Determinants of students' attitudes towards peers with disabilities

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LIST OF ABBREVIATIONS

CATCH	Chedoke-McMaster Attitudes Towards Children with Handicaps
CREATIVE	Comprendre, Respecter, Ecouter l'Autre: Travailler, Imaginer pour Vivre Ensemble
HBSC	Health Behaviour in School-aged Children

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AIM To explore factors associated with students' attitudes towards their peers with disabilities.
METHOD All 7th grade students (aged 12–13y) from 12 schools in the Toulouse area were invited to participate (*n*=1509). Attitudes were measured using the Chedoke-McMaster Attitudes Towards Children with Handicaps (CATCH) questionnaire (affective, behavioural, cognitive, and total scores). Personal characteristics, including KIDSCREEN quality of life scores, were recorded. Data regarding information about disabilities received from parents and the media and acquaintance with people with disabilities constituted the 'disability knowledge' factors. The characteristics of the schools were obtained from the local education authority. Multivariate multilevel linear regression analyses were conducted to explore the associations between CATCH scores and these three groups of factors.
RESULTS Responses from 1135 students (612 females, 523 males; mean age 12y 8mo SD 7mo; age range 10y 8mo–15y) were studied (75.2% of the students approached). Factors independently associated with more positive attitudes were being a female, having a good quality of life, being friends with a child with disabilities, or having received information about disabilities from parents and the media. Presence in the school of a special class for children with cognitive disabilities was independently associated with more negative attitudes.
INTERPRETATION This cross-sectional study identified different personal and environmental factors upon which interventions aimed at improving students' attitudes towards their peers with disabilities could be based.

In line with policies advocating inclusive education, schooling of children with disabilities often takes place in a mainstream setting.[1] However, access to an ordinary school does not necessarily guarantee full participation, and mainstreamed students with disabilities often have limited social relationships.[2–4] This restriction of social participation is brought about by both personal and environmental factors,[5] including negative attitudes of peers, which play an important role. Conceptually, attitudes are thought to be multidimensional and composed of affective, behavioural, and cognitive components. The affective component addresses feelings and emotional reactions, the behavioural component relates to actual or intended behaviour, and the cognitive component reflects beliefs and knowledge.[6] Past studies have found that children's attitudes are generally more negative towards peers with disabilities than towards non-disabled peers.[7] Numerous studies have explored attitudes towards peers with disabilities but they are often conducted on small populations and include few associated factors. Females generally demonstrate more positive attitudes than males.[7] Knowing peers with disabilities appears to have a positive effect on children's attitudes,[7–9] but this effect

has not been observed in all studies.[10,11] These discrepancies are probably due to differences in the level and context of interactions but this information is not always reported.

The administrative registration of children with disabilities in a regular school is currently a legal obligation in France. However, these children can attend either ordinary or special classes. The latter are called special education units and are made up of about 10 children with similar impairments. These children are together most of the time in the special class, but they are also individually integrated for some lessons, depending on their educational needs. Children attending regular classes could potentially have some kind of impairment, but cognitive disabilities generally prevent students from being educated in regular classes in secondary schools.

In order to facilitate full inclusion of children with disabilities, there is an urgent need to improve the attitudes of other children towards them. With this objective in mind, we initiated an intervention study in secondary schools. Here we present an analysis of observational data collected during the baseline assessments of this study in order to explore the affective, behavioural, and cognitive dimensions of non-disabled students' attitudes towards peers with disabilities and to investigate the associated individual and environmental factors.

METHOD

This research is a part of the CREATIVE project (Comprendre, Respecter, Ecouter l'Autre: Travailler, Imaginer pour Vivre Ensemble – [Understanding, Respecting, Listening to Others: Working and Thinking to Live Together], a study aimed at improving secondary school students' attitudes towards their peers with disabilities. Conducted during the school year 2006 to 2007 among a large community sample, this project followed an epidemiological approach completed by field observations and structured interviews.

The study population was drawn from 12 secondary schools in the Haute-Garonne area in France. It included all six schools in the county with a special education unit at the time of the study and was made up exclusively of children with psychological and cognitive impairments. These schools were matched with six secondary schools without special units, on the basis of social and economic background. All 7th grade students (aged 12–13y) were invited to participate. Parents received information on the study and could refuse to allow their child to participate. Children could also refuse to participate.

In the questionnaires given to the students, we defined children with disabilities in a general manner as 'children who have difficulties in their everyday activities due to impairment or a chronic condition', following the non-categorical approach towards disability adopted by the International Classification of Functioning, Disability and Health.[5]

Children's attitudes towards peers with disabilities were measured using the Chedoke-McMaster Attitudes Towards Children with Handicaps (CATCH) scale.[12] This instrument was chosen[13] because it simultaneously measures the three components of attitudes, has an adequate reliability and validity, and has already been widely used in several countries with children aged up to 16 years.[9,12,14–20] It is composed of 36 items, 12 for each of the following three dimensions of attitudes: affective (e.g. 'I would be afraid of a disabled child'); behavioural (e.g. 'In class I wouldn't sit next to a disabled child'); and cognitive (e.g. 'Disabled children can make new friends'). Total and dimensional scores were obtained from the mean of item responses and ranged from 0 to 40, with higher values indicating better attitudes. An English–French translation of the instrument was performed and approved by its original author (who speaks both languages).

Individual and familial characteristics as well as perception of the school environment were investigated using items of the French version of the World Health Organization/Health Behaviour in School-aged Children (HBSC) questionnaire.[21] Students rated their life satisfaction from 0 (worst possible life) to 10 (best possible life), their health (excellent/good/fair/poor), their academic achievement compared with classmates (very good/good/average/below average), and the level of support from classmates (low/intermediate/high). They also indicated whether they had one or several close friends (yes/no). Socioeconomic background was explored using the HBSC Family Affluence Scale,[22] which measures the material conditions of families (low/medium/high affluence). Health-related quality of life was captured by the KIDSCREEN questionnaire,[23] a generic instrument designed for children aged 8 to 18 years. Three dimensions (school environment, social support and peers, social acceptance [bullying]) from the KIDSCREEN-52 version as well as the KIDSCREEN-10 Index[24] were included. All of these factors were labelled 'personal characteristics'.

'Disability knowledge' factors were made up of items exploring information received about disabilities as well as acquaintance with people with disabilities. Received information items were derived from the Multinational Study of Attitudes Toward Individuals with Intellectual Disabilities.[25] They were the following: 'Have you ever…? heard about disability in school from a teacher; heard about disability from your parents or other adults; read about disability in a book, a newspaper, or a magazine; seen a movie or watched a TV show that was about disability'. Responses to the last two questions were merged into one

three-level variable. Questions about knowing people with disabilities concerned both family and peers in different contexts (primary school/current class/another class of the secondary school/leisure activities/friends). The type of disability of the peer(s) known was also determined (physical/mental or cognitive/sensorial/severe chronic health condition/learning disabilities*).

Categories for which CATCH scores were not statistically different in univariate analysis were combined. Questionnaires were self-completed during class under the supervision of the teacher. Additionally, contextual data were obtained from the regional authority of the Ministry of Education to characterize each school: number of students; location in underprivileged area; presence of a special education unit; socioeconomic status of families (rates of manual workers, professionals as head of family, and rate of unemployment); and academic achievement (rates of students held back at the end of the 6th and 9th grades).

Statistical analysis

Dependent variables for all statistical analyses were CATCH scores, either total or dimensional. Missing items were replaced by the mean of other items in the domain if not more than one item was missing for that domain. Participants with more than one missing item per domain were excluded.

Associations between CATCH scores and three groups of factors (personal characteristics, 'disability knowledge', and contextual factors) were studied by univariate and multivariate analyses. KIDSCREEN scores were categorized into quartiles. In order to take into account the hierarchical structure of the data (students within classes within schools), statistical significance in both univariate and multivariate analyses was assessed using multilevel models with two random intercepts, one for the class and the other for the school, and *p*-values were derived from the Wald test. Multivariate linear regressions were performed following a manual backward selection procedure (statistical significance level set to 0.05). Intermediate multivariate analyses were first conducted separately for each group of factors including all variables with $p<0.10$ in univariate analyses. Finally, significant variables from all three groups of factors were included in an overall model. Assumptions of the linear model were checked with a graphical analysis of standardized residuals, which gave satisfactory results with, notably, a proportion of values outside the range (-2, +2) between 3.7 and 4.1%.

Even if not significant, sex was kept in models containing personal characteristics because this factor is considered as one of the most important determinants of attitudes in the literature. Statistical analyses were performed using Stata statistical software (version 9.0).

The study protocol was approved by the French national commission of computer science and freedom.

RESULTS

A total of 62 classes (1509 students) were invited to participate (Fig. 1). Sixty classes participated and 1256 students filled in the questionnaire. After exclusion of 121 students for either poor data or missing CATCH items, the sample analysed consisted of 1135 students (612 females and 523 males; 75.2% of students approached) aged from 10 years 8 months to 15 years (mean 12y 8mo, SD 7mo). The majority of participants reported a high socioeconomic level (high=61.4%, medium=30.8%, low=7.9%), 8.3% were educated in an underprivileged school area, and 5.7% reported a personal disability.

CATCH total and dimensional scores in the whole population are presented in Table I. The score was significantly lower in the cognitive dimension than in the affective and behavioural dimensions. Mean CATCH scores for each level of the variables selected for multivariate analyses ($p<0.10$) are presented in Tables SI and SII (supporting information, published online). Most of the personal characteristics studied were significantly associated with at least one CATCH score. Mean scores were higher among females and among students reporting better health or quality of life. All 'disability knowledge' factors were significantly associated with CATCH scores. Having a family member with a disability significantly increased

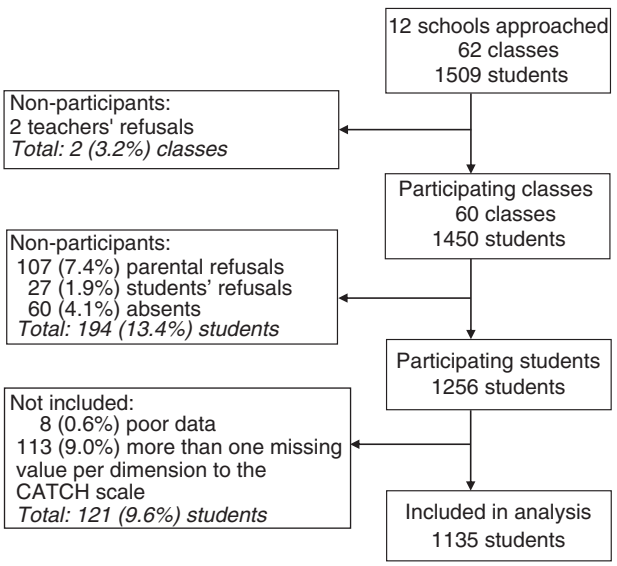

Figure 1: Composition of study population.

*North American usage: mental retardation.

Table I: Chedoke-McMaster Attitudes Towards Children with Handicaps scores in the whole population

Score	Mean	SD	Minimum	Maximum	Median	1st quartile	3rd quartile
Total	25.5	5.4	6.7	37.8	25.8	21.8	29.7
Affective	26.8	6.8	1.7	40.0	27.5	22.5	31.7
Behavioural	26.5	7.6	0.0	40.0	27.5	21.7	32.5
Cognitive	23.0	4.7	6.7	37.5	23.3	20.0	26.4

CATCH scores, but only if it was a close family member (parent or sibling). Students having a friend with a disability, but not those who simply knew such peers, reported significantly higher CATCH scores. CATCH scores were significantly higher in the case of non-cognitive impairments. Half of the contextual factors considered were significantly associated with at least one CATCH score. CATCH scores were significantly lower when there was a special education unit in the school and demonstrated a negative correlation with school socioeconomic context and academic achievement.

The three intermediate multivariate regression models selected few variables among explored personal and contextual factors and three of five 'disability knowledge' factors. All these variables appeared independently associated with CATCH scores in the overall model (Table II). Thus each of the explored domains seemed to add a specific contribution to the variance of CATCH scores. In the overall model, the proportions of variance explained by fixed factors were 16.8, 14.3, and 20.0% for total, affective, and behavioural scores respectively, and only 5.3% for the cognitive score. For the first three scores, the proportions of variance explained by each group of factors were about 3% for personal characteristics, about 8% for 'disability knowledge' factors and between 5 (total and affective scores) and 9% (behavioural score) for the contextual factors.

DISCUSSION

This cross-sectional study aimed to investigate factors associated with students' attitudes towards their peers with disabilities. The data for this study were collected during the baseline assessments of an intervention study, the results of which are currently being analysed.

This study was conducted among a large community sample established in order to assess the influence of the presence of a special educational unit for children with psychological and cognitive impairments on attitudes towards peers with disabilities.

Attitudes were measured using the CATCH scale,[12] which has the advantage of simultaneously measuring the three components of attitudes (affective, behavioural, and cognitive) and of having already been used by several other research teams.[13] The mean CATCH score observed in our population, 25.5, lies within the range of values observed in Canada by the original author (25.5–27.8)[7,12,17–19] and in a study conducted in the USA (25.3).[14] In a comparative study of attitudes in Israel and Canada,[15] Israeli students presented higher CATCH scores than Canadian students (mean 32.4 vs 26.8). Contextual and cultural differences were proposed to explain this result. Unlike other researchers, we also examined dimensional scores in addition to CATCH total score. It seemed to us that results per dimension provided worthwhile complementary information. Our analysis showed that results concerning affective and behavioural scores, as well as their associated factors, were very similar to each other, but relatively distinct from those of cognitive score.

Our study was carried out on quite a large sample of students, enabling us to study associations of attitude scores with a large range of factors. Because of the large number of participants, relatively small differences in mean scores (approximately 1 point) were considered significant in univariate analyses. However, most of the factors retained in final linear multiple regression models had high coefficient estimates, generally greater than 2. Moreover, the objective of our study was not to identify 'high-risk participants' in order to target individual approaches, but to identify potentially modifiable factors on which population-based interventions could be based.[26] The results of this study must be interpreted with caution because we used a stepwise selection procedure to determine factors associated with attitudes rather than pre-specified models.

Among personal characteristics, the most common determinant of children's attitudes towards peers with disabilities is sex, with females generally showing more positive attitudes than males.[7] In our study, females also showed more positive attitudes than males but this was only significant for the behavioural and total scores.

Attitudes can vary with age during childhood and adolescence, although a consistent trend has not yet been established.[9,27,28] In particular, no effect of age on the

Table II: Factors associated with Chedoke-McMaster Attitudes Towards Children with Handicaps scores: multilevel multivariate regression analysis, final models, beta coefficient (SE)

	Total score	Affective score	Behavioural score	Cognitive score
Intercept	19.07 (1.00)***	21.93 (0.93)***	21.83 (1.14)***	20.12 (0.69)***
Sex				
Male (reference)				
Female	0.76 (0.30)*	0.51 (0.38) *ns*	1.43 (0.42)***	0.46 (0.29) *ns*
KIDSCREEN Index quartiles				
1st (reference)				
2nd				0.79 (0.40)*
3rd				1.24 (0.42)**
4th				1.65 (0.42)***
KIDSCREEN School environment quartiles				
1st (reference)				
2nd	1.11 (0.42)**	1.29 (0.53)*	1.09 (0.58) *ns*	
3rd	1.51 (0.43)***	1.87 (0.55)***	1.64 (0.60)**	
4th	2.76 (0.43)***	3.17 (0.54)***	3.32 (0.59)***	
Knowledge of peers with disabilities				
No (reference)				
Primary school/high school/leisure	0.12 (0.35) *ns*	–0.11 (0.44) *ns*	0.10 (0.48) *ns*	0.44 (0.33) *ns*
Friend	2.34 (0.53)***	2.91 (0.67)***	2.74 (0.73)***	1.32 (0.51)**
Information from parents				
No (reference)				
Yes	1.28 (0.33)***	1.46 (0.42)***	1.72 (0.46)***	0.82 (0.32)*
Information from television or reading material				
None (reference)				
One	1.59 (0.46)***	2.03 (0.58)***	2.32 (0.63)***	0.35 (0.45) *ns*
Both	3.37 (0.45)***	3.98 (0.56)***	4.75 (0.61)***	1.15 (0.43) **
Presence of a special education unit in the school				
No (reference)				
Yes	–1.35 (0.62)*	–2.65 (0.73)***	–3.63 (0.74)***	
Proportion of 'professional' parents in the school			–0.05 (0.02)**	
Proportion of students held back at the end of 6th grade	0.11 (0.05)*			

Reference category for comparison to other categories. ***Beta coefficient (β) significant at $p<0.01$; **β significant at $p<0.01$; *β significant at $p<0.05$; *ns*, β not significant.

attitudes of children between 9 and 13 years has been found in studies using CATCH.[7] We also found no age effect, perhaps because of our very narrow age range (90% of children within a 2y-interval).

In our study, most quality of life or well-being indicators were positively associated with attitudes in univariate analyses. As there is a strong correlation between all of these items, only two remained in the overall model: KIDSCREEN school environment (for the total, affective, and behavioural scores) and KIDSCREEN general index (for the cognitive score). Thus, children with a better perception of their own life are more open towards their peers with disabilities. Similarly, some studies found a positive correlation between children's attitudes and scores on the Perceived Competence Scale for children.[17–19]

A positive role of information has been reported in the literature.[29] The media has been identified by children as their principal source of knowledge.[27,30] Our study highlights a cumulative effect of information from reading materials and television, as well as an independent effect of information received from adults.

In several studies, direct contact with peers with disabilities was shown to have a positive effect on children's attitudes.[7–9] In our study, only students declaring that they had a friend with disabilities had higher scores. However, the distinction between friends and relatives is not reported in most studies, thus hindering comparison with our results. Children who have extensive contact or a chosen relationship with peers with disabilities may have developed a greater understanding of, and sensitivity

towards, those peers and, therefore, perceive them more positively.

The influence of contextual factors on attitudes towards children with disabilities has not been widely studied. The influence of school culture on attitudes was explored in a recent Canadian study,[9] which found that all school culture constructs were positively associated with attitudes, either directly (teacher and peer support) or indirectly (positive teacher and student relationships at the school level), or both.

In all of the participating schools, some children with disabilities were educated in ordinary classes. Only half of the schools had a special education unit, and the presence of such units was strongly associated with poorer students' attitudes. This may well be because the special education units are made up of children with cognitive impairments. Indeed, attitudes have been shown to be more negative towards peers with cognitive disabilities than those with physical disabilities.[31] We found a similar trend in the answers to the question regarding the type of disability of known peers but this did not remain significant in multivariate analyses. Another study[32] found more favourable attitudes in schools without children with disabilities. The role of the presence of students with disabilities in the school has been explored by several authors but findings are quite inconsistent. Some authors observed a positive effect[8,33] whereas others did not observe any effect.[7,11,34]

We explored the links between attitudes and sociocultural status on both an individual and a contextual level. Only two contextual parameters were found to be weakly associated with attitudes in multivariate analyses: the proportion of parents of children at the school with a 'professional' occupation, which had a negative influence on the behavioural dimension; and the rate of students held back at the end of the 6th grade, which had a positive influence on the total score. These results point in the same direction, i.e. that of a more tolerant attitude in those living in a less favourable environment. This contrasts with the influence of individual factors where, on the contrary, the children with a better perception of their own life are more tolerant.

Overall, the different factors examined in our study explained 15 to 20% of the variance of the total, affective, and behavioural scores but only 5% of the variance in cognitive score. Evidently, numerous other factors could also have an influence such as the attitudes of parents, friends, teachers, and institutions, as well as the social construct of disability.[35]

CONCLUSION

This study has demonstrated the influence of different individual and environmental factors on students' attitudes towards their peers with disabilities; the majority of these factors are potentially modifiable by intervention trials. The independent effects of factors in personal, 'disability knowledge', and contextual domains fully justify the implementation of interventions acting simultaneously on several domains. Interventions aiming to improve students' quality of life as well as those providing information about disabilities or promoting friendships with disabled people may be of particular interest.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Table SI: Chedoke-McMaster Attitudes Towards Children with Handicaps scores according to personal characteristics: univariate analysis.

Table SII: Chedoke-McMaster Attitudes Towards Children with Handicaps scores according to disability knowledge and contextual factors: univariate analysis.

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