Measuring children's attitudes towards peers with disabilities: a review of instruments

Review

Céline Vignes MSc;
Nicola Coley MSc;
Hélène Grandjean MD;
Emmanuelle Godeau MD PhD;
Catherine Arnaud* MD, INSERM, Unité 558, Toulouse; Université Paul Sabatier, Toulouse, France.

**Correspondence to last author at* INSERM U558 (Epidémiologie et analyses en Santé Publique), 37 allées Jules Guesde, 31073 Toulouse Cedex, France.
E-mail: carnaud@cict.fr

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This study aimed to identify instruments for measuring children's attitudes towards their peers with disabilities that are suitable for use in epidemiological studies and to report on their psychometric properties. A literature review was conducted to identify instruments measuring at least one of the three components of children's attitudes (affective, behavioural, or cognitive measures) towards peers with disabilities and which are intended for self-completion by children. Criteria used to appraise these instruments were appropriateness, acceptability, validity, reliability, internal consistency, and test–retest reliability. Of the 19 instruments matching the inclusion criteria, 16 measured only one attitude component (affective, *n*=4; behavioural, *n*=5; cognitive, *n*=7); one measured cognitive and behavioural components; and two (Acceptance Scale and Chedoke-McMaster Attitudes Towards Children with Handicaps Scale [CATCH]) measured all three components. The majority of instruments, and those most widely used, were developed in the 1970s and 80s and so do not cover some aspects relevant to current culture, although they are still being used in research. Acceptable levels of validity and reliability were reported. Detailed descriptions of the initial validation process were available for the Acceptance Scale, Adjective Checklist, CATCH, and Peer Attitudes Towards the Handicapped Scale. The Acceptance Scale and CATCH seem to be the most complete instruments among those identified as they include all three attitude components and have appropriate psychometric properties.

See end of paper for list of abbreviations.

In the past three decades, policies on inclusive education have resulted in increased integration of children with disabilities into mainstream schools. Inclusive education encourages the acceptance of children with disabilities by their non-disabled peers and can bring about social benefits for all pupils. Negative peer attitudes are commonly considered to be a major barrier to full social inclusion of students with disabilities in schools.[1] Therefore, it is important to promote positive attitudes towards these children and to be able to measure the effects of interventions designed to encourage attitude change.

Conceptually, attitudes are thought to be multidimensional,[2] 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.[3–5] Different approaches have been used to measure attitudes towards people with disabilities, including: (1) direct methods, such as opinion surveys, sociometric techniques, adjective checklists, semantic differential scales, summed rating scales, or social distance scales;[2,4] and (2) indirect methods, such as behavioural observations in which respondents are either unaware that they are being observed, or are unaware of the reason they are being observed.[2]

The aim of this article is to present a review of self-completion instruments for measuring children's attitudes towards peers with disabilities that are suitable for use in epidemiological studies and to describe the psychometric properties of these instruments.

Method

A literature search was conducted by entering combinations of the keywords 'attitudes', 'perception', 'child*', 'adolescent',

'handicap*', and 'disab*' (where * denotes a truncated word with variable endings) into the Medline, PsycINFO, and Academic Search Premier electronic databases. The 'related articles' function of the Medline database was also used to identify additional studies. Reference lists in the articles identified were cross-checked for further relevant studies and key journals were hand searched. Where necessary, individual authors were contacted to obtain further information. Finally, the internet was searched for 'grey' literature. Articles dating from before 1970 were generally not considered unless deemed important by more recent studies. Articles were only included if published in English or French. Attitude measurement instruments were identified either in articles specifically presenting the development of a new instrument, or in articles describing research studies using such instruments.

To be included in this review, instruments were required to: (1) measure at least one of the three previously described components of children's attitudes towards peers with disabilities (affective, behavioural, or cognitive); (2) be intended for self-completion by children; and (3) provide data that could be used in epidemiological analysis.

Each instrument was evaluated according to criteria developed to assess self-completed measurement instruments, including appropriateness, acceptability, validity, internal consistency, test–retest reliability, and responsiveness.[6]

Results

SEARCH RESULTS

A total of 176 relevant articles were identified in the literature search. Of these, 23 were reports of the development or validation of an instrument, 152 were research studies of children's attitudes towards peers with disabilities (including four reviews[6–9]), and one was a review of the methodology used in attitude measurement.[2]

Some studies of children's attitudes towards peers with disabilities used sociometric techniques for part[10–12] or all[13] of their research, while others used indirect methods of attitude measurement, such as behavioural observations,[14] or qualitative research methods.[15–17] Such methods were not considered suitable for use in an epidemiological study, therefore, instruments based on these methods were not included in this review.

Thirty-three instruments were identified that had been used to measure children's attitudes towards people with disabilities. However, 14 were excluded from the final review as they did not meet the inclusion criteria for the following reasons. Five instruments (Attitudes Towards Disabled Persons Scale,[18–20] Mental Retardation Attitude Inventory – Revised,[21,22] Disability Factor Scale – General,[23–26] Scale of Attitudes towards Disabled Persons,[27] and Questionnaire on Attitudes toward Physically Disabled Persons[28,29]) were excluded because they were developed to measure adults' attitudes. Three instruments (Pictorial Scale of Perceived Competence and Social Acceptance for Young Children,[30] Acceptance Scale for Kindergarteners,[14,31] and Pictographic Scale[32,33]) were excluded because they were developed for use with preschool-age children. One instrument (Children's Attitudes Towards Integrated Physical Education[34]) was excluded because it measured attitudes towards integration rather than attitudes towards children with disabilities; one (Test of Attitudes Towards Children with Disabilities[35–39]) was not used because there was insufficient information available; and four instruments[13,15,17,40] were excluded because they were devised by their authors for one or two specific studies, and because insufficient evidence of sound instrument development or psychometric properties was reported.

DESCRIPTION OF INSTRUMENTS

The 19 instruments identified as meeting inclusion criteria are described in Table I and studies using these instruments are described in Table II.

Nearly all of the instruments identified were developed in North America. Of the four instruments developed in other continents, two originated from the UK, one from Australia (based on a US instrument), and one from Israel. Only three instruments, the Adjective Checklist (ACL),[41] Activity Preference List, and Chedoke-McMaster Attitudes Towards Children with Handicaps Scale[3] (CATCH) have been used in a country with a language other than the one they were developed in. CATCH has been translated into Hebrew,[42] while the ACL and Activity Preference List have been translated into Italian.[12]

The majority of instruments, including those that have been most widely used, were developed in the 1970s and 80s. However, some (ACL, Shared Activities Questionnaire [SAQ], CATCH, Foley Scale,[43] Multi-Response Attitude Scale,[44] and Peer Attitudes Towards the Handicapped Scale [PATHS][45]) are still being used in current research.

Six of the instruments (ACL, Behavioural Intention Scale,[46] CATCH, Foley Scale, PATHS, and SAQ) were used in two or more studies carried out by researchers other than those involved in the instruments' original development, while seven (Activity Preference List, Children's Attitude Toward Handicapped Scale,[47] Emotional Reaction Scale,[48] Social Distance Scale,[49] Semantic Differential Scale,[49] Friendship Activity Scale [FAS],[50] and Multi-Response Attitude Scale) were used in one other study by a different research group. The other six were used only by the original authors or by members of their research teams.

Ten instruments were designed for use with children under 13 years of age, and three were designed for adolescents. The other six instruments were designed for use with children, but the target age range was not specified. In some cases, instruments have been used with children outside of the target age group; for example, CATCH was developed for children aged 9 to 13 years, but has been used with children aged up to 16 years; the Personal Attribute Inventory for Children[51,52] was developed for children aged 8 to 11 years, but has been used with children as old as 15 years.

Sixteen instruments measured only one attitude component (affective, $n=4$; behavioural, $n=5$; cognitive, $n=7$); two measured all three components; and one measured cognitive and behavioural components. Instruments measuring only one or two attitudinal components have often been used in conjunction with each other (Table II). For example, measures of behavioural intent (such as the Behavioural Intention Scale, Foley Scale, or Activity Preference List) have been used alongside cognitive measures (e.g. ACL) or affective measures (e.g. PATHS).

The number of items per instrument varied from six to 48, with five instruments containing 10 items or fewer, 10 instruments containing 11 to 30 items, and four containing more than 30 items. Although completion time was not reported for most instruments, it was estimated to be approximately 15 and 20 minutes for the Acceptance Scale[53] and CATCH respectively.

Table I: Instruments reviewed measuring children's attitudes towards peers with disabilities

Instrument	*Country of development*	*Age of target population, y*	*Attitude measure*[a]	*Type of instrument*	*Items, n*	*Validity*
Acceptance Scale[53]	USA	9–12y	A, B, C[b]	Rating scale (3-point)	21	'High face validity.' Construct validity assessed: 'children volunteering as special friends compared with the whole sample'
Activity Preference List[(c)]	USA	Children	B[b]	Rating scale (2-point; 4-point in revised version)	24 (15 in revised version)	–
Adjective Checklist (ACL)[41]	USA	8–12y	C	Adjective checklist	32	Construct validity assessed by correlations with measures of behavioural intentions (Pearson *r* values) of 0.76 (Foley Scale), 0.67 (Activity Preference List), 0.35 (Selman's Friendship Activity Scale), 0.46 (Shared Activities Questionnaire)[41]
Attitude Scale[48]	UK	16–19y	C[b]	Rating scale (5-point)	28	Face validity assessed by five experts in field of special education and psychology
Attitude Towards Chronically Disabled Patients Questionnaire[63]	Israel	14–18y	B, C[b]	Rating scale (2-point)	39	Face validity assessed by four paediatricians, two education advisors, one psychologist, one social worker, and two teachers
Behavioural Intention Scale[46] (partly based on Siperstein's Friendship Activity Scale[50])	Australia	9–10y	B[b]	Rating scale (4-point)	10	Construct validity assessed (principal components analysis)[32]
Chedoke-McMaster Attitudes Towards Children with Handicaps Scale (CATCH)[3]	Canada	9–13y	A, B, C	Rating scale (5-point)	36	Construct validity assessed[56]
Children's Attitude Toward Handicapped Scale[47]	USA	Children	C[b]	Adjective checklist	20	–
Children's Knowledge about Handicapped Persons Scale[65]	USA	7–12y	C	Rating scale (3-point)	25	–
Children's Social Distance from Handicapped Persons Scale[65]	USA	7–12y	A	Social distance scale	10	–
Emotional Reaction Scale[48]	UK	16–19y	A[b]	Rating scale (3-point)	8	Content validity assessed by five experts in the field of special education and psychology
Semantic Differential Scale[49]	USA	Children	C[b]	Semantic differential scale	27	–
Social Distance Scale[49]	USA	Children	A[b]	Social distance scale	6	–
Foley Scale[43]	USA	Children	B[b]	Rating scale (5-point)	10	Criterion validity assessed: comparison with other measures of behavioural intention (Activity Preference List and a social distance scale)[54]
Friendship Activity Scale (FAS)[50]	USA	Children	B	Rating scale (4-point)	17	–
Multi-Response Attitude Scale[44]	Canada	5–12y	C	Adjective checklist	20	Construct validity and criterion validity assessed[32]
Peer Attitudes Towards the Handicapped Scale (PATHS)[45]	USA	8–12y	A[b]	Social distance scale	30	'Good construct validity'[48]
Personal Attribute Inventory for Children[51,52]	USA	8–11y	C[b]	Adjective checklist	48	Criterion validity assessed by correlations with Piers-Harris Children's Self-Concept Scale (r=0.32)[52]
Shared Activities Questionnaire (SAQ)[d]	USA	8–12y	B[b]	Rating scale (3-point)	24 (Short Form: 12 Campbell et al.[68])	–

[a]A, affective; B, behavioural; C, cognitive. [b]Attitude component was assessed by authors of this review, or by authors using instrument in a later study, rather than original author; [c]Siperstein and Bak, unpublished material; [d]Morgan et al. unpublished material.

Table I: continued

	Reliability
	Internal consistency assessed by Spearman-Brown split half coefficient=0.82, and Cronbach's α=0.77. Test–retest reliability assessed (coefficient=0.68)
	–
	Internal consistency assessed by Cronbach's α=0.67–0.91[41,62]
	–
	–
	Cronbach's α=0.89. Internal consistency coefficient=0.89,[32] 0.91–0.96[33]
	Internal consistency assessed by Cronbach's α=0.90 Test–retest reliability assessed (coefficient=0.70)
	Internal consistency assessed by Cronbach's α=0.70[64]
	Internal consistency assessed by odd-even split-half coefficient=0.63 (Spearman–Brown corrected). Test–retest reliability assessed by Pearson's product-moment correlation=0.79
	Internal consistency assessed by odd-even split-half coefficient=0.78 (Spearman–Brown corrected). Test–retest reliability assessed (coefficient=0.75)
	–
	Internal consistency assessed (coefficient=0.86)[66]
	Internal consistency assessed (coefficient=0.67)[66]
	Internal consistency assessed (coefficient=0.88–0.95)[43,64,67]
	Internal consistency assessed by Cronbach's α=0.91
	Internal consistency coefficient=0.88–0.93[32] Cronbach's α=0.73–0.92[33]
	Internal consistency assessed by odd-even split-half coefficient=0.89 Test–retest reliability assessed (coefficient=0.75)
	Test–retest reliability assessed (coefficient=0.88)
	Internal consistency assessed by Cronbach's α=0.95,[69] 0.91–0.94 (Short Form)[68]

Most of the instruments identified were rating scales (n=11). Other types of instruments were used less frequently (adjective checklist, n=4; social distance scale, n=3; semantic differential scale, n=1). Rating scales require respondents to choose the response that best corresponds with how they feel about statements relating to people with disabilities (responses may range from 'I strongly disagree' to 'I strongly agree'). Adjective checklists require respondents to choose from a list of positive and negative adjectives those which best describe a person with disabilities. Social distance scales require respondents to choose the level of social contact they would be prepared to have with a person with disabilities (e.g. ranging from 'I would marry a person with disabilities' to 'I would not allow a person with disabilities into my country'). Semantic differential scales require respondents to rate a person with disabilities using a scale with bipolar adjectives (e.g. good/bad, weak/strong).[2]

PSYCHOMETRIC PROPERTIES

Psychometric properties of the identified instruments were generally under-emphasized (Table I), and stages of development and validation were reported only for three instruments (CATCH, Acceptance Scale, Personal Attribute Inventory for Children). Development of other instruments has occasionally been presented in books (PATHS, ACL) or unpublished manuscripts (ACL, Activity Preference List [Siperstein and Bak, University of Boston, 1977]; SAQ [Morgan et al., University of Memphis, 1996]). For the remaining instruments, the validation process was not specifically explained.

Construct and criterion validity were quantified for the ACL and the Personal Attribute Inventory for Children respectively, while for other instruments it was just stated that a certain form of validity had been 'assessed' or 'established'. Face or content validity was assessed for four instruments[48 (2 instruments), 53,63] and construct validity for six.[3,41,44–46,53] Criterion validity (concurrent or predictive) was assessed for only three instruments.[43,44,51] An actual value of internal consistency was available for 14 instruments, measured either by Cronbach's alpha (n=8), a split-half coefficient (n=4), or 'internal consistency coefficient' (n=5). For the Activity Preference List, an article only mentioned that adequate reliability had been previously reported.[54] An actual value of test–retest reliability was reported for six instruments.[3,45,51,53,65-2 instruments] Responsiveness was not formally described for any of the instruments. However, four instruments were used in intervention studies[55–59] (Table II) with pretest and posttest measures.

Discussion

The aim of this study was to conduct a literature search, covering various disciplines (education, epidemiology, psychology, rehabilitation, and paediatrics), to identify instruments for measuring children's attitudes towards their peers with disabilities that are suitable for use in epidemiological studies, and to review the conception and psychometric development of such instruments, as well as detailing their further use in later studies. To the authors' knowledge, such a review has not previously been published.

An essential stage in this review was to consider the theoretical and conceptual definition of attitudes. While some studies made no mention of the concepts underlying attitudes, those that did tended to focus on the multidimensional, three-component model, in which attitudes are made up of affective,

Table II: Further use of instruments included in review

Instrument[a]	*(Other attitude instruments used in conjunction)*	*References*	*Country of use*	*Participant age, y*	*Study design*
Acceptance Scale[53]					
		Voeltz 1982[55]	*USA*	*9–12y*	*Intervention (pretest, posttest, control group, without randomization)*
		Voeltz 1980[53]	*USA*	*7–13y*	*Descriptive (cross-sectional)*
Activity Preference List[(unpub.)]					
	(ACL, Foley Scale)	Morgan and Wisely 1996[54]	USA	8–12y	Descriptive (cross-sectional)
Adjective Checklist (ACL)[41]					
		Siperstein and Bak 1977[(unpub.)]	*USA*	*11–12y*	*Descriptive (cross-sectional)*
	(SAQ – Short Form)	Campbell et al. 2005[10]	USA	8–12.5y	Descriptive (cross-sectional)
	(SAQ – Short Form)	Campbell et al. 2004[68]	USA	8–12.5y	Descriptive (cross-sectional)
	(SAQ)	Bell and Morgan 2000[69]	USA	8–12y	Descriptive (cross-sectional)
	(Foley Scale)	Gray and Rodrigue 2001[67]	USA	11–14y	Descriptive (cross-sectional)
	(Activity Preference List)	Manetti et al. 2001[12]	Italy	9–11y	Descriptive (cross-sectional)
	(Activity Preference List, Foley Scale)	Morgan and Wisely 1996[54]	USA	8–12y	Descriptive (cross-sectional)
	(SAQ – Short Form)	Morton and Campbell 2007[70]	USA	8.5–12.5y	Descriptive (cross-sectional)
	(FAS)	*Hemphill and Siperstein 1990[71]*	*USA*	*9–12y*	*Descriptive (cross-sectional)*
	(SAQ)	Swaim and Morgan 2001[62]	USA	9–12y	Descriptive (cross-sectional)
Attitude Scale[48]					
	(Emotional Reaction Scale)	*Beh-Pajoob 1991[48]*	*UK*	*16–19y*	*Descriptive (cross-sectional)*
Attitudes Towards Chronically Disabled Patients Questionnaire[63]		*Brook and Galili 2000[63]*	*Israel*	*14–18y*	*Descriptive (cross-sectional)*
Behavioural Intention Scale[46]	(Multi-Response Attitude Scale)	Nowicki 2006[32]	Canada	5–10y	Descriptive (cross-sectional)
	(Multi-Response Attitude Scale)	Nowicki 2006[33]	Canada	4–10y	Descriptive (cross-sectional)
	(PATHS)	Laws and Kelly 2005[72]	UK	9–12y	Descriptive (cross-sectional)
	(PATHS)	*Roberts and Smith 1999[11]*	*Australia*	*9–12y*	*Descriptive (cross-sectional)*
	(PATHS)	*Roberts and Lindsell 1997[46]*	*Australia*	*9–11y*	*Descriptive (cross-sectional)*
Chedoke-McMaster Attitudes Towards Children with Handicaps Scale (CATCH)[3]		McDougall et al. 2004[1]	Canada	13–16y	Descriptive (cross-sectional)
	(FAS)	Alderfer et al. 2001[73]	USA	11–13y	Descriptive (cross-sectional)
		Tirosh et al. 1997[42]	Israel	8–12y	Descriptive (cross-sectional)
		King et al. 1989[74]	*Canada*	*10–14y*	*Descriptive (cross-sectional)*
		Armstrong et al. 1987[57]	*Canada*	*9–13y*	*Intervention (pretest, posttest, RCT)*
		Rosenbaum et al. 1986b[56]	*Canada*	*9–13y*	*Intervention (pretest, posttest, RCT)*
Children's Attitude Toward Handicapped Scale[47]		Archie and Sherill 1989[75]	USA	9–11y	Descriptive (cross-sectional)
Children's Knowledge about Handicapped Persons Scale[65]	*(Children's Social Distance from Handicapped Persons Scale)*	*Hazzard 1983[65]*	*USA*	*8–12y*	*Descriptive (cross-sectional)*
Children's Social Distance from Handicapped Persons Scale[65]	*(Children's Knowledge about Handicapped Persons Scale)*	*Hazzard 1983[65]*	*USA*	*8–12y*	*Descriptive (cross-sectional)*
Emotional Reaction Scale[48]		Hastings and Graham 1995[40]	UK	14–15y	Descriptive (cross-sectional)
	(Attitude Scale)	*Beh-Pajoob 1991[48]*	*UK*	*16–19y*	*Descriptive (cross-sectional)*
Semantic Differential Scale[49]	(Social Distance Scale)	Townsend et al. 1993[66]	New Zealand	8–13y	Descriptive (cross-sectional)

Studies using more than one attitude instrument are included more than once in Table. Studies carried out by original author or research team shown in italics. ACL, Adjective Checklist; SAQ, Shared Activities Questionnaire; PATHS, Peer Attitudes Towards the Handicapped Scale; FAS, Friendship Activity Scale; CATCH, Chedoke-McMaster Attitudes Towards Children with Handicaps Scale; RCT, randomized controlled trial.

behavioural, and cognitive components.[5] Despite being relatively old, this model still appears to be widely accepted.[4,17,60] It is important to measure all three attitude components, as findings may vary according to the type of component assessed. For example, in a study employing various measures, respondents showed more favourable attitudes towards peers with disabilities on measures of behavioural intent (i.e. actual or intended behaviour) than on a cognitive measure (i.e. beliefs and knowledge).[61] Of the 19 instruments matching the current study's inclusion criteria, only two (CATCH and Acceptance Scale) measured all three attitude components simultaneously. The ACL is the most widely used instrument, even in current research, but this instrument only measures the cognitive component of attitudes. Measures of an individual attitude component could be used in conjunction with other instruments to assess the remaining component(s), but this approach may give rise to problems of instrument length and completion time, as well as lack of coherence in the way that questions are presented for different sections of a questionnaire.

The appropriateness of attitude measurement instruments can be assessed in terms of how well an instrument matches the specific research objectives of its intended use. Characteristics of the study population will influence the choice of the most appropriate instrument, as will the concepts under study and the setting. Certain measures of behavioural intent (e.g. Activity Preference List) may not be appropriate for measuring attitudes towards children with physical disabilities, as some of the activities mentioned can only be performed by children without disabilities. Some instruments, such as ACL, require the 'attitude object' (i.e. a target child with disabilities) to be presented (in a video or in a text) before completion; others, for example CATCH, use a general term (e.g. 'a disabled child') as the attitude object.

Measurement instruments need to be acceptable to respondents in terms of cultural considerations. All except one of the instruments (Attitude Towards Chronically Disabled Patients Questionnaire) were developed in English, and nearly all of the research studies using these instruments have been carried out in English-speaking countries. Careful consideration should

Table II: continued

Instrument[a]	*(Other attitude instruments used in conjunction)*	*References*	*Country of use*	*Participant age, y*	*Study design*
Social Distance Scale[49]	(Semantic Differential Scale)	Townsend et al. 1993[66]	New Zealand	8–13y	Descriptive (cross-sectional)
Foley Scale[43]	(ACL)	Gray and Rodrigue 2001[67]	USA	11–14y	Descriptive (cross-sectional)
	(Activity Preference List, ACL)	Morgan and Wisely 1996[54]	USA	8–12y	Descriptive (cross-sectional)
Friendship Activity Scale (FAS)[50]	(CATCH)	Alderfer et al. 2001[73]	USA	11–13y	Descriptive (cross-sectional)
Multi-Response Attitude Scale[44]	(Behavioural Intention Scale)	Nowicki 2006[32]	Canada	5–10y	Descriptive (cross-sectional)
	(Behavioural Intention Scale)	Nowicki 2006[33]	Canada	4–10y	Descriptive (cross-sectional)
Peer Attitudes Towards the Handicapped Scale (PATHS)[45]		McGregor and Forlin 2005[58]	Australia	13–14y	Intervention (pretest, posttest, control group, without randomization)
	(Behavioural Intention Scale)	Laws and Kelly 2005[72]	UK	9–12y	Descriptive (cross-sectional)
	(Behavioural Intention Scale)	Roberts and Smith 1999[11]	Australia	9–12y	Descriptive (cross-sectional)
	(Behavioural Intention Scale)	Roberts and Lindsell 1997[46]	Australia	9–11y	Descriptive (cross-sectional)
Personal Attribute Inventory for Children[51,52]		*Newberry and Parish 1987*[59]	*USA*	*8–11y*	*Intervention (pretest, posttest, RCT)*
		Parish and Morgan 1985[76]	*USA*	*9–13y*	*Descriptive (cross-sectional)*
		Parish et al. 1980[77]	*USA*	*12–15y*	*Descriptive (cross-sectional)*
Shared Activities Questionnaire (SAQ)[(unpub.)]		*Morgan et al. 1998*[78]	*USA*	*8–12y*	*Descriptive (cross-sectional)*
	(ACL)	Campbell et al. 2005[10]	USA	8–12.5y	Descriptive (cross-sectional)
	(ACL)	Campbell et al. 2004[68]	USA	8–12.5y	Descriptive (cross-sectional)
	(ACL)	*Bell and Morgan 2000*[69]	*USA*	*8–12y*	*Descriptive (cross-sectional)*
	(ACL)	Morton and Campbell 2007[70]	USA	8.5–12.5y	Descriptive (cross-sectional)
	(ACL)	*Swaim and Morgan 2001*[62]	*USA*	*9–12y*	*Descriptive (cross-sectional)*

be given to the cross-cultural applicability and language of measures developed in a given culture for research performed in other countries. In addition, many instruments were developed over 20 years ago, and do not cover some aspects relevant to today's culture or refer to modern technologies, such as mobile phones or the internet.

Psychometric validation is essential to ensure that an instrument is measuring what it is supposed to in a reliable and repeatable manner. However, the psychometric properties and validation process of attitude instruments are generally under-reported. Acceptable levels of validity and reliability were reported for various instruments, but there was often little or no explanation of how they were determined. Detailed descriptions of the initial validation process were available for Acceptance Scale, ACL, CATCH, and PATHS.

One of the objectives of this research was to identify instruments suitable for measuring changes in attitudes, which can be used to evaluate intervention studies for improving children's attitudes towards peers with disabilities. The effectiveness of a given intervention may be assessed by measuring attitudes before and after the implementation of the intervention. This type of methodology was employed in five studies[55–59] using four different instruments (Acceptance Scale, CATCH, PATHS, and Personal Attribute Inventory for Children). The interventions used in those studies focused mainly on direct contact between children with disabilities and their peers, which was considered as the most effective technique to modify attitudes towards peers with disabilities.[8]

Conclusion

The Acceptance Scale and CATCH are the most complete instruments among those identified in this review, as they measure all three attitude components. This does not mean that all other survey instruments are unsatisfactory, as the choice of the most appropriate instrument depends on specific research objectives.

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List of abbreviations

ACL	Adjective Checklist
CATCH	Chedoke-McMaster Attitudes Towards Children with Handicaps Scale
FAS	Friendship Activity Scale
PATHS	Peer Attitudes Towards the Handicapped Scale
SAQ	Shared Activities Questionnaire