A review and analysis of programmes promoting changes in attitudes towards people with disabilities

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ABSTRACT

This paper reviews some programmes promoting changes in attitudes towards people with disabilities and the techniques used in order to implement them. The study collects projects carried out in the educational setting between the years 1972 and 2009 and which are written up in the following documentary sources: Web of Knowledge, an integrated scholarly information system, and the CSIC databases and electronic journals, Dialnet, Eric, Psycinfo, Psycodoc and Scopus. Most of these programmes use a variety of either isolated or combined strategies. The ones most frequently used are establishing contact with people with disabilities, collecting information about issues related to this population, discussing non-academic experiences in small groups, working in cooperative groups, carrying out interpersonal ability training, simulating disabilities and carrying out tutorial programmes. The findings of the review show that contact, information and cooperative teamwork are the most efficient resources for achieving more positive attitudes. On the other hand, important methodological limitations reduce the significance of the conclusions and findings obtained by many of the programmes reviewed. These limitations mainly make reference to: a) lack of follow up, as only 12 out of the 63 reviewed programmes promoting attitudinal changes have carried out some type of follow up; b) the use of measurement techniques with no previous psychometric studies, and c) inadequate experimental designs.

Key words: Attitudes, attitudes to disabilities, change of attitude, disability, assessment, intervention

INTRODUCTION

The interest in modifying the general population's attitudes towards people with disabilities and the research seeking to provide efficient methods to achieve this, emerge in the 1970s in Anglo-Saxon countries within the context that Aguado (1995) calls *the prodigious decades.* The growth of community psychology and the principle of the philosophy of normalisation fostered this interest. Only in the 1980s does the Spanish context start to work in the areas of assessment and change of attitudes. The importance of the issue lies in the fact that the attitudes of partners and peers have an important effect not only in the development of the actual disabled person's self concept but also in their own socialisation process. What is more, when the attitudes are negative, they make up one of the main barriers against this group's social integration. Most of the studies, which mainly focus on the analysis of

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attitudes in the school context, verify that even though the attitudes do improve little by little, there are still many prejudices and stereotypes which give rise to attitudes of rejection and discrimination against children with disabilities (Aguado, Flórez and Alcedo, 2003, 2004; Almazán, 2003; González, 2008; Hughes *et al.* 2001; Krahé y Altwasser, 2006; Manetti, Schneider and Siperstein, 2001; Piercy, Wilton and Townsend, 2002; Shevlin and O´Moore, 2000). We should not forget about the decisive importance of these negative attitudes in these children's process of school integration. It has been often argued and repeated that the success of the educational inclusion of children with disabilities depends as much, if not more, on the attitudes of peers and teachers than on the design of a well adapted curriculum (Garaigordóbil and García de Galdeano, 2006; Navas, Torregrosa and Mula, 2004; Rillota and Nettelbeck, 2007). The persistence of such negative attitudes might partly account for the verified information that the educational inclusion of children with disabilities is not achieving the expected positive results, both in relation to curricular competence and in participation, the latter viewed from a social relations and personal self-esteem point of view (Hogan, McLellan and Bauman, 2000; Llewellyn, 2000; Piel, 2007).

Disabled students within the scope of educational inclusion face a higher risk of rejection, state not being happy about their experiences in their schools and perceive attitudes charged with stereotypes and prejudices (Echeita, 2009). Furthermore, the success of educational inclusion is also questioned in the light of the data collected in the *Libro blanco sobre universidad y discapacidad* (The White Book on University and Disabilities) (Peralta, 2007), since only 1% of the students with disabilities reach the academic level expected just prior to university studies.

It is argued that mistaken conceptualisations and attitudes are responsible for the slow changes, resistance and occasional backward steps in the process of inclusive education. This process, pervaded mainly by principles and values, requires society to understand how important this attitudinal change is, a change which will be achieved by increasing the space and opportunities for coexistence at school and in the community (Giné, 2004; Nikolaraizi *et al*. 2005).

The possibility to modify and achieve this change to positive attitudes through programmes and specific intervention already has empirical support. Modification and change are more feasible when the negative and pitying side of disability are not focused on but rather the positive one of adjustment together with the potential of people with disabilities. There are a number of techniques outlined in the specialist bibliography that show useful and efficient ways to achieve such changes, but not all of them count on the same degree of empirical support. In spite of the relevance of the issue, given its decisive role in the consolidation of the principles of equality of opportunities and integration, the implementation of this type of programme and the assessment of results is still an unresolved matter. In fact, the objective of this study focuses on the review of these programmes promoting changes in attitudes in order to find about the contexts where they develop, the population they are addressed to, the most efficient strategies and techniques, and the data analysis carried out, etc. This information is necessary for planning actions and intervention aimed at the full integration and normalisation of people with disabilities in any area of life, including, without any doubt, the school context, which is the first and most decisive stage of the inclusion process.

In order to carry out this review, the following sources of information have been consulted: the *Web of Knowledge, an* integrated scholarly information system, and the *CSIC* databases and electronic journals*, Dialnet, Eric, Psycinfo, Psycodoc* and *Scopus*. The descriptive words used, either in isolation or in combination, are the terms of *disability, attitudes, change, modification, programme, school/education* as adjectives*, school/education* as nouns, *assessment* and *intervention*. A total number of 63 programmes implemented between the years 1972 and 2009 have been reviewed. The choice for this time period responds to the fact that the first publications on the issue appeared in the 1970s. Even though the period of time reviewed is long, the selection of research to review has not been complicated, since there are only a few studies available. Only ten programmes have been ruled out, since their methodological limitations of the study sample or the instruments for assessment used, among other facts, restricted the range and significance of the findings.

INTERVENTION TECHNIQUES

The reviewed programmes of change of attitudes towards people with disabilities use a number of methods to achieve a change to positive attitudes. To be specific, eight types of techniques, some of them sometimes combined, are collected in the programmes that are explained below. The tables summarise these programmes providing information about the type of study, that is, about authors, year and sample size; about the change technique used as a strategy to modify attitudes; about the ages or school levels of the participating subjects; about the assessment procedures used to measure change and type of design; about the data analyses carried out, and, finally, about the main conclusions and findings. It is worth pointing out that the data shown in the 'conclusions' column make reference to statistically significant data, unless the opposite is specified in those which need this comment.

1. Contact with people with disabilities

This method provides the opportunity by means of programmed contacts, the interchange of personal experiences and also planned events, such as game sessions, lectures and discussions, and outings or trips, etc, the direct contact with the object of a negative attitude, that is to say, the disabled person. The reviews show (see Table 1) that, in general, personal contact is a powerful technique to provoke a change to more positive attitudes. The scores in the experimental group improve and acquire statistical significance in the inter and intragroup analyses. To this fact there are some authors who add some clarifications. Thus, Evans (1976) argues that such contact needs to be very well structured, that is to say, the type of activity and the time and place of the contact need to be planned, and the interaction needs to be exhaustively controlled. In addition to this, Manetti, Schneider and Siperstein (2001) conclude that it is not the type of contact that achieves positive attitudes but it is the social behaviour of the partners with disabilities that determines the type of attitudes from their partners without disabilities. There are also studies in which this technique does not achieve the expected results. In a programme in which 87 children aged 13-17 participated, Armstrong, Rosenbaum and King (1987) achieved positive changes in a great part of the sample population, whereas another part their attitudes worsened. In the same line of thought Diamond, Hestenes, Carpenter or Innes (1997) don't find significant differences among pre-school children with and without integration, except for differences in tolerance in the case of children attending inclusive lessons.

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Rapier, Adelson, Carey and Croke (1972) (n = 152)	Contact with primary education students (3rd, 4th and 5th graders) with physical disability	Semantic diferencial scales. Pre-posttest	Chi square test	Inprovement in attitudes to disabilities .
Evans (1976) (n= 60)	Structured / non structured contact among people with visual impairment and university students	Likert type scale. Pre-posttest.	Analysis of covariance.	Positive changes in the structured contact group. No changes shown in non structured contact group.
Blackburn, Candler y Sowell (1980) (n= 30)	Contact among university students doing their practice and people with disabilities.	Attitude observation scale. Pre-posttest.	Pearson's Correlation	No change. The study started from very positive attitudes .
Voeltz (1980) (n= 817)	Contact among 2nd graders and 7th graders with and without disabilities	Likert type scale. Pre-posttest	Single and multivariate analyses .	The more often the contact the better the attitudes.
Voeltz (1982) (n=817)	Contact among children with and without disabilities in primary school (4th, 5th and 6th grades)	Likert type scale. Pre-posttest.	Analysis of covariance .	The more often the contact the better the attitudes.
Esposito and Peach (1983) (n= 9)	Contact among 4-5 year old pre-school children with and without disabilities	Likert type test and observación. Pre-posttest.	Unspecified, may be mean differences .	Improvement in social skills of children with disabilities and more favorable attitudes in partners.
Jenkins, Speltz y Odom (1985) (n= 43)	Contact among 3-6 year old preschool children with and without disabilties.	Psychometric scales for measuring various skills, and observation. Pre-postttest.	Analysis of covariance and frequency distribution.	Improvement in gross motor abilities and in cooperative games of children with disabilities.
Armstrong, Rosenbaum and King (1987) (n= 87)	Contact among 9-13 year old children without disabilities and 6-16 year old children with disabilities.	Likert type scale. Pre-posttest.	Analysis of covariance and chi square test .	Positive change in a large percentage, but 17% of the experimental group worsens.
Craig (1988) (n= 34)	Contact among university students and two paraplexic children .	Likert type scale. Pre-posttest.	Analysis of covariance .	Positive changes in the experimental group .
Townsend, Wilton and Vakilirad (1993) (n= 563)	Contact among 8-13 year old children with and without intellectual disabilities.	Likert type scale and semantic differential scale. Posttest.	Analysis of variance	Better attitudes to children with intellectual disabilities if the integration is structured.
Maras and Brown (1996) (n= 50)	Contact among 8-10 year old children with and without intellectual disabilities.	Classifications and psychometric scales. Three measures (Unspecified time)	Multidimensional scaling. Anova and Manova.	Rather nuclear findings, although the authors report more positive attitudes.
Diamond, Hestenes, Carpenter e Innes (1997) (n=60)	Contact by integration among 3-6 year old preschool children with physical and sensory disabilities without a specific programme.	Interviews of participating students in integration classrooms.	Covariance test.	No more differences are found between children with and without integration . Except small changes such as being more tolerant.
Wilhite, Adams, Goldenberg and Trader (1997) (n= 704)	The Paralympic Day with people with visual impairment and other physical disabilities in middle and higher vocational training groups.	Ad hoc questionnaire based on other instruments. Pre-posttest .	Mean Differences test (t-test).	No significant actitudinal changes appear.
Burns, Storey and Certo (1999) (n= 24)	2 experimental groups: 1) Gardening students aged 15-17 with physical and mental disabilities and without disabilities, and 2) A Special Olympics. meeting .	Likert type scale and semantic differential scale. Pre-posttest.	Mean Differences test (t-test) and MANOVA.	The first experimental group achieves change to more positive attitudes, but the participants in this group were volunteers and the contact was more continuous.
Maras and Brown (2000) (n= 256)	A comparison of schools with various types of contact among 5-11 year old peers with and without disabilities.	Classifications and psychometric scales .	ANOVA	The children with disabilities are less well accepted in the two types of school, but the differences are larger in the 'categorized' schools

| Manetti, Schneider and Siperstein (2001) (n= 190) | Contact with peers with intellectual abilities in various activities once a day, or with 9-11 year old integrated companions | Adjective listings, contact questionnaire, sociometric measure. | ANOVA. | In general terms, the contact has a positive effect, but the behavioural intention of the children without disabilities depends on the social behaviour of their partners with disabilities not on the type of contact. |
| Cameron and Rutland (2006) (n= 67 | Contact by means of reading activities of three 5-10 year old experimental groups, various types of reading and information provided. | Interviews, Likert type scale, adjective listings, ad hoc and adapted questionnaires, and sociometric measures. | ANOVA. | Vicarious learning (disabled /non disabled) improves the attitudes to the disabled. The contact with neutral information does not produce any change. |

Table 1. Studies that use *'contact'*.

So it seems that the programmes based on personal contact achieve positive results when the contact, developed in well structured environments, is continuous and intense, in a way that allows for knowing about all the potentialities of the disabled person and finding out whether the activities carried out have been non segregating. Thus, in the line with what has been argued by some authors, it is the type of interaction or contact and the conditions in which they take place that conditions the change, the maintenance or the worsening of attitudes. (Ammerman, 1997; Díaz-Aguado, Royo and Baraja, 1994; Donaldson, 1987; Evans, 1976; Horne, 1988; Pelechano and García de la Banda, 1996; Verdugo, Arias and Jenaro, 1994).

2. Information

This technique provides a variety of information about issues related to the area of disability. The information may be given to the receiving group in a direct way, by the people with disabilities themselves or by experts on the subject matter, or in an indirect way, that is, by means of various types of materials, such as general films, documentary films, reference books, tales, and so on. This technique is usually implemented in such a way that the discussion, guided by the expert who has provided the information, is present throughout the programme..

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Lazar, Orpet and Demos (1976) (n= 20)	Information: Lecturres and reading students in a Masters programme.	Likert type scale and one other unspecifiec scale. Pre-post test.	Unspecified	Improvement of attitudes to people with disabilities.
Gottlieb (1980) (n=208)	Information and discussion with 3rd to 6th graders.	Adjective listing. Pre-post test.	Analysis of covariance	Improvement of attitudes to children with intellectual disability.
Kierscht and DuHoux (1980) (n= 150)	Direct information from people with physical disabilities to 3rd grade students.	Likert type scale. Pre-post test.	Analysis of variance and Tukey's test	Only the experimental group achieved significant improvement after the participation.
Westervelt and Mckinney (1980) (n= 46)	Information to children about 10 years old by means of a film about a boy in a wheel chair	*Ad hoc* scales. Unspecified endorsing studies or types, only description of them. Pre-post test, follow up nine days later.	Analysis of variance	Some significant change in first pre-test, which is not observed in post-test.
Miller, Armstrong and Hagan (1981) (n= 71)	Information, discussions and simulation with 3rd to 5th grade students.	One supposes that an opinion survey is used as the scale Pre-post test.	Analysis of variance	No changes registered in the overall experimental group. Changes only observed in younger children.
Hazzard and Baker (1982) (n= 325)	Film, book discussion and other activities with 3rd to 6th grade children.	Likert type scales, Observation and opinión Survey. Pre-post test and follow up one month later.	Analysis of varianze and covariance or Chi square	More positive perception and greater knowledge about people with disabilities and greater knowledge. Higher rates in the experimental group one month later, but not significant.
Shortridge (1982) (n= 424)	Telling a story to 5-9 year old children.	Series of non standardized questions without a control group. Pre-post test.	Non parametric tests. (Wilcoxon)	Positive change of attitude

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Siperstein and Chatillon (1982) (n= 96)	Neutral or personalizad information provided to children in 5th and 6th grades.	Adjective listing and Likert. Type scale. Pre-post test.	Analysis of variance	Better results in children who received personalised information.
Bauer, Campbell and Troxel (1985) (n= 155)	Information by means of a book, a film, or both in combination to 4th and 6th grade students.	Likert type scale Post test.	Analysis of variance and Tukey's test	Changes only in younger children (4th graders). Improvement with the group who used only the book.
Fiedler and Simpson (1987) (n= 90)	Generic information or basic concepts about disabilities to high school students.	Likert type scales. Two control groups and two experimental groups. Pre-post test all groups except one control group.	ANOVA	Positive differences in favour of both experimental groups. Better results in the experimental 'categorization' group.
Fisher- Polites (2004). (n= The number of participants is not mentioned. Only the fact that it was a small group of children)	Information about skills and behaviour appropriate to support a companion with autism.	Class-room observation.	Qualitative. Subjective impressions	Improvement in group attitudes, as they were great support to the companion with disability.

Table 2. Studies that use *'information'*.

Most of the reviews report changes towards positive attitudes after participation (see Table 2), although it is a fact that the positive effects are sometimes only partial, especially in younger children (Bauer, Campbell and Troxel, 1985; Miller, Armstrong and Hagan, 1981). In other cases, either the effects of the participation are not maintained during the follow up (Westervelt and Mckinney, 1980) or the scores in the experimental group although high do not reach statistical significance.

3. Information plus contact.

The two techniques explained above are often combined in the change of attitude programmes in such a way that, as pointed out by previous reviews (Donaldson, 1987; Flórez, 1999; Horne, 1988; Yuker, 1988), information plus contact is the most effective technique for change. The findings of this review also support these conclusions (see Table 3).

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Lazar, Gensley and Orpet (1971) (n= 44)	Information and contact with people with various disabilities.	Likert type scale. Pre-post test..	t student test.	Possitive findings according to the authors, but possible methodological problems.
Jones, Sowell, Jones and Butler (1981) (n= 74)	Information, group discussions,contact with people with various disabilities, experience with technical aids and simulation of disabilities. Children aged 7-9	Semantic differential scale. Pre-post test.	Mean differences	Change in the perception of people with disabilities.
Skrtic, Clark and White (1982) (n= 109)	Information and information plus contact between trainee teachers and people with visual impairment.	Likert type scale. Pre-post test.	Analysis of variance and covariance.	Improvement in attitudes to disabled people in both groups. More improvement in the information plus contact group.
Leyser and Price (1985) (n= 60)	Direct and indirect information, contact with people with various disabilities and tutorials with a section of the sample. Children in grades 4-6.	Likert type scale. Pre-post test.	Analysis of variance.	No differences between the experimental group and the control group.
Leyser, Cumbland and Strickman (1986) (n= 281)	Information and contact with people with various disabilities. Simulations and information about technical aids with children in grades 4-6.	Likert type scale. Pre-post test.	Analysis of variance.	Positive differences in favour of the experimental group.

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Rosenbaum, Armstrong and King (1986) (n= 99)	Contact group, information group and information group plus contact among 4-7 grade students and people with various disabilities.	Likert type scales and measurement of demographic issues and knowledge about disabilities. Pre-post test.	Analysis of variance and chi square	Significant changes only in the group with the contact programme.
Blanchard (1990) (n= 105)	Contact group, information and information plus contact among 5-7 grade students and people with various disabilities.	Likert type scale and observation. Pre-post test.	Analysis of covariance and percentages	This study finds worse attitudes after applying the contact technique, and do not differ when using information or information plus contact.
Durán and Giner (1999) (no especificado)	Information plus contact, simulations and group discussions among 7-8 grade students and people with various disabilities.	Not described.	Not applied	Start from the idea that the programme will achieve changes, but the changes are not analysed.
Aguado, Flórez and Alcedo (2003) (n= 234)	Direct and indirect information and contact among people with various disabilities and 13-16 year old students.	Likert type scales. Pre- post test and two year long follow up of control group and experimental group.	ANOVA and ANCOVA	Positive change of attitudes to people with disabilities, which continues with a few fluctuations.
Aguado, Flórez and Alcedo (2004) (n= 83)	Direct and indirect information and contact among people with various disabilities and 12-15 year old students..	Likert type scales. Pre- post test and three year long follow up of control group and experimental group.	Mann-Whitney U test, t student test.	Effective programme which achieves changes that last over time with some variations.
Krahé and Altwasser (2006) (n= 70)	Cognitive intervention versus cognitive-behavioural intervention to promote change in around 14 year old children, of attitudes to people with physical disabilities.	Standardized Likert type scale with test-controlled slight modifications. Pre-post test and three month long follow up.	ANOVA.	Reduction of negative attitudes to peers with disabilities is only achieved by combining techniques. These attitudes continue during follow up.
Aguado, Alcedo and Arias (2008) (n= 128)	Direct and indirect information and contact among people with various disabilities and 8-10 year old students.	Likert type scale. Pre- post test and follow up of control group and experimental group three years later.	Univariate and multivariate analyses of repeated measures	Significant improvement in the experimental group. Scores continue three years after the participation.

Table 3. Studies that use *"information plus contact."*

The findings provided by the programmes combining both techniques are generally very positive. What is more, those studies that carry out follow up, a control that is infrequent in this type of study, confirm that the advantages gained by the control group are not only maintained in the short term (Krahé and Altwasser, 2006), but even two and three years after participation (Aguado, Flórez and Alcedo, 2003 y 2004; Aguado, Alcedo and Arias, 2008), which gives strong empirical support to the consistency of both techniques. Nevertheless, contradictory findings can be seen among some studies. Thus, on the one hand, Skrtic, Clark and White (1982) report the best findings by using the combination of information plus contact is not effective when the contact is carried out in isolation. On the other hand Rosenbaum, Armstrong and King (1986) argue that significant changes only appear in the group with contact programmes, and not when the contact technique is combined with the information technique. For his part, Blanchard (1990) concludes that attitudes worsen after having used the contact technique and do not differ from the initial ones when using the information technique or information combined with contact.

4. Non academic experiences in small groups

Two decades ago Horne (1988) stated that outings, games, trips or other experiences in which people with and without disabilities work together or interact can achieve a positive change of attitudes and improve the prestige and social appraisal of the social role of disabled people.

The bibiography reviewed only reports two programmes (see Table 4) whose findings show a change to more positive attitudes that can be achieved from other contexts which are not strictly school based, such as the 'scout' groups (Newberry and Parish, 1987) or from play and leisure activities in which the children usually participate (Schleien *et al.*, 1987).

5. Cooperative teamwork

Another of the reviewed techniques is participation in cooperative teamwork, which share objectives and aims. The team, consisting of people with and without disabilities, works together and the rewards are to the benefit of the whole group.

The cooperative structure of these groups, carried out basically in school contexts, allows for a great deal of interaction and generally brings about very positive results (see Table 5).

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Newberry and Parish (1987) (n= 476)	Six 8-10 year old scout groups. Each group integrated one child with a different disability, except for the control group.	Adjective listings. Pre-post test.	Analysis of covariance.	Positive changes in 5 out of the 6 experimental groups. No attitudinal changes towards children with learning problems.
Schleien, Ray, Soderman-Olson and McMahon (1987) (n= 27)	Visit to and various cooperative activities in a museum among 7-10 year old children with intellectual disability and without any disability.	Likert type scale and observation. Pre-post test.	Analysis of variance and t student test.	Statistically significant differences between pre-test and post- test, which supposes improvement in the attitudes to people with disabilities.

Table 4. Studies that use *"non academic experiences in small groups."*

This group of studies shows the effectiveness of cooperative teamwork in promoting positive attitudes. The students improve their perceptions on school integration and value the abilities and potential of their disabled peers. Furthermore, although with slight variations, these findings are consistent over time (Shevlin and O´Moore, 2000).

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Ballard, Gottlieb, Corman and Kaufman (1977) (n= 659, aproximadamente)	Twenty-five 3rd, 4th and 5th grade groups integrating children with intellectual disabilities as experimental groups doing cooperative work with companions with intellectual disability.	Sociometric test. Pre-post test.	Analysis of covariance.	Statistically significant increase of acceptation and decrease of rejection in experimental groups. The opposite happened in the control groups.
Rynders, Johnson, Johnson and Schmidt (1980) (n=30)	Playful environment with cooperative, competitive and individual team games of 13-15 year olds and children with Down Syndrome.	Observation and sociometric test. Various measurements during the study.	Mean Difference Student's t test.	Significant differences of positive interaction in group of cooperative work. Better appraisal of the Down syndrome in sociometric test.
Acton and Zarbatany (1988) (n=80)	Cooperative game with high or low interaction and good and bad results among 7-12 year old children with or without intellectual disabilities.	Pre test and observation during treatment and sociometric test. Pre-posttest and follow up 3-4 months later.	Analysis of variance, univariate analysis and student's t test.	Less negative appraisal and more positive perception of companions with disabilities when the interaction was high.
Díaz-Aguado, Royo and Baraja (1994) (n=457)	Cooperative learning with 3rd and 5th graders with and without visual impairment plus two tales for reflection and discussion.	Mainly sociometric tests and interview. Pre-post test.	Non parametric test (Mann Whitney's Test).	Both sighted and visually impaired student improve their attitude and perception of integration.
Martínez (1995) (n=78)	Cooperative learning among 4th and 5th graders and companions with mental retardation.	Sociometric tests and Likert type scale. Pre-post test.	Analysis of covariance and student's t test.	Increase of acceptation of integrated disabled children. Better attitudes from the 4th grade group.
Putman, Markovchick, Johnson and Johnson (1996) (n=417)	Cooperative learning of approx. 13 year old children with learning difficulties in two 45 minute weekly sessions from October to May.	Sociometric test and structured interview. Pre-post test.	Analysis of covariance.	Positive change in the perception of students with disabilities and in the disposition to work cooperatively with them.
Shevlin and O´Moore (2000) (n=302)	13-17 year olds share cooperative learning with children with intellectual disability for 60-90 minutes a week during the school year.	School questionnaire on attitudes. Pre-post test and follow up six and twelve months later.	Mean Difference Chi square.	The experimental group shows a positive long lasting attitude with slight variations.
Piercy, Wilton and Townsend (2002) (n=51)	Six year old children work cooperatively with children with severe intellectual disability in two experimental groups or individually plus a control group.	Sociometric measurement. *Ad hoc* adapted standardized scales and behaviour observation. Pre-post test.	Analysis of variance.	Acceptance, social interaction and popularity ratings improve in the cooperative learning group and there are no differences in the other groups.

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Almazán (2003) (n=146)	Role-playing, cooperation, information and tutorial action about different disabilities for three weekly hours during three months in grades 7-8 with a control group.	*Ad hoc* questionnaire. Pre-post test.	Chi square.	Differences are reported by schools and in some items showing more positive attitudes of the experimental group. The differences are not very high after the participation.

Table 5. Studies that use *"cooperative teamwork."*

6. Training in interpersonal skills

Training in interpersonal skills has proved effective as it gives ability to effectively act and interrelate with partners with disabilities (Horne, 1988). Furthermore, as argued by Strain and Odom (1986) after having reviewed previous studies, the school companions of disabled children can when directed teach them social abilities, which does not bring about any negative effect but improvement in the social competence of children with disabilities. Within our setting, Professor Pelechano and his team have developed and implemented various programmes promoting change of attitudes by using *training in interpersonal skills* as a technique of change (see Table 6). These programmes are addressed to children in the first cycle of Compulsory Secondary Education, grades 7 and 8) with the objective of helping towards the educational inclusion of children with visual impairment. They report very positive results and confirm that these results are maintained over time. A wide and detailed description of them can be consulted in the trilogy published by Pelechano (1996).

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Pelechano, García and Hernández (1994) (n= 68 68 in grades 1-2 and n = 118 in grades 5-6)	Training in interpersonal skills in the first and second cycles of primary education, grades 1-2 and 5-6.	Likert type scale and scale to assess interpersonal abilities. Pre-post test.	Mean Difference before and after the test in inter-group and intra-group.	Positive change towards the integration of blind children and their personal and social acceptance, and improvement in interpersonal abilities.
Fumero (1997) (n= 68)	Training in interpersonal abilities in grades 1-2.	Likert type scale and scale to assess interpersonal abilities. Pre-post test and follow up 9 months later.	Bivariate and multivariate analyses.	The experimental group's rejection of integration decreases and the personal and social acceptance increase, but not too significantly. The findings remain in the post-test nine months later.
García (1997) (n=118)	Training in interpersonal abilities in secondary education, grades 7-10.	Likert type scale and scale to assess interpersonal skills. Pre-post test and follow up 6 months later.	Mean Difference.	Significant increase of some factors related to interpersonal skills. Acceptance of integration and decrease of rejection of school integration. The findings do not remain in the post-test.

Table 6. Studies that use *"training in interpersonal skills."*.

7. Simulation of disabilities

Both roleplaying or simulating some disability and the indirect experience of watching someone roleplaying or simulating it, can modify and provoke a positive change of attitudes (see Table 7), above all if the subjects, in addition to experiencing it, also observe the reactions of people without disabilities towards themselves as simulators (Donaldson, 1987; Horne, 1988).

Most of the simulation programmes, which are frequently combined with other techniques, especially the 'information' technique, modify attitudes to disabilities. However, if alternative solutions to potential difficulties are not provided, the results obtained can be negative, that is, prejudices and stereotypes are reinforced and emphasized in the face of experiences of many limitations and with problems difficult to solve (Grayson and Marini, 1996).

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Clore and Jeffery (1972) (n= 66)	Simulation of physical disability and vicarious learning by companions. University students..	Semantic differential scale, Likert type scale and description of the experience. Post test surveys four months later.	Analysis of content, Scheff'e's test, chi square and analysis of variance.	Change achieved in both experimental groups (simulation and vicarious) but, in general, no differences are reported between both experimental groups.

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Clunies-Ross and O'Meara (1989) (n= 60)	Structured information and discussion , simulation of physical disability and contact with 4th grade students.	Likert type scale, pre-post test and three month follow up.	Analysis of covariance.	Significant attitudinal differences in the experimental group which remain three months later in the follow up.
Grayson and Marini (1996) (n= 38)	Simulation of physical disabilities with university students.	Likert type scale. Post test administered to control group and experimental group.	Student's t test.	Awareness of difficulties and frustrations of using a wheelchair.
Pernice and Lys (1996) (n= 114)	Information, contact and simulation of physical disabilities with university students.	Likert type scale. Pre-post test.	Student's t test.	Significant increase of means for the experimental group and the control group. Serious methodological problems, though.
Basic attention group of la Rioja region's Delegation of the ONCE (Spanish Organization for people with visual impairment) (1995). Unspecified number of subjects.	Simulation of visual impairment and information. Sixth grade students.	Qualitative information.	Data analysis not described.	Positive experience for the blind student, the teachers and the class mates who participated in the programme.
Conejero and Lopezuazo (1999) (n: not specified)	One weekly hour information, simulation and discussion in a 14-16 year old school group.	Qualitative or subjective information on students' opinions or bahaviours.	Not described.	Encouragement of sympathetic, tolerant and respectful attitudes to people's diversity.

Table 7. Studies using *"simulation of disabilities."*

8. Colleague guided tutorial programmes

Tutoring from a colleague without disabilities can be an effective method for the disabled student to develop social and academic abilities.

The studies reviewed (see Table 8) have shown the positive effect of tutorial programmes in the academic performance of tutoring and tutored students, as well as an increase in motivation, improvement in self-concept, of positive attitudes to the school and of interpersonal abilities (Donder and Nietupski, 1981; Fenrick and Petersen, 1984; Hughes *et.al.,* 2001). Nevertheless, the findings are not yet well defined and it seems that the performance of tutorial action may be affected by some variables which have not yet been controlled, such as age, gender, personality characteristics, or level of previous training to carry out the tutorial programme, etc.

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Donder and Nietupski (1981) (n= 17)	Tutorial action with 12-13 year olds with intellectual disabilities after a training period.	Observation at different times and a week and a half after the participation.	Percentages of appropriate and inappropriate behaviour and quantity of contact.	The children with disabilities increased their appropriate responses in games and decreased their inappropriate responses. Also greater average contact with children without any disabilities. The findings remain one and two weeks later.
Fenrick and Petersen (1984) (n= 69)	Tutorial action of students with intellectual disabilities by their sixth grade class mates.	Semantic differential questionnaire and Likert type scale. Pre-post test.	ANOVA and item analysis.	More positive attitudes of the experimental group than the ones held prior to the participation.

STUDY	CHANGE TECHNIQUE	ASSESSMENT	DATA ANALYSIS	CONCLUSIONS
Hughes, Copelend, Guth, Rung, Hwang, Kleeb and Strong (2001) (n= 115)	"Peer Buddy Program," promoting interaction among students with various disabilities and with no disabilities in and out of the high school.	*Ad hoc* questionnaire with semistructured answers. Only post test.	Percentages of incidence in the significance of the answer.	The participants report increase of interpersonal abilities, personal knowledge, friendship, knowledge about and awareness of people with disabilities and giving comfort when they are together.

Table 8. Studies that use *"tutorial action programmes."*.

DISCUSSION AND CONCLUSIONS

The bibliographical review about programmes promoting change of attitudes to people with disabilities has allowed us to locate 63 studies which use eight techniques as strategies of change, which are sometimes used in combination. In general terms, the state of this issue is characterized by:

- Predominance of programmes implemented in the school context, such as extracurricular activities carried out during normal class hours, but without any other relation to the curriculum.
- The programmes mainly address children in primary and secondary schools. Programmes focusing on younger students are less frequent.
- Disability programmes most frequently focus attention on physical disability
- Contact with people with disabilities is by far the most often used technique. It is present in 17 programmes and in another 12 in combination with the 'information' technique, which is the second most often used technique. Cooperative teamwork has been used in 9 programmes and simulation of disabilities in another 6.
- Personal contact is the technique with the greatest empirical support and which reports the greatest effectiveness on changes to promote positive attitudes. However, such contact needs to be structured, it has to enhance positive and stimulating interaction and permit the acknowledgement of the potential of people with disabilities. Combined contact plus information is equally effective. Furthermore, information as an isolated technique, and cooperative teamwork also result in modification and improvement of attitudes. In general terms, the studies show that most of the techniques used prove effective in promoting positive attitudes to disabilities.
- The assessment instruments which have most often been used are Likert type scales, sociometric tests, semistructured interviews and adjective listings.
- This review also notes important methodological limitations which restrict the findings and conclusions reached above. Namely:
- Inadequate experimental design, made evident by the lack of assessment prior to intervention, the lack of control groups, the merely descriptive nature of studies and the shortage of multivariate techniques.
- The use of measurement techniques without prior psychometric studies in some cases and in others, the assessment instruments are not mentioned.
- Lack of follow up. Only 12 out of the 63 programmes reviewed which promote change of attitudes have carried out some kind of follow up measurement. As a consequence, the future effectiveness of these programmes, either in the short or in the long run is unknown.

In spite of these limitations, there is a a clear need for programmes promoting change of attitudes in order to continuously implement specific actions leading to the total integration of people with disabilities. These programmes generally obtain good results and their execution is not complex, bringing about a modification to negative and mistaken conceptions of diversity and difference. The mere personal contact with people with disabilities does not bring about a change of attitude. Rather, the improvement is associated with better knowledge about disabilities (Navas, Torregrosa and Mula, 2004; Nikolaraizi *et al.,* 2005).

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