(343) = 8.01$  (blind–intellectually disabled), all at  $p < .001$ .

### 3.3. Predicting attitudes

In order to check whether age, religion, self-esteem, gender and familiarity with a disabled person had a significant effect on the attitudes toward disabled peers, a stepwise linear regression was conducted with factor 1 and factor 2 as the dependent variables. In order to be able to do so, each background variable with more than two levels was dichotomized. A division is made between students younger ( $N = 200$ ) and older ( $N = 144$ ) than 18, with ( $N = 174$ ) and without ( $N = 196$ ) a religion, with low ( $N = 175$ ) and high ( $N = 169$ ) self-esteem, between girls ( $N = 242$ ) and boys ( $N = 102$ ) and between students that did ( $N = 241$ ) or did not ( $N = 103$ ) know a disabled person. Self-esteem was dichotomized into ‘low self-esteem’ and ‘high-self-esteem’ using the median as a cut-off point. The predictors ‘Gender’ and ‘Familiar with handicap’ already had only two levels.

Table 1 shows that these variables account for 20–30% of the variance in factor 1, and for 35–45% of the variance in factor 2. This means that especially for cognition and negative emotions age, self-esteem and familiarity with a person with a disability explain a fair amount of the variance. All the variables except religion are at least once a significant predictor of an attitude.

Table 1 shows that age had a significant effect on attitude over all the disabled groups and both factors. The Beta-values show that the university students had a more positive attitude toward disabled peers than high school students. Religion did

**Table 1**  
Beta-coefficients for each background variable per factor and disabled group.

	Factor 1 behavior–positive affect				Factor 2 cognition–negative affect			
	Deaf	Blind	Paralyzed	ID	Deaf	Blind	Paralyzed	ID
Age	.386***	.371***	.314***	.340***	.613***	.634***	.549***	.634***
Self-esteem	.128***	.121**	n.s.	n.s.	.128**	.120**	n.s.	.120**
Gender	.174***	.160**	.162**	.108*	n.s.	n.s.	n.s.	n.s.
Familiarity	.206***	.197***	.219***	.193***	.103*	.116**	.137**	.113**
Adjusted R <sup>2</sup>	.334	.302	.244	.218	.435	.465	.340	.463

n.s., not significant.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

not influence the attitude on any of the factors and disabled groups. For factor 1 it seemed that the higher the participants' self-esteem, the more positive their attitude was toward deaf and blind peers, but not toward paralyzed and intellectually disabled peers. For factor 2, however, self-esteem affected attitudes toward all the disabled groups, except the paralyzed peers. Girls had a more positive attitude toward all the disabled groups, with respect to factor 1, but not with respect to factor 2. This means that the girls scored more positive on behavior and positive affection, but not on cognition and negative affection. Familiarity did affect the participants' attitudes toward all the disabled groups for both factors. Students that knew a disabled person had more positive attitudes toward them.

Further analyses were done using nonparametric correlation tests on the amount of contact the participants had with a disabled person. The amount varied from "less than once a month", through "3 to 4 times a month", "every week", "2 to 6 times a week", to "every week". The results showed that the more the participants came in contact with a disabled person, the more positive they were toward disabled persons,  $R = .35$  (deaf f1),  $R = .35$  (blind f1),  $R = .34$  (paralyzed f1),  $R = .34$  (ID f1),  $R = .35$  (deaf f2),  $R = .35$  (blind f2),  $R = .34$  (paralyzed f2),  $R = .38$  (ID f2), all at  $p < .001$ .

#### 4. Discussion

The first research question was whether attitudes show a clear multidimensional picture for specific disabilities and if so, whether these dimensions were consistent with the three components proposed by Triandis (1971). Factor analyses of the CATCH-questionnaire showed a clear distinction between a behavioral and a cognitive component, which is partly consistent with Triandis' theory, which states that there are three factors (Vignes et al., 2008). The affective component however is split up between these two factors, which is not consistent with Triandis, who suggested that affection is a separate factor within attitudes. Affective items that consist of statements with positive emotions were grouped with behavioral statements. Examples are: "I would enjoy being with a ... child" and "In class I wouldn't sit next to a ... child". Affective items that consisted of statements with negative emotions were grouped with cognitive statements. Examples are: "Being near someone who is... scares me" and "... children don't have much fun". A possible explanation could be that negative emotions are more prone to socially desirable responses, just like cognitions. It could be harder to admit that a disabled person is scary, than to admit that you do not especially like working with a disabled person. Just as it could be harder to admit negative cognitions over negative behavior, since it is easier to 'lie' or give socially desirable answers about your cognitions than about your behavior.

The second research question was whether attitudes differed significantly for different disabilities. This seems to be the case. Respondents were less positive in their behavior and positive affections toward intellectually disabled persons than toward the three other groups. This is consistent with Furnham and Gibbs (1984) who found that people had more negative attitudes toward intellectually disabled persons than toward persons with a physical disability. The respondents' motivations were not included in the questionnaire, so we can only speculate about *why* they were less positive toward intellectually disabled persons. A possible reason for the more negative attitudes toward intellectually disabled persons can be derived from research on people with psychiatric disorders. It was found that the more participants viewed persons with schizophrenia as unpredictable and dangerous, the more social distance participants desired toward schizophrenics (Angermeyer & Dietrich, 2006). The same motives could be in place for people with intellectual disabilities since they exhibit, or are thought to exhibit, less socially and culturally accepted behavior, such as unpredictable, strange, childish or stereotypical behaviors. This could mean that a reason behind the more negative attitudes toward intellectually disabled persons is that respondents desire more social distance toward intellectually disabled persons based on the idea that persons with such a disability are unpredictable in their behavior and as such pose a threat. However, more research is needed to determine the exact reasons *why* respondents were less positive in their behavior and positive affections toward intellectually disabled persons. Regarding the cognitive and negative affective aspects of attitudes, both the paralyzed and the intellectually disabled were regarded with a less positive attitude than the blind and deaf. A reason for this could be that deafness and in a lesser degree blindness are less visible than a paralysis and intellectual disability (i.e. Down syndrome). Persons with a more apparent disability could perhaps be more conspicuous and possibly deterring than persons with a less

striking disability or more normal looking appearance (see also Siperstein et al., 1977). Prevalence of the four handicapping conditions differs widely, with intellectual disability being the most prevalent handicapping condition. Attitudes toward people with intellectual disability might therefore be more realistic, because based on real experiences. In contrast, attitudes toward the other handicapping conditions might be based on presuppositions or hearsay and not on personal experience.

The last question was whether age, religion, self-esteem, gender and familiarity with a disabled person have a significant effect on the attitudes toward disabled peers. The results showed that the older the respondents, the more positive their attitudes were toward all the disabled groups for both factor scores. This is consistent with some previous research (Brook & Galili, 2000; Findler et al., 2007; Weiss, 1994), but not all (Rosenbaum et al., 1988; Vignes et al., 2009). Important to notice is that the older group in this research consisted of students in special education, but not necessarily with an interest in developmental disabilities. This could be the reason why they have a more positive attitude than the younger group, which consisted of high school students.

Self-esteem was a clear significant predictor for attitudes toward deaf and blind persons and was not significant for attitudes on both factors toward the paralyzed. Students with higher self-esteem, had a more positive attitude toward the deaf and the blind group. Since it appears only for the deaf and blind group this result is only partly in line with earlier research (Findler et al., 2007; Vignes et al., 2009). With regard to the intellectually disabled, self-esteem was only a significant predictor for factor 2, cognition and negative affect and not for factor 1 behavior and positive affect. Higher self-esteem led to more positive thinking and less negative emotions about people with ID but not to a change in behavior and positive emotions. For future research it is interesting to see whether school performance relates to self-esteem and whether this combination affects attitudes toward disabled people. If so then classes with high instead of low numbers of students with learning, motivational or behavioral problems might be less suited to include disabled peers. What we do know is that to accomplish behavioral change in children's attitudes more is needed than work on self-esteem alone.

Interestingly, gender seems to affect only the behavioral and positive affective components of attitudes toward all four disabled groups. Girls have a more positive attitude than boys, but not concerning their cognitions and negative affections. A reason for this could be that girls might act more positively, regardless of their beliefs and knowledge, while boys tend to act more in line with their beliefs. Note however that gender effects in previous research proved to be inconsistent, see the review by Scior (2011).

Familiarity with a disabled person was a significant predictor for attitude, for both factors. The more the participants came in contact with a disabled person, the more positive they were toward disabled persons, regardless of their disability. This is in line with what Rosenbaum et al. (1988) and Scior (2011) found and can be explained by cognitive dissonance theory which states that people change their attitudes whenever one cannot find a basis for a particular attitude or behavior so that inconsistencies between cognitions or elements of knowledge that people have about oneself, one's behavior, or the environment are solved (Male, 2011). This theory was described by Festinger (1957) and states that people have a motivational drive to reduce dissonance. They can do this by altering existing cognitions or adding new ones to create a consistent belief system. Alternatively they can do it by reducing the importance of any one of the dissonant elements. Close contact with someone with a disability is not always reflected in more positive attitudes (Bossaert et al., 2011), which could be explained by the notion that personal experiences might lead to more realistic expectations and attitudes. Why religion was not found to have a significant effect on attitudes toward the four disabled groups is unclear. Much of the care for and education of disabled people originated in churches and religious congregations and charities. That is why we expected religion to be related to attitudes. Speculatively, a reason could be that our respondents might consider their belonging to a religious group more a cultural than a religious phenomenon, fading out any values traditionally propagated by most religions. Maybe if one distinguishes between active and passive religious involvement and cultural aspects related to religions it is possible to find some effect of religion on attitudes toward disabled people.

Our results show that there is indeed a difference in attitudes between different kinds of disabilities. A result consistent with results that show that teachers, parents and students have a more positive attitude toward inclusion of physically and sensory disabled children than toward children with behavioral or intellectual disabilities (De Boer, Pijl, & Minnaert, 2012). At the same time this might have implications for social inclusion of disabled children in, for example, schools. To make inclusion more effective teachers, parents and non-disabled peers of children with disabilities might need more information on children with intellectual disabilities than on deaf or blind children, since their attitudes are less positive toward the former group. The chance of being able to change children's attitude are good since Bossaert et al. (2011) showed that adolescents that watched an introductory video on peers with a disability reported more tolerant attitudes toward peers with disabilities than the ones who did not watch the video.

There are several limitations in our study that need to be addressed. Subject selection might be biased. Although some university students might have felt obliged to fill in the questionnaire because of social pressure or to comply with the teacher's request, the advantage of the current administration was that an intervention selection bias based on motivation or interest in the subject was prevented. Ethnicity can be an issue with regard to attitudes. Although representative for the Nijmegen area our sample did not consist of children with a wide range of ethnic backgrounds, so we could not study the effect of this variable on the children's attitudes. Important to note is that the MAS-questionnaire did not show clear components. The first reason may be a methodological one. The MAS per handicap



group was only filled in by a quarter of the total sample of participants which may have been too small a sample for reliable regression analyses. Another explanation could be that the MAS is too specific. The main difference with the CATCH is that the MAS has items that question a very specific situation (i.e. meeting someone in a coffee shop) and the CATCH asks about disabilities in more general situations, making it more robust for changes in situation. Since a clear factor structure was found for the CATCH over all four groups, but no clear structure arose in de MAS-questionnaire, it is also likely that the underlying factor structure of attitudes is mostly dependent on the instrument used to determine those attitudes.

Overall, the mean attitudes were never distinctly negative and questions could be raised whether these attitudes are means for worry. To answer this question, research is needed that compares attitudes toward these four groups with attitudes toward a suitable control group or condition. With such a control group or condition a norm could be established and the question on whether we must improve attitudes toward disabled persons could be answered. The question is, however, what a suitable control group would be. Finally, research is needed to determine the motives behind the differences between the attitudes.

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**Appendix**

*Results of the principal component analyses for each disability reported in the CATCH*

nr	Item	Category <sup>a</sup>	Deaf		Blind		Paralyzed		ID	
			f1 <sup>†</sup>	f2 <sup>††</sup>	f1	f2	f1	f2	f1	f2
21	<i>I would be pleased if a ... child invited me to his house</i>	A	.752		.720		.760		.742	
31	<i>I would enjoy being with a ... child</i>	A	.745		.720		.720		.745	
23	<i>I would feel good doing a school project with a ... child</i>	A	.700		.685		.690		.675	
13	<i>I would like having a ... child live next door to me</i>	A	.677		.640		.566		.670	
25	<i>I would invite a ... child to sleep over at my house</i>	B	.656		.666		.595		.705	
15	<i>I would be happy to have a ... child for a special friend</i>	A	.652		.649		.601		.693	
35	<i>I would miss recess to keep a ... child company</i>	B	.636		.634		.635		.609	
9	<i>I would invite a ... child to my birthday party</i>	B	.637	.329	.649	.359	.640	.350	.654	.391
20	<i>In class I wouldn't sit next to a ... child</i>	B	.488	.318	.523	.310	.509		.600	
11	<i>I would talk to a ... child I didn't know</i>	B	.483		.439	.317	.434	.314	.452	.417
27	<i>... children are interested in lots of things</i>	C	.455		.461		.440		.307	
18	<i>I would not like a ... friend as much as my other friends</i>	A	.481	.363	.451	.389	.511		.506	.317
32	<i>I would not go to a ... child's house to play</i>	B	.463	.375	.435	.443	.464		.500	.412
7	<i>I would stick up for a ... child who was being teased</i>	B	.444		.496		.539		.478	
2	<i>I would not introduce a ... child to my friends</i>	B	.414	.310	.363	.322	.382		.400	.420
29	<i>I would tell my secrets to a ... child</i>	B	.398		.575		.635		.578	
4	<i>I wouldn't know what to say to a ... child</i>	B	.362		.354	.464		.421		.563
1	<i>I wouldn't worry if a ... child sat next to me in class</i>	A	.330		.308				.401	
19	<i>... children know how to behave properly</i>	C	.300			.318	.366	.306	.451	
24	<i>... children don't have much fun</i>	C		.648		.630		.580		.685
26	<i>Being near someone who is ... scares me</i>	A	.311	.634	.371	.516	.378	.496	.375	.512
14	<i>... children feel sorry for themselves</i>	C		.634		.627		.577		.642
34	<i>I feel upset when I see a ... child</i>	A		.612		.593		.553		.561
28	<i>I would be embarrassed if a ... child invited me to his birthday party</i>	A	.305	.587	.326	.504	.467	.405	.368	.494
30	<i>... children are often sad</i>	C		.563		.574		.598		.556
8	<i>... children want lots of attention from adults</i>	C		.550		.543		.503		
10	<i>I would be afraid of a ... child</i>	A		.548		.489		.458	.303	.546
12	<i>... children don't like to make friends</i>	C		.530		.560		.426		.518
6	<i>I feel sorry for ... children</i>	???		.491		.517		.506		.558
36	<i>... children need lots of help to do things</i>	C		.472		.447		.425		
33	<i>... children can make new friends</i>	C	.366	.443	.393	.453	.511	.345	.359	.467
3	<i>... children can do lots of things for themselves</i>	C		.444		.519		.502		.326
17	<i>... children are as happy as I am</i>	C		.382		.399		.457		.498

<sup>a</sup> A, affective; B, behavioral; C, cognitive.

<sup>†</sup> Factor 1, behavior and positive affect.

<sup>††</sup> Factor 2, cognition and negative affect.

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