

*Pre-service Teacher Self-Efficacy for Teaching Students with Disabilities:
What Knowledge Matters?*

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Abstract

The relation between items assessing knowledge about educating students with disabilities and the Tschannen-Moran and Hoy's Teachers' Sense of Efficacy Scale (TSES; 2001) was explored for 140 preservice, general education teachers using biserial correlation coefficients and a multiple regression equation. From the data collected, 8 correlations were found to be significant using Connor's (n.d.) criteria and the stepwise multiple regression model identified 3 significant predictors of teacher efficacy. Of the items that entered into the multiple regression, the first item assessed the definition of RtI, the second understanding of intellectual disability, and the third collaborative teaching. These 3 items accounted for approximately 8.6% of the variance in the teacher sense of efficacy score; and, thus, may be important contributors to teacher self-efficacy.

Key words: Teacher self-efficacy; preservice teachers; general education; special education

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An educator's performance in the classroom is impacted by a variety of factors; among them are teacher self-efficacy and knowledge (Austin, 2013; McCoy, 2012). This paper examines the relations between these two constructs; specifically, the relation of knowledge about teaching students with disabilities to teacher self-efficacy and describe their relevance to preservice teachers.

Teacher Self-Efficacy and Performance

Teacher self-efficacy, defined as a teacher's belief in his/her ability to help students learn in a given situation (Skaalvik & Skaalvik, 2007), is a subcategory of self-efficacy – a concept which was first utilized by Bandura (2006) to refer to beliefs in one's capabilities to perform the action(s) required to produce given results. According to some experts (e.g., Woolfolk & Hoy, 1990), two constructs comprise teacher self-efficacy: 1) teaching self-efficacy and 2) personal

efficacy. Teaching self-efficacy is defined as the belief that teachers can affect the learning of students, while personal efficacy is teachers' confidence in their own teaching. The former construct refers to the extent to which teachers believe they are limited by external factors, and the latter construct refers to the extent to which teachers believe they are limited by internal factors.

Strong teacher self-efficacy has been found to be an important characteristic of successful teachers in some studies (e.g., Thomas, 2013). Teachers with higher reported levels of self-efficacy provide their students with more feedback and instruction than teachers with lower levels of reported self-efficacy (Caprara, Barbaranelli, Steca, & Malone, 2006; Gibson & Demo, 1984). Educators with high levels of teacher self-efficacy set loftier goals for their student and met performance goals more often than their peers (Rose, 1995), and teachers with high self-efficacy problem solve more frequently than teachers with low self-efficacy (Lee, Patterson, & Vega, 2011). In addition, teachers are less likely to experience "burnout" (i.e., an increased feeling of emotional exhaustion) if they have high levels of self-efficacy (Hastings & Brown, 2002; Skaalvik & Skaalvik, 2007). Duffin, French, and Patrick (2012) reported a relation between teacher efficacy and a variety of variables that contribute to positive outcomes for teachers and students. Moreover, teachers with high levels of self-efficacy are perceived as more competent than teachers with low levels of self-efficacy (Holzberger, Philipp, & Kunter, 2013).

Teacher Self-Efficacy and Knowledge

Research suggesting a link between teacher self-efficacy and knowledge about disabilities has shown data where in-service teachers tend to believe that they are better able to help students learn if they are well-informed about disabilities (Brown, Welsh, Hill, & Cipko, 2008; Brownell & Pajares, 1999; Conners, 2008; Cook, 2002; Dielmann, 2006; Hoover, 2010; Kim, 2011; Leader-Janssen & Rankin-Erickson, 2013; Lee, Patterson, & Vega, 2011; Peebles & Mendaglio, 2014; Walls, 2008). This relation may be due to the federal special education law of the United States, the Education for All Handicapped Children's Act (PL 94-142, 1975). PL 94-142 stipulated that students with disabilities be educated in the least restrictive environment (LRE) that can reasonably meet their needs. With subsequent reauthorization of the special education law, renamed the Individuals with Disabilities Education Act (IDEA; 1990; 1997; 2004), school officials have increasingly become obligated to place students in LREs and, therefore, have assigned an increasing number of students to general education classrooms for at least some portion of the school day. According to the 2001 Study of Personnel Needs in Special Education (SPeNSE), 96% of general educators have taught students with disabilities. The U.S. Department of Education (2015) provides support for this finding; the Department reported that 61.1% of all students with disabilities receive instruction in a general education classroom for most (80% or more) of the school day. Consequently, teachers are increasingly expected to competently instruct general education and special education students. And, apparently this climate of emphasis on inclusion and collaboration between general educators and special educators requires all teachers to be knowledgeable about disabilities in order to develop a sense of teacher efficacy and, thus, perform competently in the classroom. For example, Hoover (2010) concluded that general education teachers' sense of efficacy decreased as a result of a lack of knowledge about teaching students with learning disabilities. Conners (2008) concluded that 30 "expert" middle school special education teachers in a large suburban school district believed knowledge about disabilities leads to a high sense of teacher self-efficacy. Similarly, Dielmann

(2006) reported that elementary school teachers tended to report a high degree of teacher self-efficacy and willingness to work with children with Attention-Deficient/Hyperactivity Disorder when they were knowledgeable about disabilities. Further, general education teachers reported that their levels of teacher self-efficacy were high after receiving instruction in educating students with disabilities. Although these results were found primarily for general education teachers, some studies have generated similar results for special education teachers. In addition, Lee, Patterson, and Vega (2011) found a positive relation between teacher self-efficacy and perceived content knowledge and skills

In contrast to the findings of studies that have established a link between knowledge and teacher self-efficacy, Fives (2004) found that self-efficacy and demonstrated knowledge were negatively correlated among experienced teachers. In addition, Frank and Vaden (2013) found teacher self-efficacy was not associated with RtI knowledge and skills.

Preservice Teachers' Self-Efficacy and Knowledge

Researchers have found some evidence that *preservice* teachers have higher self-efficacy when they have knowledge about disabilities. For instance, Cook (2002) found that teacher self-efficacy is perceived by undergraduate, preservice general educators to be associated with knowledge about disabilities; preservice teachers believed that they were better able to help students learn if they were well-informed about disabilities. Similarly, preservice teachers in early childhood teacher education preparation tracks with more knowledge about disabilities had greater levels of teaching self-efficacy than peers with minimal knowledge (Walls, 2008). In addition, preservice educators indicated higher levels of teacher self-efficacy when teacher preparation programs included instruction in educating students with disabilities (Brown, Welsh, Hill, & Cipko, 2008). Kim (2011) found that self-efficacy was positively related to meta-cognitive knowledge among preservice teachers. Furthermore, survey results suggest that the self-efficacy of preservice teachers increased after completing an inclusion course and field experience (Peebles & Mendaglio, 2014). Finally, preservice teachers enrolled in a reading course reported overall higher levels of self-efficacy for teaching reading than did participants enrolled in other education courses (Leader-Janssen & Rankin-Erickson, 2013), suggesting that knowledge for teaching reading increased self-efficacy.

On the other hand, Bowlin (2012) found that preservice teachers' self-efficacy did not correlate significantly with their knowledge of legal issues, disability characteristics, and instructional strategies. Shillingford and Karlin (2014) found similar results; they found that undergraduate general education and special education preservice teachers' knowledge of emotional and behavioral disorders was not correlated with teacher self-efficacy. Finally, knowledge of teaching students with disabilities did not correlate significantly with teacher self-efficacy among students enrolled in a graduate-level introductory special education class (Martinez, 2003).

Summary

Although much of the literature supports a positive relation between teacher self-efficacy and knowledge, the literature is inconclusive. Perhaps the positive relation has been inconsistent because knowledge of certain content may relate to self-efficacy more than knowledge of other content. Consequently, we examined the impact of knowledge about educating students with disabilities on teacher self-efficacy among *preservice* teachers at an item level. It is important to

explore these relations because our current educational climate emphasizes inclusion and collaboration between general educators and special educators, requiring all teachers to be prepared to teach students with disabilities in order to perform competently in the classroom.

Research Questions

The research questions that guided this study were as follows:

1. Of the 30 items [from three broad categories—a) legal issues, b) disability awareness, and c) instructional strategies] designed to assess knowledge of teaching students with disabilities, which items, if any, are significantly correlated with teacher self-efficacy for pre-service general education students?
2. Of the 30 knowledge items that significantly correlate with teacher self-efficacy, which items, if any, significantly predict teacher self-efficacy within a multiple regression context, and to what extent?
3. Of the 30 knowledge items significantly correlated with teacher self-efficacy, what is the mean teacher self-efficacy score for those who answered the item correctly versus those who answered incorrectly?

Method

The aforementioned research questions were examined by giving participants measures of 1) self-efficacy and 2) knowledge of teaching students with disabilities. The participants and measures used are described in detail below.

Participants

Participants were 140 general education, preservice teachers between the ages of 20 and 53 ($M = 23.17$, $SD = 4.95$) from an introductory special education course at a large southeastern university. The preservice teachers were recruited from this course because it is a requirement for all teacher education students pursuing a licensure in teaching. The areas of preparation were as follows: Early Childhood: 5.7% ($n = 8$); Elementary: 47.9% ($n = 67$); Middle Grades: 41.4% ($n = 7$), Secondary: 41.4% ($n = 58$); 20.7% ($n = 29$) identified as males, 79.3% ($n = 111$) as females. The racial breakdown was 2.1% African American, 94.3% Caucasian, .7% Hispanic, .7% Native Indian, .7% Asian American, and .7% Motswana. Most of the participants (52.9%) reported having no prior experience teaching students with disabilities. Anonymity was preserved by assigning each participating preservice teacher a number during the assessment and all other university IRB guidelines were observed. In addition, arrangements for data storage and consent for participation were confirmed prior to data collection.

Instruments

Participants responded to a survey that incorporated demographic information, knowledge questions (i.e., law, disability characteristics, and teaching strategies) and the short version of Tschannen-Moran and Hoy's Teachers' Sense of Efficacy Scale (TSES; 2001). The knowledge measure consisted of 30 multiple choice questions taken from the test bank of Mastropieri and Scruggs' *The inclusive classroom: Strategies for effective differentiated instruction, 4th ed*

(2010). The 30 items were chosen based upon review by Bowlin (2012). In some cases, the questions and answer options were slightly modified by Bowlin and a professor in special education with expertise in test construction to ensure adherence to sound test construction principles (e.g., to ensure that the correct response would not be the longest; to avoid responses such as “A and B”; to ensure that all options were plausible, etc.) (Payne, 2003). Initially, internal consistency for the 30 item Knowledge scale ($\alpha = 0.47$) for this sample is lower than recommended by most experts, even for research purposes (Salvia, Ysseldyke, & Bolt, 2013). However, the focus of this study is not on the entire scale but rather at the item level.

Self-efficacy was measured with the Teachers’ Sense of Efficacy Scale (TSES) Short Version. This measure consists of 12 items that measure respondents’ beliefs in their capability to make a difference in student learning and to effectively reach students who are challenging to teach or unmotivated. Each of the 12 items is scored on a scale from 1 (None) to 9 (A great deal) with the middle item (5) being (Some influence). In a series of three studies, Tschannen-Moran and Hoy (2001) found that the TSES has adequate reliability. Reliability estimates for the measure’s three subscales – efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement – were .91, .90, and .87, respectively. Construct validity was established as well; the TSES correlated significantly with two items measuring self-efficacy developed by the RAND Corporation ($r = .18$ and $.52, p < 0.01$). TSES scores also correlated significantly with the personal teaching efficacy ($r = .61, p < .01$) factor of Hoy and Woolfolk’s (1993) adaptation of Gibson and Dembo’s (1984) Teacher Efficacy Scale (TES). For this sample, the alpha coefficient for the TSES = .92.

Results

Biserial correlation coefficients were calculated between individual knowledge items and the Teacher Sense of Efficacy Scale. Correlations ranged from .00 to .20. Although these values are modest, they are to be expected given the nature of data (i.e., coefficients based on single items). Eight of the biserial correlations were significant using Connor’s (n.d.) criteria for retaining or rejecting test items based on biserial correlations.

To further determine the most relevant items, a stepwise multiple regression analysis of the aforementioned eight questions with the TSES score as the criterion variable was conducted. According to the multiple regression model, the three most powerful knowledge items explained 8.6% of the variation in teacher efficacy ($F(3,139) = 5.344, p = .002, R^2 = .086$; see Table 1, p. 10).

Table 1

Stepwise Multiple Regression Analysis of the Significant Impact of Knowledge Items on Teacher Sense of Efficacy Scale

Knowledge Item	R^2	Std β	F	p
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Knowledge about RtI	.044	.209	6.319	.013
Collaborative teaching	.078	.186	5.824	.004
Definition of intellectual disabilities	.105	.165	5.344	.002

Note. $N = 140$

The three items with the most predictive power assessed knowledge about response to intervention (RtI; $\beta = .705, p = .005$), the definition of intellectual disabilities ($\beta = .547, p = .029$), and collaborative teaching ($\beta = .433, p = .044$; see Table 2, p. 11). The remaining five items (that did not add significantly to the multiple regression prediction) addressed provisions of the Individuals with Disabilities Education Act (IDEA; $\beta = .155, p = .058$), knowledge of nondiscriminatory assessment ($\beta = .113, p = .168$), examples of high incidence disabilities ($\beta = .107, p = .194$), examples of low incidence disabilities ($\beta = -.135, p = .101$), and the definition of a functional assessment (A-B-C) chart ($\beta = .099, p = .227$). These results suggest that certain types of knowledge impact teacher efficacy more powerfully than other types.

Though only eight of the 30 original items assessing knowledge of disabilities correlated significantly with the TSES score, participants who passed the item as a group generally scored higher on the TSES than those who incorrectly answered the items. Mean TSES scores for those who answered correctly versus incorrectly each of the eight knowledge items are presented in Table 3 (p. 12).

Table 2

*Three Knowledge Items and their Correlations with the Teacher Sense of Efficacy Scale (TSES) Score**

Item	TSES
Working jointly with others and sharing in goal setting, problem solving, and goal achievement are all hallmarks of what process?	.156
In response to the passage of the 2004 amendments of IDEA federal funds were provided for early intervention services to students who were experiencing difficulty in school but who had not been referred for special education. These services are delivered in three tiers and are part of what procedures?	.209
Which of the following is the currently accepted term for what used to be referred to as 'mental retardation'?	.173

Note. All correlations significant at $p < .01$. $N = 140$

Table 3
Mean Teacher Sense of Efficacy Scale (TSES) for Participants who Passed and Did Not Pass the Item

Content Knowledge Item	Mean TSES Score for Participants Passing Item	Mean TSES Score for Participants Not Passing Item
Collaborative Teaching	8.1214	7.7121
RtI	8.1256	7.4896
Intellectual Disability	8.1193	7.5938
IDEA	8.1178	7.5476
Nondiscriminatory Assessment	8.1048	7.5625
High Incidence Disabilities	8.1497	7.8854
Low Incidence Disabilities	7.9707	8.2222
Functional Assessment Charts	8.1122	7.6548

Note. $N = 140$

Discussion

In this study, 8 of 30 items from a knowledge of teaching students with disabilities scale correlated significantly with self-reported teacher efficacy. Three of those items entered significantly into a multiple-regression equation, items related to the ability to accurately define intellectual disabilities, knowledge of the RtI model, and knowledge of provisions of the Individuals with Disabilities Education Act. So, teacher self-efficacy appears to be related to some elements of teaching knowledge and not to other elements when self-efficacy is characterized as the belief that teachers can positively affect the learning of students with learning and behavioral disabilities (Bowlin, 2012; Woolfolk & Hoy, 1990).

Much of the literature reflects a link between teacher self-efficacy and knowledge about disabilities; for example, some have shown that in-service teachers believe that they are better able to help students learn if they are well-informed about disabilities (Conners, 2008; Cook, 2002; Dielmann, 2006; Hoover, 2010; Walls, 2008). In contrast, others have failed to establish a link between knowledge and self-efficacy. For example, Fives (2004) found negative relations between teacher efficacy and demonstrated knowledge. Similarly, Frank and Vaden (2013) found no association between self-efficacy and RtI skills. Bowlin (2012) found that preservice

teachers' self-efficacy did not correlate significantly with their knowledge of legal issues, disability characteristics, and instructional strategies when molar measures were used to operationalize these constructs. Given these disparate findings, practitioners are justified in having questions about this link, even though it is intuitively appealing. It is our belief that confusion can be reduced by taking a more molecular approach to investigating the relation. That is, rather than addressing the relation by evaluating the concordance rates between or among global scores, our approach relied on evaluating the magnitude of the power of individual knowledge items to predict teacher self-efficacy. This strategy changes the nature of the original question from, "*what is the relation between teacher knowledge and teacher self-efficacy?*" to "*which aspects of teacher knowledge are most related to teacher self-efficacy?*"

As indicated above, data has shown that teacher self-efficacy is *most* influenced by the ability to accurately define intellectual disabilities, the RtI model, and knowledge of provisions of the IDEA. Other areas of knowledge that seem to be significantly related to self-efficacy include: knowledge of provisions of the Individuals with Disabilities Education Act, findings from the 1970 Diana v. State Board of Education court case, definition of the least restrictive environment, examples of high incidence disabilities, areas of difficulty for students with severe and multiple disabilities, and the definition of a functional assessment (A-B-C) chart. These results are consistent with some of the research demonstrating a relation between teacher and preservice teacher self-efficacy and the belief that they need to be well informed about disabilities (e.g., Conners, 2008; Cook, 2002; Dielmann, 2006; Hoover, 2010; Walls, 2008). Apparently, teachers' self-efficacy is tied to their knowledge of the guidelines and strategies in place to address those with disabilities (the RtI process, knowledge of disability categories, functional assessment) and, to a lesser though still important extent, to general teaching strategies (i.e., collaborative teaching). Interestingly, no items about legal requirements in special education were in the final three that predicted most strongly teacher self-efficacy.

Limitations and Direction for Future Research

In this study, knowledge was assessed using multiple choice items from a well-respected and widely used introductory special education textbook (Mastropieri & Scruggs, 2010), with items selected to represent three categories -- knowledge of disabilities, of legal and policy issues, and of effective teaching strategies. Results are somewhat disconcerting in that, in general, knowledge and self-efficacy are not strongly related; and, further, of 30 knowledge items, only eight correlated significantly with teacher self-efficacy. A few conclusions are possible and warrant further exploration through research. First, it is possible that the relation between teacher self-efficacy and knowledge is not straightforward or linear. Teachers who have an in depth knowledge of special education students might actually have decreased self-efficacy (i.e., they "know what they know," and their circumscribed domain of self-knowledge makes them more cautious in estimating their abilities to meet the needs of students).

Second, it is possible that multiple choice questions typical in textbook test banks may not optimally represent and/or assess the knowledge that matters most in building teacher self-efficacy for working with students. Given that multiple choice tests are a common method for assessing knowledge acquisition in college classes, further research is needed to determine which knowledge matters and the best means of assessing it using this evaluation strategy, as well as

exploration of other assessments (e.g., essay or short answer items, role playing, third-party informant ratings of teaching).

Another possible explanation for the weak relation between self-efficacy and molar operationalizations of knowledge relates to the type of knowledge acquired in the classroom. Preservice teachers obtain content knowledge through coursework, but pedagogical knowledge is best acquired through field experiences (Grossman & Richert, 1988; Tuchman & Isaacs, 2011). Perhaps a dearth of pedagogical knowledge can explain the weak relation between self-efficacy and molar operationalizations of knowledge among the participants of the present study.

Future researchers should also address the several limitations which characterize this study. For example, generalizability is limited. Participants were primarily Caucasian, pre-service teachers attending a large university in the Southeastern United States with little teaching experience. Such individuals may not be representative of teachers across the country; therefore, future researchers should obtain participants from a variety of racial and ethnic background with various levels of teaching experience. Another limitation of the present study is our operationalizations of the constructs of “knowledge” and “self-efficacy” represent limited characterizations of the terms; there are many other definitions based on other types of measures (e.g., observation, student outcomes). Future researchers should determine the relation between knowledge and self-efficacy using other operationalizations and measures.

Significance and Implications

The results of this study are significant in that they provide preliminary evidence about specific types of knowledge that predict teacher self-efficacy for preservice teachers in general education fields to teach students with challenging behaviors and learning difficulties. Though the identified items accounted for a relatively small amount of variance in the self-efficacy score, participants who answered the three identified items correctly invariably earned higher means on the teacher self-efficacy score than those who answered incorrectly. Results should be useful for those who prepare general educators to teach students with disabilities.

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