A Meta-analytic Review: Teachers' Attitudes toward Students with Disabilities

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Abstract

A meta-analytic review of published and unpublished intervention studies to change teachers' attitudes and behaviors toward students with disabilities was conducted in order to clarify the concepts of exceptionalities, attitudes, and change. The second objective of this study was to examine the moderating variables that may account for disparate results. The moderators that were examined were the level of intentionality of teachers at the beginning of the interventions, intervention characteristics, measurement characteristics, and teachers' specialization (regular vs. special education). The findings showed that lectures that used an indirect approach to attitude change and that were accompanied by field experience resulted in more change in attitudes. In addition, those studies that used self-report questionnaires showed more attitude change than the studies that used observational measures. Teachers' expectations and beliefs were easier to change than their behaviors and emotions. Conclusions and implications of the findings are discussed.

Introduction

Teachers' attitudes are important factors in successful inclusion of students with disabilities (Duquette & O'Reilly, 1988; Kunzweiler, 1982). Teachers' attitudes are not only related to their behaviors toward students with disabilities (Elik, 2002; Sharan & Hertz-Lazarowitz, 1980; Stanovich, 1994; Stanovich & Jordan, 1998), but also influence other students' acceptance of learners with disabilities and the academic self-concept of students with and without disabilities (Stanovich & Jordan, 1998).

The linkage between teachers' attitudes and behaviors toward students with disabilities has led researchers to design interventions to change teachers' or prospective teachers' attitudes toward these students (Finlayson & Appleton, 1972; Leyser & Abrams, 1983; McDaniel, 1982; Pinckney, 1962). These studies provide conflicting results on the effectiveness of different interventions. Although there are two related reviews that provide useful guidelines (Colosimo, 1984; Stern & Keislar, 1977), there has not been any systematic review of the intervention studies conducted to change teachers' attitudes toward students with disabilities. For this reason, a meta-analytic review of interventions to change teachers' attitudes was conducted.

Specifically, this study has two objectives: (1) clarification of the concepts and terms used in the teacher attitude change literature regarding learners with disabilities, and (2) examination of the moderating variables that may account for disparate results.

Theoretical Framework

Interventions to change teachers' attitudes employ various techniques including providing information on disabilities (Niertsheimer, Hopkins, Dillon, & Schmitt, 2000), supervised practice teaching (Niertsheimer et al., 2000), showing videotapes of students with disabilities (Dailey & Halpin, 1981), reading stories about children with disabilities (Marlowe & Maycock, 2001), and reflecting on teachers' beliefs and behaviors (Brownlee, Purdie, & Bouton-Lewis, 2001). Evaluations of some of these interventions showed an improvement in teachers' attitudes (Siperstein & Goding, 1985); some showed no positive effects (Lewin, Nelson, & Tollefson, 1983; Leyser & Abrams, 1983); and others showed a decrease in teachers' positive attitudes after intervention (Castoria, 1986; Oelke, 1956; Saglio, 1993). These findings raise many questions regarding the moderators that account for the differential effectiveness of interventions in changing teachers' attitudes toward students with disabilities. Before examining possible moderators, it is important to define the main concepts of disabilities, attitudes, and change.

Disabilities/Exceptionalities/Special Needs

This study examined disabilities and disorders that different studies perceive as a form of disability or special need. In addition, studies were compared across different types of disabilities to examine the effect of type of student behavior on the amount of change in teachers' attitudes and behaviors.

Attitudes

Allport (1967) provided two definitions of attitudes: (1) a subjective or mental state of preparation for action, and (2) the outward manifestation or visible posture (the bodily position) of a figure in statuary or painting. These definitions have been translated in psychology into mental attitudes and observable behaviors (Allport, 1967). However, attitudes are not limited to beliefs and behaviors. They also have an affective dimension, in that they involve the affect for or against a psychological object that determines potential action (Ajzen, 1988, 1991; Blackburn, 1996; Thurstone, 1967). Studies on teachers' attitudes usually do not specify their definition of attitudes. Most studies measure general beliefs as indicators of teachers' attitudes. Observable attitudes, that is, reactions and behaviors, also remain undefined. Definitions of observable attitudes include immediate reactions, like giving the child a timeout, or planned behaviors such as modifying instruction (Elik, 2002). Therefore, it is important to explicate the term "attitude" across different studies. In addition to providing descriptive data on the definition of attitudes, this meta-analysis compared research in terms of the amount of attitude change that occurred as a result of the intervention based on the dimension of the attitude being assessed (i.e. beliefs, attributions, emotions, reactions, or behaviors).

Individual differences among teachers in terms of their beliefs toward students with special needs have been conceptualized along the pathognomonic-interventionist (P/I) continuum (Jordan & Bierma, 1995; Stanovich & Jordan, 1998). Teachers at the pathognomonic (or restorative) end of this continuum believe that there is a specific disease entity that exists within students with disabilities. At the other end of the continuum is a group of beliefs identified as "interventionist" (preventive). Teachers holding these beliefs assume that their students' learning problems result from the interaction between the student and the instructional environment. In

the remainder of this paper, teachers' attitudes and behaviors will be referred to in terms of an adapted version of the P/I continuum, called the interventionist continuum (Elik, 2002), which describes teachers' attitudes and behaviors toward learning and behavioral problems in students. In Elik's (2002) version of the interventionist continuum, attitudes refer not only to cognitions, such as beliefs (Allport, 1967; Ajzen, 1991) and attributions (Weiner, 1985), but also to emotions (Ajzen, 1988, 1991; Blackburn, 1996; Thurstone, 1967; Weiner, 1985). Teachers' behaviors include instant reactions such as sending the student to the principal's office for misbehaving, as well as reflective (or planned) behaviors, such as modifying instruction.

Change

Intervention study reports usually do not include even a brief discussion about what "change" means and they all assume that change is positive (results in more positive attitudes). Change can be considered in at least four different ways. The first meaning of change corresponds to radical conceptual change in science (Kuhn, 1996) and science learning (diSessa & Sherin, 1998; Sinatra & Pintrich, 2003). Radical conceptual change refers to a situation where one conceptual framework is replaced by a completely new framework, as in the case of replacing the view that the earth is flat with the view that the earth is round (Sinatra & Pintrich, 2003). The second meaning of change is as conceptual capture (Hennesey, 2003), which refers to an increase or decrease in amount, like adding new pieces of information to your existing conceptual framework, such as learning more details about the earth and its shape. This meaning of change corresponds to weak conceptual change, or regular learning (Carey, 1991; Chi, 1992; Thagard, 1992). In addition to the weak-radical change dimension, conceptual change can be considered along a positive-negative dimension. Change can be flawed (Ferrari & Elik, 2003), such as when a student teacher starts to have unfavorable attitudes toward students with exceptionalities after starting teaching (Colosimo, 1982).

In this meta-analysis, the meaning of "change" was examined by coding the studies as resulting in radical positive change, weak positive change, radical flawed change, weak flawed change, or no change. Variables that may account for different kinds of change were investigated by comparing studies based on the four kinds of change. A review of the literature suggests a number of moderators that may account for the differential effects of treatments to change teachers' attitudes toward exceptional students. Four moderators were considered in this study: intentionality, intervention characteristics, measurement characteristics, and teacher specialization.

Intentionality

Intentionality is considered in the teacher attitude literature through discussion on direct and indirect approaches to attitude change (Ducote, 1980). The traditional (indirect) approach attempts to facilitate attitude change in teachers by having them learn about disabilities and effective instructional techniques for students with disabilities (Ducote, 1980). This approach to attitude change corresponds to unintentional learning. The direct approach for changing teachers' attitudes toward students with disabilities attempts to facilitate change by asking teachers to reflect on their attitudes (Brownlee & Carrington, 2000). Other examples of direct approaches to attitude change include any kind of consultation or workshop that includes reflection (in the form of making teachers think about and/or give them feedback on their attitudes and behaviors). This approach corresponds to intentional conceptual change in attitudes. Direct approaches have been

found to be more effective in changing teachers' attitudes toward students with disabilities (Ducote, 1980).

Intervention Characteristics

Interventions to change teachers' attitudes usually include a course or lecture and/or field experience. Some of the interventions that included only didactic lectures reported no attitude change (Tait & Purdie, 2000). It is expected that when lectures are combined with a practicum, teachers will show more positive attitude change. In addition, characteristics of the contact or practicum were examined in relation to attitude change in teachers.

Measurement Characteristics

In their meta-analytic review of interventions to change mental health employees' attitudes toward people with psychiatric conditions, Kolodziej and Johnson (1996) found that attitude change was smaller when the evaluative measure described a group with mental illness rather than specific individuals. This was presumed to be because specific measures are more likely to correspond to person-specific information (Fishbein & Ajzen, 1981; Sears, 1983). Therefore, it is expected that studies, which use specific attitude measurement tools (e.g., vignettes, asking questions about specific students) will show more attitude change in teachers than those studies that use general attitude measurement scales. In addition, observational or objective data (e.g., measuring pulse) has been found to conflict self-report data (Gargiulo & Yonker, 1983). It is expected that more positive attitude change will be found when self-report questionnaires are used than when objective data (i.e. observation of teachers' behavior) is gathered.

Teachers' Specialization and Status

Differences in the amount of attitude change between general education and special education teachers were examined. In addition, differences between preservice and practicing teachers in terms of attitude change were examined.

Method

Meta-analysis involves determining the difference between experimental and control (or comparison) group mean scores in standard deviation units (called an effect size, ES, or Δ; Lipsey & Wilson, 2001). If there is no control group, an effect size is estimated by comparing the mean after treatment with the pretreatment mean, and dividing by the pretreatment standard deviation. Average effect sizes then are converted to standard score units to examine efficacy of a particular treatment across studies (Lipsey & Wilson, 2001). All effect sizes (*d*) were calculated by the computer program developed by Wilson (see Lipsey & Wilson, 2001). The *d*'s were converted to product moment correlation coefficients (*r*'s), using the same computer program. This was done because the data in the studies reviewed were continuous (interval or ratio), and *r* provides an interpretable and flexible method of presenting statistics that are based on these relations (Cook, Cooper, & Cordray, 1992). The mean *r* values were compared across different categories of descriptive and moderator variables.

Literature searches were conducted to retrieve relevant studies conducted prior to January 2006. The primary sources of articles were the following computerized databases: PsycINFO

(Psychological Abstracts), 1860-2006; ERIC, 1966-2006; MEDLINE (Medical Abstracts), 1959-2006; and Dissertation Abstracts-Dissertation Abstracts International (1861-2006). Combinations of the following keywords were used in the computer search: teachers, attitudes, beliefs, change, intervention, exceptional, special education, disability, ADHD, Oppositional Defiant Disorder (ODD), and Learning Disabilities (LD). The search resulted in 178 studies. In addition, reference lists of located intervention and review studies were checked to identify any studies not found in the computerized search.

Among these studies, although 50 of them met the following criteria, only 34 studies possible to locate within the time constraint and availability. The criteria were: (1) inclusion of both an experimental and control group or inclusion of pre and post intervention assessment of teachers' attitudes; (2) provision of necessary statistics reported or archived to be usable in the meta-analysis, and (3) attrition between pre and post measurements of less than 10 percent of the sample. The study authors were contacted when necessary to retrieve archived data that was not reported as summary statistics. If the authors could not be reached, the study was removed from the sample. For those studies that only indicated non-significant effects, the effect sizes were coded as zero (using the procedure recommended by Lipsey & Wilson, 2001). The studies yielded a total of 116 effect sizes. The authors of this paper coded 14 studies (44 effect sizes) independently. Of the 34 studies located, 27 of these studies were journal articles, 5 of them were conference papers, and 2 of them were technical reports. The publication year for the studies ranged between 1962 and 2005. A list of the studies that were included in this meta-analytic review and a summary of their characteristics can be seen in Appendix A. Other unpublished studies (14 dissertations) were not possible to access due to unavailability. The mean *r* was higher for the journal articles than for the conference papers (see Table 1). Reports had the lowest effect sizes.

Results

Interrater Agreement

The mean agreement between the two coders for 14 studies and 44 effect sizes was 96 percent (range: 84-100%). Table 2 illustrates the interrater reliability in terms of percentages and Cohen's kappa for the variables included in the analyses. Cohen's kappa ranged between 0.84 and 1, with a mean of 0.97, for those studies it was possible to compute it for.

Definitions

Disabilities/Special Needs/Exceptionalities

Of 34 studies, 21 of them did not specify any kind of disability, and assessed teachers' attitudes toward students with special needs in general (see Table 1). Those studies that tried to change teachers' attitudes toward students with LD and students without disabilities were the ones that showed the most change. Teachers' attitudes were also easily changed for students with severe disabilities (these were mostly physical disabilities). Teachers' attitudes were harder to change about students with Attention Deficit Hyperactivity Disorder (ADHD) and emotional and behavioral problems. Other exceptionalities that were studied were developmental disabilities, physical disabilities, disabilities, "disabled, minority and disadvantaged," and speech impairment.

Attitudes

There were more studies (68 ESs) that aimed to change teachers' beliefs than attributions (1 ES), expectations (2 ESs), behaviors (8 ESs), or emotions (6 ESs; see Table 1). Studies that examined teachers' immediate reactions looked at teachers' interactions with students. However, they did not specify whether those interactions involved teaching behaviors or responses to students' misbehavior. Although teachers' behaviors were the hardest to change by themselves, they were easier to change when accompanied by interventions that aimed to change teachers' beliefs. Similarly, teachers' emotions were difficult to change when considered alone. In combination with beliefs, it was possible to show a moderate amount of change emotions after the interventions. Other dimensions of attitudes that were studied were expectations, social distance, and rating of student behaviors by teachers. In sum, attitude change was easier to accomplish when interventions targeted different attitude dimensions (i.e. beliefs, emotions, and behaviors) at the same time.

The amount of change in teachers' attitudes was evaluated based on the criteria that the studies used for positive and negative attitudes. The amount of change for different criteria corresponded to dimensions of attitudes, in that when the criteria were about teachers' interactions with children, there was a smaller amount of change. Teachers' expectations were easier to change than other dimensions of attitudes. Therefore, it can be concluded that it is easier to change teachers' self-reported attitudes than their observed behaviors. When the studies measured general attitudes without specifying any dimension, the amount of change was very small. See Table 3 for the criteria that studies used to evaluate positive and negative attitudes.

Change

Evaluation of the change that the interventions accomplished was done based on the quality of change, rather than the amount of change between pre and post (or experimental and control) test differences. Most studies resulted in normal positive change (80 ESs; see Table 1).
There were also a few studies that resulted in radical positive change (30 ESs). As expected, those studies that resulted in radical positive change had higher effect sizes (r) than those resulted in normal positive change. There were also some studies that resulted in no or flawed change (3 ESs each).

Moderators

Intentionality. When teachers' intentionality was not supported (81 ESs), there was a smaller amount of change in attitudes than when intentionally was supported (35 ESs). However, this difference was very small (see Table 1). In order to further evaluate the impact of intentionality on attitude change, the characteristics of the lectures and workshops were evaluated based on direct and indirect approaches (see Table 1). When direct approaches were used (i.e. talking about attitude change directly; 20 ESs), there was slightly more attitude change than with indirect approaches (i.e. increasing teachers' knowledge; 83 ESs) and combinations of direct and indirect approaches (2 ESs). However, direct approaches were not effective when used in the context of asking teachers to reflect on and change their behaviors (6 ESs). Consultations (2 ESs) with teachers that focused on helping them deal with students' misbehavior resulted in less change than lectures that employed direct and indirect approaches.

Intervention Characteristics. Interventions typically involved lecture with or without a component of field experience or another kind of contact with the students or people with disabilities (see Table 1). Other interventions were workshops/seminars, in-service training (courses for practicing teachers), one-to-one consultation, or field experience alone. Workshops and seminars resulted in the most change in attitudes, followed by lectures without a practical or contact component. When the intervention included face-to-face contact without a supporting lecture or consultation, teachers' attitudes changed negatively (1 ES). When teachers had contact with students with disabilities, the attitude change was smaller than when they did not have any contact. This suggests that teachers may have unrealistically high evaluations of students with disabilities when they do not have any experience with them.

When the contact characteristics were evaluated, face-to-face contact with a specified group of students (rather than general classroom) was most effective in changing teachers' attitudes (see Table 1). Contact in the form of videotapes or reading stories was less effective than face-to-face contact. In sum, the results suggest that teachers' attitudes change more when the intervention is a workshop or seminar, or when the field experiences were supported by lectures.

Measurement Characteristics. Self report measures (107 ESs) showed more change than observational measures (7 ESs; see Table 1). When the self-report measure was a student behavior checklist (2 ESs), the effect size (r) was higher. This may be related to the fact that the study that asked teachers to fill out a behavior checklist included an intervention to change students' behaviors as well. Therefore, the change in teachers' ratings may have been a function of the change in student behaviors as well. Within the self-report measures, those that measured teachers' attitudes toward specific students or vignettes of students showed more attitude change than the questionnaires that assessed teachers' attitudes with general statements.

Teachers' Specialization and Status. Special education teachers had more positive attitudes than regular education teachers (see Table 1). The amount of attitude change was higher when the interventions targeted special education teachers than when they aimed to change attitudes of general education teachers. When interventions included general and special education teachers in their sample, the amount of change was smaller than with special education teachers or general education teachers alone. Vocational teachers showed the least amount of change in their attitudes. Also, practicing teachers showed more attitude change than preserving or teacher candidates.

Conclusions and Implications

Given the empirical evidence that teachers' attitudes and behaviors influence successful academic and social-emotional inclusion of students with special needs in general education classrooms, it is important that teachers have positive attitudes and behaviors toward students with disabilities. This is a pressing issue for the ethical treatment of learners (Foucault, 1982, 1988) and for improving teachers' job satisfaction and competence (Kremer-Hayon & Tillema, 1999; Stanovich, 1994).

Teacher education programs strive to prepare teachers for the challenges of working with children with disabilities by increasing their knowledge of subject areas (e.g., math and science) (Tillema, 2000), disabilities (Minner & Prater, 1984), instructional methods (Mergendoller, Maxwell, & Bellisimo, 2000), and improving their attitudes about learners with disabilities (Brownlee & Carrington, 2000; Shechtman, 1994).

The most effective interventions for changing teachers' attitudes toward learners with disabilities are workshops, seminars, and lectures. When lectures are combined with a field experience or another kind of contact, the change in attitudes is less; however, field experiences help teachers to develop realistic expectations and attitudes.

The greatest amount of attitude change is achieved when different components of attitudes are targeted at the same time, rather than separately. Teachers' emotions and behaviors are the hardest to change in isolation. Teachers need support in the form of lectures, workshops, or consultation when they have face-to-face contact with learners with special needs. If they do not have the necessary support, their attitudes become more negative after intervention.

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Table 1. Mean *r* values (the effect size measure) for descriptive and moderator variables

Intervention Characteristics	**Mean *r***	**N**
Workshop/Seminar	0.41	8
Lecture	0.38	19
Face-to-face and feedback	0.34	8
Lecture, face-to-face, stories	0.29	2
In-service training	0.23	6
Workshop and videotape	0.23	5
Lecture and face-to-face	0.23	24
Lecture, community	0.23	10
Lecture and videotape	0.19	8
Lecture and stories	0.15	4
One-to-one consultation	0.13	13
Lecture, face-to-face, videotape	0.04	8
Face-to-face contact	-0.09	1
		116
Specialization of the Teachers	**Mean *r***	**N**
Special and General education contrasted	0.54	5
Special education	0.31	8
General education	0.26	48
Special and General education combined	0.20	29
Unspecified	0.19	25
Vocational teachers	0.06	1
		116
Status of the Teachers	**Mean *r***	**N**
Practicing teachers	0.42	20
Teacher candidates	0.21	96
		116
Type of Disability	**Mean r**	**N**
LD and students without disabilities	0.52	1
Learning Disabilities (LD)	0.38	5
Severe disability	0.37	4
Emotional and behavioral problem	0.34	8
Emotional problems	0.34	2
Other (Ed. Psy. course)	0.30	2
Students with disabilities – general	0.24	69
LD, physical, and developmental disabilities	0.24	2
"Disabled, minority and disadvantaged"	0.19	6
Emotional, physical, developmental disabilities and speech impairment	0.18	6
Attention Deficit/Hyperactivity	0.09	8
Behavioral problems	0.00	2
		115
Lecture Type	**Mean *r***	**N**
Direct approach (about attitudes)	0.28	20
Indirect approach (knowledge)	0.26	83
Direct and indirect	0.24	2
Consultation and student behavior (indirect)	0.17	4
Feedback on teacher's behavior	0.00	6

Contact Type	**Mean *r***	**N**
Face-to-face contact with specific students	0.33	21
(Practice) teaching unspecified students	0.25	18
Observation of students with disabilities	0.23	3
Interviewing community	0.23	10
Watching videotape	0.18	19
Reading stories	0.15	4
Instructor has a disability + videotape	0.10	4
One-to-one contact with one student	0.07	10
Instructor has a disability	-0.09	2
		91
Intentionality	**Mean *r***	**N**
Intentionality supported	0.26	35
Intentionality not supported	0.23	81
		116
Assessment Technique	**Mean *r***	**N**
Behavior checklists about students	0.35	2
Self-report questionnaires about attitudes	0.25	107
Observation of teachers' behavior	0.07	7
		116
Attitude Dimension	**Mean *r***	**N**
Expectations	0.53	2
Emotions and beliefs	0.49	1
Beliefs and social distance	0.39	11
Beliefs	0.25	68
Attributions	0.22	1
General attitudes	0.21	14
Teachers' description of student behaviors	0.15	5
Emotions	0.11	6
Teachers' behaviors	0.11	8
		116
Change	**Mean *r***	**N**
Radical positive change	0.35	30
Normal positive change	0.22	80
No change	0.03	3
Normal flawed change	-0.13	3
		116
Type of Publication	**Mean *r***	**N**
Journal article	0.25	102
Conference paper	0.22	10
Report	0.20	4
		116

Table 2. Interrater agreement for 14 studies (out of 34) and 44 effect sizes (out of 116)

	Percent	Kappa
Definitions		
Type of disability	84	
Attitude dimension	98	0.97
Criteria for positive attitudes	95	
Criteria for negative attitudes	95	
Change	98	0.9
Moderators		
Is intentionality measured?	98	
Is intentionality supported?	84	
Type of intervention	95	
Lecture characteristics	89	
Contact characteristics	91	
Assessment technique	100	1
Specificity of evaluation	98	
Teachers' specialization	89	0.84
Variables Related to Effect Size calculation		
Success direction of the groups	93	
Treatment group sample size	100	1
Control group sample size	100	1
Single group sample size (pre)	93	
Single group sample size (post)	91	
Treatment group mean	98	
Treatment group standard deviation	100	1
Control group mean	98	
Control group standard deviation	100	1
Pre-test mean	95	
Pre-test standard deviation	98	
Post-test mean	95	
Post-test standard deviation	98	
T value	100	1
F value	100	1
Chi Square value	100	1
Agreement Mean Value	96	0.97

Table 3. Evaluation of positive and negative attitudes that are investigated in the studies

Positive Attitudes	Negative Attitudes	Mean *r*	N
Higher expectations	Lower expectations	0.53	2
Less social distance and general education placement	More social distance and special education placement	0.36	14
Seeing behaviors of students as less severe and positive interactions	Seeing behaviors of students as more sever and negative interactions	0.34	10
Favoring general classroom placements	Favoring special classroom placements	0.26	40
Using less negative/more positive adjectives in describing students	Using more negative/less positive adjectives in describing students	0.22	12
Agreement with clinicians in ranking behavioral problems	Disagreement with clinicians in ranking of behavioral problems	0.19	3
Seeing disability similar to ability	Seeing disability different than ability	0.16	9
Positive interactions and beliefs	Negative interactions and beliefs	0.14	17
General (higher scores on the measure)	General (lower scores on the measure)	0.06	7
			116

Appendix A. List of studies included in the meta-analysis and their characteristics

First Author	Pub. year	Pub. type	Teachers' status	Teachers' specialization	N	# of ESs	Intervention	Disability	Lecture	Contact
Beattie, JR	1997	Article	Teacher candidates	Special and General combined	433	8	Lecture and contact	Exceptional Children-General	Indirect approach	Videotape
Brooks, BL	1971	Article	Practicing teachers	General	30	3	Workshop/ Seminar	Exceptional Children-General	Indirect approach	Observation
Campbell, J.	2004	Article	Teacher candidates	Unspecified	274	10	Lecture and contact	Exceptional Children-General	Indirect approach	Interviewing community
Cardona, C	1997	Conference paper	Practicing teachers	General	22	2	One-to-one consultation	Learning Disabilities	Indirect approach	Contact with a group of specific students
Dailey, IL	1981	Article	Teacher candidates	Special	52	8	Lecture and contact	Emotional problems, physical disability, developmental disabilities, speech impairment	Indirect approach	Videotape
Dickens-Smith, M	1995	Report	Practicing teachers	Special	200	2	Workshop/ Seminar	Exceptional Children-General	Indirect approach	Contact with a group of specific students
Drake, GA	1977	Conference Paper	Teacher candidates	Special and General combined	86	1	Lecture	Exceptional Children-General	Indirect approach	Not applicable
Dunson, RM	1994	Article	Teacher candidates	General	20	10	One-to-one consultation	Attention Deficit/Hyperactivity Disorder	Indirect approach	One-to-one contact with one child
Dworkin, NE	1979	Article	Practicing teachers	General	32	2	Workshop/ Seminar	Learning Disabilities	Indirect approach	Contact with a group of specific students
Eichinger, J	1991	Article	Teacher candidates	Special and General contrasted	102	2	Lecture and contact	Severe Disability	Direct approach	Practice teaching
Hastings, RP	1996	Article	Teacher candidate	Unspecified	100	2	Lecture	Emotional and behavioral problems	Indirect approach	Contact with a group of specific students

First Author	Pub. year	Pub. type	Teachers' status	Teachers' specialization	N	# of ESs	Intervention	Disability	Lecture	Contact
Herr, DE	1979	Article	Teacher candidates	Special and General combined	60	8	Contact and feedback	Disabled, minority and disadvantaged	Direct approach	Contact with a group of specific students
Johnson, AB	1991	Article	Teacher candidates	General	84	6	Lecture and contact	Learning Disabilities	Indirect approach	Contact with a group of specific students
Krause, K	1981	Article	Practicing teachers	Unspecified	76	1	Workshop/ Seminar	Exceptional Learners-General	Indirect approach	Contact with a group of specific

										students
Larrivee, B	2001	Conference paper	Practicing teachers	General	107	3	Workshop/ Seminar	Exceptional Learners-General	Indirect approach	Videotape
Lazar, AL	1973	Article	Practicing teachers	Special	20	2	Lecture	Behavioral problems	Indirect approach	Not applicable
Lewin, P	1983	Article	Teacher candidates	General	39	1	One-to-one consultation	Exceptional Learners-General	Indirect approach	One-to-one contact with one student
Leyser, Y	1985	Article	Teacher candidates	General	253	10	Lecture and contact	Exceptional Learners-General	Indirect approach	Practicing teaching
Leyser, Y	1983	Article	Practicing teachers	General	230	3	Lecture and contact	Exceptional Learners-General	Indirect approach	Practicing teaching
Leyser, Y	1982	Article	Teacher candidates	Special and General contrasted	51	3	Lecture and contact	Exceptional Learners-General	Indirect approach	Practice teaching
Marlowe, M	1997	Article	Teacher candidates	Special	62	2	Lecture and reading stories	Emotional problems	Direct and indirect	Stories
Marlowe, M	1996	Article	Teacher candidates	Special and General combined	38	2	Lecture and reading stories	Exceptional Learners-General	Direct approach	Stories
First Author	**Pub. year**	**Pub. type**	**Teachers' status**	**Teachers' specialization**	**N**	**# of ESs**	**Intervention**	**Disability**	**Lecture**	**Contact**
McGettigan, JF	1985	Article	Teacher candidates	Vocational teachers	80	1	Workshop/ Seminar	Exceptional Learners-General	Indirect approach	Videotape
Parish, TS	1977	Article	Teacher candidates	Special and General contrasted	45	2	Lecture and videotape	Developmental, physical, & learning dis.	Direct and indirect	Videotape
Parish, TS	1982	Article	Teacher candidates	Unspecified	53	5	Workshop/ Seminar	Exceptional Learners-General	Direct approach	Videotape
Pinckney, GA	1962	Article	Teacher candidates	Unspecified	203	3	Lecture	Other	Indirect approach	Not applicable
Sanche, RP	1976	Article	Teacher candidates	General	106	1	Lecture	Exceptional Learners-General	Indirect approach	Not applicable
Shaw, SF	1975	Article	Practicing teachers	General	35	4	Lecture	Exceptional Learners-General	Indirect approach	Not applicable
Siperstein, G	1985	Article	Practicing teachers	General	8	1	One-to-one consultation	Learners with learning dis.	Direct approach	Contact with a group of specific students
Stainback, S	1983	Article	Practicing teachers	Special and Genera; combined	74	4	Workshop/ Seminar	Severe disability	Indirect approach	Not applicable
Stainback, S	1982	Article	Teacher candidates	General	31	1	Lecture	Exceptional Learners-General	Indirect approach	Not applicable
Tait, K	2000	Article	Teacher candidates	General	480	3	Lecture and contact	Exceptional Learners-General	Indirect approach	No information
Wasicsko,	1981	Article	Teacher	Unspecified	28	4	Lecture and	Exceptional	Indirect	Practice

MM			candidates				contact	Learners-General	approach	teaching
Winzer, M	1984	Article	Teacher candidates	Special and General combined	75	1	Lecture	Exceptional Learners-General	Indirect approach	Not applicable