

Attitudes of Preservice Teachers Enrolled in an Infusion Preparation Program regarding Planning and Accommodations for Included Students with Mental Retardation

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Abstract: The beliefs, skills, and intended practices of general ($n = 34$) and special education ($n = 23$) preservice teachers regarding planning and making accommodations for included students with mental retardation were investigated. Participants were drawn from teacher preparation programs that infused content related to inclusion into pre-existing courses. Results of a repeated-measures ANOVA indicated a significant main effect of teacher type—that preservice special educators rated their beliefs, skills, and intended practices significantly higher than their general education counterparts. A significant main effect of attitudinal category showed that participants also rated their beliefs and intended practices significantly higher than their skills. A significant interaction effect was evidenced due to the varying discrepancies between general and special educators' ratings of their beliefs, skills, and intended practices. Specifically, general educators' ratings were further below those of special educators in skills and closest in the area of beliefs. Findings suggest that this infusion teacher preparation program was more effective at generating positive beliefs and intentions than skills, especially among general educators. Implications for teacher preparation and practice are discussed.

The diversity of student characteristics in general education classrooms in the United States has consistently increased in recent years. In particular, the prevalence of inclusive placements for students with mental retardation has been on the rise. For example, the 10 year period from 1990 to 2000 represents an increase from approximately 41,000 to 86,000 children with this disability having spent greater than 79% of the school day in general education settings (U.S. Department of Education, 2002). During this same period the number of children with mental retardation who spent between 40% and 79% of the day in inclusive settings increased by nearly 43,000 students. In contrast, the number of children

with mental retardation who were placed primarily in separate classrooms and facilities (greater than 60% of the day) decreased by approximately 40,000 from 1990 to 2000 (U.S. Department of Education). These data clearly demonstrate the importance of examining teachers' preparedness for addressing the needs of children with disabilities in general education settings.

A great deal of the extant research on inclusion has focused on general educators' attitudes toward the general concept of inclusion (see Scruggs & Mastropieri, 1996 for a review of this literature). However, teachers' attitudes toward inclusion appear to be a multifaceted construct. For example, teachers may believe in a practice associated with effective inclusive instruction, but not actually implement it. Schumm, Vaughn, Gordon, and Rothlein (1994) conducted a study related to this issue that investigated general educators' beliefs, skills, and practices regarding plan-

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ning and adapting their instruction for included students with learning disabilities. Their findings indicated that inclusive teachers reported themselves to practice adaptations and planning techniques significantly less than the degree to which they believed and were skilled in the approaches. As such, it is important to investigate these aspects of teachers' inclusive attitudes (i.e., beliefs, skills, and practices) as distinct constructs.

That teachers believe in, are skilled in, and engage in appropriate planning and adaptations for students with mental retardation appears critical to the educational progress of the increasing numbers of students with this disability who receive their education, partially or wholly, in general education classrooms. It is widely accepted that students with mental retardation require their inclusive teachers to make adaptations and accommodations to typical planning and instruction to meet their unique learning needs (e.g., Westling & Fox, 2000). Practicing teachers have, however, reported a lack of competence and the need for more training in planning and making adaptations for included students with disabilities (Scruggs & Mastropieri, 1996; Wolery, Werts, Caldwell, Snyder, & Lisowski, 1995). One possible explanation for reports of teachers' lack of skill in this regard is that their teacher preparation did not place sufficient emphasis on training in these areas. Indeed, change in teacher education to prepare preservice teachers for the realities of inclusion has been unsatisfactorily slow (Griffin, Jones, & Kilgore, *in press*).

Research has indicated that teachers' attitudes can be influenced by their training experiences. For example, Leyser (1988) successfully increased positive teacher attitudes toward inclusion among 15 general education teachers through an in-service program emphasizing inclusive practices and concepts. Similarly, Hutchinson and Martin (1999) found that a nine-month field based course incorporating discussions of case studies increased understanding of equity issues and developed the expectations among participants that they would adapt their teaching for included students. A significant task for researchers, then, is to determine which approaches to training preservice teachers produce desired attitudes, skills, and practices by

continuing to investigate the degree to which different types of preparation programs are associated with desired inclusive attitudes and aptitudes.

One approach for preparing general educators that has been instituted by many teacher preparation programs has been dubbed a curricular infusion model (see Akasmit, 1990; Cook, 2002; Strawderman & Lindsey, 1995; Voltz, 2003). The infusion approach involves presenting curricular content related to inclusion throughout an existing teacher education program rather than devoting an entire course to the topic. A primary advantage of the model appears to be its ease of implementation; it requires few significant changes to an existing program when new content is introduced (Strawderman & Lindsey). Another reported benefit of the infusion model is that special education issues are presented in unison with other important aspects of teaching, reinforcing the idea that children with disabilities should not be viewed as a separate concern to be dealt with in isolation (Voltz). However, some have expressed concern that curricular content is likely to be presented with inadequate consistency and depth in infused programs (Akasmit; Gay, 1997).

Although the bulk of the research base on inclusive planning and adaptations has focused on general educators (e.g., Schumm et al., 1994), special educators also play a prominent and critical role in planning and providing inclusive education (Fennick & Liddy, 2001). Indeed, a central focus of traditional teacher preparation in special education has been on planning instruction and making instructional adaptations for students with disabilities. Yet, it is only recently that the focus of these procedures has been the inclusive classroom. In order to prepare preservice special educators for inclusive teaching, the special education teacher education program in which we conducted the present study had also adopted an infusion model regarding inclusion. We speculate that many other special education teacher preparation programs have implemented a curricular infusion model for their inclusive content, for many of the same reasons that general education programs have done so. In particular, the interspersing of inclusion issues throughout an existing set of

courses introduces little disruption to the pre-existing program. Thus, it is important to conduct research on the impact of inclusive curricular infusion on preservice teachers in special, as well as general, education teacher preparation programs.

As the trend towards including students with mental retardation shows little sign of abating, the value of ensuring that new teachers are prepared for these contexts is clear. Despite the growing popularity of infusing content related to inclusion into existing teacher preparation coursework, little research has investigated the effectiveness of this approach. As both general and special education teachers are actively involved in planning and making accommodations for students with mental retardation in inclusive classrooms, we chose to study the attitudes (i.e., beliefs, skills, and intended practices) of preservice general and special education teachers who had been trained in infusion teacher preparation programs toward planning and accommodations for included students with mental retardation. As we were unable to identify any research examining this combination of variables, this research study will, we believe, be the first to explore this important set of issues.

Method

Participants

The study sample comprised 57 preservice general and special educators enrolled in separate 4-year teacher preparation programs at a large mid-western university. Participants were in their final semester of undergraduate teacher training. Two comparison groups were formed according to whether students would be entering the teaching field as general ($n = 34$) or special educators ($n = 23$). Although the specific licensures sought by participants varied within comparison groups (e.g., some special education majors sought licensure in mild/moderate disabilities, others in moderate/intensive disabilities; general education majors sought licensure in early childhood, physical, elementary, and secondary education), participants were easily identified and categorized as either general education or special education on the basis of

their degree program and licensure track. Individuals pursuing dual-certification in general and special education concentrations, and/or previously certified teachers, were not included in the study. Demographic information regarding participants' gender, ethnicity, age, and intended teaching area are presented in Table 1.

Program Setting

The special and general education teacher preparation programs existed as largely separate entities in the university setting in which data were collected. Both programs led to a bachelor's degree and state teaching licensure after four years of training. Approximately one-third of program requirements for both groups consisted of coursework in the liberal arts and sciences. In addition, undergraduate education majors devoted at least one-fifth of their training to professional preparation through field experiences and student teaching. With respect to field experiences (including student teaching), placement in inclusive classrooms was encouraged but not mandated or guaranteed. The remaining time was allotted for mastery of the content or specialization area that they would be teaching.

Shared classroom experiences for general and special educators were typically limited to universal liberal arts and science requirements and introductory or foundations coursework (e.g., educational theory/psychology, language and literacy, child development). These courses were most often completed in the early stages of training. In contrast, the majority of programming pertaining to the student's concentration area(s) occurred in the final two years of training, with increasing exposure each year. For example, by their senior year, preservice special educators were typically enrolled only in courses pertaining to special needs populations.

With regard to special education related content, the general education training program was consistent with previous descriptions of infusion models for teacher preparation (see Aksamit, 1990; Cook, 2002; Voltz, 2003). Students were not required to take separate courses in which special education or inclusion was a primary focus. Rather, inclusion

TABLE 1

Characteristics of Preservice General and Special Education Teachers

<i>Characteristic</i>	<i>General Education</i>		<i>Special Education</i>	
	<i>n</i>	<i>P^a</i>	<i>n</i>	<i>P^a</i>
Gender				
Female	25	73.53	18	78.26
Male	9	26.47	5	21.74
Ethnicity ^b				
African American	0		1	04.35
White	33	97.06	22	95.65
Unspecified	1	2.94	0	
Intended Teaching Level				
Elementary	22	64.71	4	17.39
Intermediate	1	2.94	3	13.04
High School	4	11.76	1	4.35
K-12	7	20.59	15	65.22
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Age	23.76	5.91	23.48	3.98
Special Education/Inclusion Courses ^c	1.54	1.71	10.96	4.45

Note. ^a*P* = percent of each comparison group. ^bOnly ethnic categories reported by participants are listed in this table. ^cClasses taken in which special education or inclusion related issues were a major component.

and special education issues were infused into a small number of introductory teacher preparation courses. Participating preservice general educators were enrolled in the final (fourth) year of a requisite series of cumulative seminar courses. It was within these seminar courses, in particular, that content related to special education and inclusive schooling was provided to general educators. Among other course topics infused throughout these seminars were learning theories, diversity awareness, technology use, and historical and current issues in schooling.

Preservice special education students were not required to take a specific course that was uniquely intended to address the issue of inclusion. However, the majority of courses within the special education concentration covered, to varying degrees, issues related to inclusion. The course that focused most extensively on strategies for adapting general education curriculum and teaching methods for inclusive classrooms was the required methods course (which was taught separately for those enrolled in mild/moderate and moderate/intensive licensure tracks). In addition,

the special education participants had taken the first three courses in the required educational seminar series and were enrolled in the fourth seminar alongside their general education counterparts.

Instrumentation

Participants completed a 3-page survey containing demographic questions and a modified version of the Teachers' Beliefs and Attitudes toward Planning for Mainstreamed Students instrument (TBAP) (Schumm et al., 1994). The modified instrument (P-TBAP) contains 30 statements intended to measure preservice teacher attitudes in three areas (attitudinal categories) with respect to 10 effective inclusive classroom practices. Definitions for the attitudinal categories are as follows:

Beliefs – participants' ratings of their belief in the value of planning and making adaptations for included students with mental retardation.

Skills – participants' ratings of their skill in planning and making adaptations for included students with mental retardation.

Intended Practices – participants' ratings of their will (intention) to plan and make adaptations for included students with mental retardation when they become teachers.

Participants rated their level of agreement with each statement using a 4-point Likert-type scale (1 = low agreement, 4 = high agreement). Statements from the P-TBAP instrument are presented in Table 2. In their investigation of general education teachers' attitudes, Schumm et al. (1994) reported that the TBAP demonstrated adequate reliability and validity. The P-TBAP differs from the original scale in two ways. First, the scale was adapted for preservice teachers to reflect intended rather than current practices. Second, each item was changed to refer to "included students with mental retardation," rather than the broader category of "mainstreamed students." Both the original and modified scales were shown to exhibit adequate internal reliability. Analyses of the P-TBAP revealed Cronbach coefficient alphas of 0.82, 0.90, 0.97, and 0.93 for Beliefs, Intended Practices, Skills, and the total scale, respectively.

In regard to validity, Schumm et al. (1994) generated items for the TBAP through a multi-stage procedure consisting of (a) a review of the literature on teacher planning, (b) a survey of teachers' planning practices (Schumm & Vaughn, 1992), and (c) a focus group interview with teachers. In addition, the content validity of the scale was assessed through an analysis of 25 classroom teachers' responses to open-ended questions pertaining to items on the instrument. Schumm et al. then coded, analyzed, and compared the teachers' responses to potential instrument items. Although the P-TBAP differs slightly from the original instrument with respect to the population of students investigated, the planning strategies and adaptations depicted on the scale are consistent with the literature on effective inclusive practices for students with mental retardation (e.g., Westling & Fox, 2000). Thus, the modified instrument appears to be valid for this population as well.

Procedure

The entire survey, comprising the P-TBAP instrument and demographic questions, takes approximately 15 minutes to complete. All surveys were administered by one of the authors over six sessions during the initial 20 minutes of university courses in which participants were enrolled. Directions for completion of the survey were scripted to ensure uniformity of administration. During each phase of data collection students were read a general description of the study and instructed that participation was voluntary and anonymous. A total of 72 students completed the survey (response rate = 96%), of which 57 (79% of those surveyed) met the criteria for participation. The majority of individuals who completed the survey but were not included in the study were graduate students in special education classes that were attended by both undergraduate and master's level students. Three sessions of data collection were conducted for each comparison group during courses for which the majority of students were in their final year of training. Specific classes were randomly selected for participation from identified clusters of courses in which the target groups were enrolled. The researchers were not involved in instruction for any of the courses in which data were collected.

Research Design and Analysis

The investigation employed a causal comparative research design to evaluate teachers' ratings of their beliefs, intended practices, and skills regarding planning and making accommodations for included students with mental retardation. Mean ratings of the 10 effective practices for each attitudinal category (i.e., beliefs, intended practices, and skills) served as the unit of analysis in a repeated-measures ANOVA in which attitudinal category was the within-subjects factor and teacher type (general and special education preservice teachers) was the between-subjects factor. If the main effect of attitudinal category or the teacher-type by attitudinal category interaction effect were statistically significant, within-subject contrasts were conducted to examine between which levels of the variables the dif-

TABLE 2**P-TBAP Statements Rated by Participants**

1. I BELIEVE that information sources such as the student's IEP and psychological reports are useful in planning for included students with mental retardation.
 2. I BELIEVE that long-range instructional planning (e.g., yearly, semester, monthly) needs to be adapted for included students with mental retardation.
 3. I BELIEVE that short-range planning (e.g., daily, weekly) needs to be adapted for included students with mental retardation.
 4. I BELIEVE that varying group composition (e.g., small group, large group, whole class) is important for included students with mental retardation.
 5. I BELIEVE that course content needs to be adapted for included students with mental retardation.
 6. I BELIEVE that the time and the pace of a lesson must be adjusted to meet the needs of included students with mental retardation.
 7. I BELIEVE that the tests I design for my general education students need to be adapted for included students with mental retardation.
 8. I BELIEVE that frequent checks with individual students are an effective way to monitor the progress of included students with mental retardation.
 9. I BELIEVE that providing individualized instruction according to the students' needs helps included students with mental retardation.
 10. I BELIEVE that using individualized (or different) criteria for grading assignments and tests is important when evaluating included students with mental retardation.
 11. As a teacher, I WILL use information sources such as the student's IEP to plan for included students with mental retardation in my classroom.
 12. As a teacher, I WILL adapt my long-range instructional planning for included students with mental retardation.
 13. As a teacher, I WILL adapt daily planning for included students with mental retardation.
 14. As a teacher, I WILL vary group composition for included students with mental retardation.
 15. As a teacher, I WILL adapt course content for included students with mental retardation.
 16. As a teacher, I WILL adjust the time and pace of a lesson for included students with mental retardation.
 17. As a teacher, I WILL adapt tests for my included students with mental retardation.
 18. As a teacher, I WILL use frequent checks with the individual students to monitor the progress of included students with mental retardation.
 19. As a teacher, I WILL provide individualized instruction for included students with mental retardation.
 20. As a teacher, I WILL use individualized/different criteria when evaluating the assignments and tests of included students with mental retardation.
 21. I am SKILLED at using a variety of information sources (e.g., IEPs, parents, student feedback) to assist me in planning for my included students with mental retardation.
 22. I am SKILLED at designing long-range plans that meet the needs of my included students with mental retardation.
 23. I am SKILLED at appropriately pacing and timing the presentation of content material for included students with mental retardation.
 24. I am SKILLED at grouping for instruction so that the needs of included students with mental retardation may be met.
 25. I am SKILLED at designing tests that effectively monitor progress of included students with mental retardation.
 26. I am SKILLED at using individualized/different criteria when evaluating the assignments and tests of students with mental retardation.
 27. I am SKILLED at designing short-range plans that meet the needs of included students with mental retardation.
 28. I am SKILLED at adapting course content to meet the needs of included students with mental retardation.
 29. I am SKILLED at using frequent checks to monitor the progress of included students with mental retardation.
 30. I am SKILLED at providing individualized instruction for included students with mental retardation.
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TABLE 3

Means and Standard Deviations for Group Ratings of Beliefs, Intended Practices, and Skills

	<i>Beliefs</i>		<i>Intended Practices</i>		<i>Skills</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
General Educators	3.25	0.54	3.15	0.63	1.72	0.85
Special Educators	3.64	0.34	3.73	0.36	2.81	0.66

ferences or interactions existed. A conventional alpha level of .05 was used to determine statistical significance for all analyses.

Results

Means and standard deviations of attitudinal category ratings for comparison groups are presented in Table 3. A repeated measures ANOVA was performed with attitudinal category as the within subjects factor and teacher type as the between subjects factor (special and general education preservice teachers in their final year of training). A significant main effect of teacher type was found, $F(1, 55) = 33.34, p < .001, \eta^2 = .38$, where future special educators rated their beliefs, skills, and intended practices higher than those of preservice general educators. A significant main effect of attitudinal category was also found, $F(2, 110) = 96.79, p < .001, \eta^2 = .64$, indicating that significant differences existed in participants' self-ratings regarding their beliefs, intended practices, and skills related to effective planning and accommodations for included students with mental retardation. Within-subjects contrasts indicated that skills were rated significantly lower than both beliefs, $F(1, 55) = 118.00, p < .001$, and intended practices, $F(1, 55) = 93.79, p < .001$. No significant differences were found in preservice educators' beliefs and intended practices ratings, $F(1, 55) = .004, p = .95$. A significant attitudinal category-by-teacher type interaction was also found, $F(2, 110) = 6.96, p = .001, \eta^2 = .11$. Within subjects contrasts indicated that significant teacher type-by-attitudinal category interactions existed between beliefs and intended practices ($F(1, 55) = 4.56, p = .04$), beliefs and skills ($F(1, 55) = 10.59, p = .002$), and intended practices and skills ($F(1, 55) =$

4.40, $p = .04$). These significant interactions can be attributed to the variability in differences between general and special educators across the attitudinal categories. That is, general educators' mean ratings related to beliefs were 0.39 lower than special educators', 0.58 lower for ratings of intended practice, and 1.09 lower than special educators in regard to skill ratings.

Discussion

Across all attitudinal categories (i.e., beliefs, skills, and intended practices), future special educators' ratings regarding planning and accommodations for included students with mental retardation were higher than those of preservice general educators. Ratings for all participants were significantly higher for beliefs and intended practices than skills. Furthermore, the disparity between special and general education preservice teachers varied significantly across attitudinal categories. It should be noted that participants' ratings were generally positive—above the theoretical neutral rating of 2.5 in all but one instance. The one exception was that general educators reported themselves to be, on the whole, less than moderately skilled related to survey items. Interpretations and implications of these findings as well as limitations and suggestions for future research are discussed below.

Explanation and Interpretation of Findings

Findings indicate that participants, future general and special educators nearing completion of teacher preparation programs that infused content related to inclusion, believe planning and instruction should be adapted

for students with mental retardation, intend on practicing these adaptations, yet do not feel commensurately skilled in using these strategies. The positive beliefs of participants regarding the importance of effectively planning and adapting their instruction for included students with mental retardation may be an outcome of a larger trend among educators in recognizing the benefits of inclusion as inclusive placements become more commonplace (Scruggs & Mastropieri, 1996). An alternative explanation for participants' positive beliefs may be their lack of professional experience. Given that these undergraduate students have not yet experienced the demands of working professionally in heterogeneous classrooms first hand, it may be easier for them to maintain positive beliefs about the value of inclusive practices. In fact, some evidence suggests a negative correlation between years of teaching and support for inclusion (Soodak, Podell, & Lehman, 1998). Another possible reason for preservice teachers' positive beliefs and intentions is that the infused content related to inclusion that they received in both teacher preparation programs was sufficient to make participants feel that engaging in effective inclusive practices was a good idea and something that they intended to do.

However, it appears that the infused training did not provide these future teachers with skills commensurate with their beliefs and intentions. It may be that infusing content related to inclusion does not allow sufficient time for the intensive training needed to develop inclusive teaching skills. It is interesting to note that special education preservice teachers—who were enrolled in a program that infused content related to inclusion more pervasively than the program in which general education participants were involved (general educators reported taking 1.5 courses on average in which inclusion or special education content was a major focus, as opposed to approximately 11 courses for special educators)—reported relatively higher skills (although still not as high as their reported beliefs or intentions). Although participants' relatively low level of skills may be due to their infused teacher preparation, it is also possible that teacher preparation in general does a better job of developing beliefs and intentions than producing actual skills; or that partici-

pants felt more skilled in planning and adapting instruction for students with disabilities other than mental retardation (e.g., learning disabilities).

Findings of this study may appear somewhat inconsistent with those of Schumm et al. (1994) that practicing teachers believed in the value of planning and making adaptations, perceived themselves as skilled in these areas, but confessed that they did not practice these adaptations. Although preservice teachers in the present study held similarly positive beliefs, they reported possessing lower levels of skills, but, nonetheless, intended to implement these practices when they became teachers. These discrepant findings may be due to the lack of relevant experience of preservice teachers. Teachers who have worked in inclusive classrooms may simply be more aware of the barriers (such as lack of resources, time, and support) encountered in adapting instruction and planning for included students. Intended practices instead appear to be a function of beliefs for preservice teachers, unmediated by their perceived skills. In other words, it may be difficult for these future teachers to separate the idea that something is the right thing to do from the reality that they do not have the requisite skills to implement the techniques.

Prospective general educators' ratings across categories were pervasively lower than those of special educators. One logical interpretation of these between group differences is that they are a function of the teacher preparation programs in which participants were enrolled. Although both programs infused content related to inclusion, the special education program did so in a prominent manner in many courses. Inclusion was a central topic in most, if not all, special education courses. For example, the introduction to exceptionalities course, the course on professional collaboration, and the special education instructional methods courses all had multiple class sessions specifically devoted to inclusion. In contrast, although instructors were encouraged to relate course content to inclusion whenever possible in the general education preparation program, inclusion was a prominent focus in only one seminar course. It is not surprising, then, that Cook (2002) reported that many preservice general educa-

tion teachers previously enrolled in this same program perceived that the amount of content and time dedicated to inclusion and students with disabilities was insufficient. It is also possible that differences other than the degree to which inclusion content was infused in the teacher preparation programs contributed to the attitudinal discrepancies between preservice general and special educators. For example, special educators undoubtedly were exposed to more coursework about and involved in more field work with students with mental retardation, which could have impacted their relevant beliefs, intentions, and skills toward these students. Preservice special educators may also have had experiences and developed dispositions before entering their teacher preparation program that predisposed them to obtain high beliefs and skills related to the inclusion of students with mental retardation.

In regard to the significant interaction effect, in which differences in ratings between general and special education preservice teachers varied across the three attitudinal categories, it is noteworthy that the gap between the two groups widens as the prompts become more practical or concrete. That is, the ratings provided by the two groups of participants were most similar on beliefs—a construct that reflects participants' convictions and is not bound by what can actually be accomplished. The gap in ratings expanded when participants rated their intended practices, which asks them to speculate about what will happen in the real world; but in a future that participants may have idealized or not known enough about to realistically appraise. The most concrete category of questions, regarding their actual skills, is the area in which the two groups are the most discrepant. We speculate that the positive relation between rating disparities and the concreteness of the attitudinal category may have been due to (a) the differences in the degree to which inclusion was infused in the two programs (i.e., greater infused content results in greater concrete skills, whereas even a minimal amount of infused content may be sufficient for producing positive beliefs), (b) the general and special education nature of the two programs (i.e., perhaps the focus on individualizing instruction in special education teacher preparation,

regardless of the degree to which inclusion content is infused in the curriculum, is responsible for this interaction effect), or (c) both.

Implications and Recommendations

That participating preservice teachers appear to hold positive beliefs and intentions regarding appropriate planning and instructional adaptations for included students with mental retardation is an undeniably positive finding and suggests that infused teacher preparation programs can accomplish these important goals for both general and special educators. Believing that these practices are important and intending to implement them likely predisposes teachers to actually practicing the techniques and overcoming the barriers often encountered in applying effective practices. However, positive beliefs and intentions are not sufficient for the effective application of effective instructional practices. Teachers certainly have to be skilled in a technique to use it correctly. Given their relatively low skills ratings, it seems highly unlikely that these teachers will begin their careers using effective planning and instructional adaptations for included students with mental retardation, regardless of their beliefs and intentions. Teachers not engaging in appropriate planning and instructional adaptations have obvious negative implications for the educational opportunities and outcomes of the increasing number of students with mental retardation included in general education classes. The lack of skills appears especially problematic for general educators, who had rated their skills much lower than special education participants and often find themselves having primary or even sole responsibility for instructing included students with disabilities.

Although this study does not address what changes in teacher education programs might result in higher skill levels, it is interesting to note that special education teachers reported skill levels that were above a theoretical neutral rating of 2.5 and were markedly higher than those of their general education counterparts. So, it seems that infused teacher preparation programs can be somewhat successful in engendering adequate skills when a great deal of content related to inclusion is

presented throughout the curriculum and when the infused content is integrally tied to the focus of the program (as inclusion is to special education). As such, if it is to produce teachers who are at least moderately skilled in practicing what they believe in and intend to do regarding the inclusion of students with mental retardation, we speculate that the general education teacher preparation program may need to (a) increase the frequency and intensity that content related to inclusion is presented and (b) communicate that being skilled in inclusion is a fundamental aspect of being a general education teacher. Alternatively, neither program produced future teachers with skills equal to their beliefs and intentions. It may be that, as opposed to infused content, specific coursework devoted to inclusion and linked to high quality field experiences is necessary to generate high levels of inclusive teaching skills such as appropriate planning and instructional adaptations.

Limitations and Suggestions for Future Research

The self-reported nature of participants' ratings poses an important limitation to these findings. It is possible that participants did not accurately perceive their own skills, for example, or that they may have reported what they deemed to be socially desirable responses. The limited nature of the sample poses another noteworthy limitation. Because participants were drawn from only two teacher preparation programs at a single university, results cannot be generalized to other teacher preparation programs that infuse content related to inclusion. It is also important not to generalize results beyond participants' beliefs, intentions, and skills related to planning and making adaptations for included students with mental retardation. It is possible that these future teachers felt more skilled working with, for example, students with learning disabilities or that they intended to practice these techniques less with, for example, students with autism.

Future research could compare the degree to which these findings hold across other infused teacher preparation programs, and if the degree to which inclusion content is infused systematically varies with future teachers' beliefs, intentions, and skills. Future re-

search should also seek to broaden the sample to include participants from more diverse backgrounds. In addition, future researchers could compare educators' beliefs, practices, and skills regarding planning and adapting instruction for students with different disabilities. Ultimately, experimental research is necessary to determine what approach to teacher preparation produces teachers with the highest beliefs, intended practices, and skills.

Conclusion

Fifty-seven future general and special education teachers rated their beliefs, intentions, and skills related to planning and making accommodations for included students with mental retardation. Participants were nearing completion of separate teacher preparation programs that infused content related to inclusion into pre-existing courses. Results indicated that preservice special educators rated their beliefs, skills, and intended practices significantly higher than general educators; across groups, participants rated their beliefs and intended practices significantly higher than their skills; and discrepancies varied significantly between general and special educators' ratings of their beliefs, skills, and intended practices—with skills being the category on which the two groups differed most. Important limitations notwithstanding, we conjecture that infusing content related to inclusion into pre-existing coursework, rather than devoting one or more entire courses to the topic, may preclude most prospective teachers from developing high levels of skills in this area. Conversely, infused instruction, even when occurring infrequently (i.e., in one seminar course), appears to be sufficient to engender positive beliefs and intentions.

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