Creating Self-Efficacious Special Educators through Mentoring during Teacher Preparation

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Abstract

The purpose of this study was to examine the effects of a specific mentoring intervention on the teaching self-efficacy of pre-service special education teacher candidates. A Special Educators Efficacy Scale (SEES) was developed to measure self-efficacy for the initial skill set required for novice special educators. A two-group, pre-test/post-test design was used to compare the special education teaching self-efficacy scores between the intervention and comparison group. The self-efficacy scores reported by 245 pre-service special education candidates from two universities were analyzed (intervention group, $N = 43$; comparison group, $N = 202$) before and after a 10-week mentoring intervention. ANCOVA findings indicated a statistically significant difference across all subscales between groups while controlling for the pre-test scores. The analysis of demographic characteristics such as age and grade level did not reveal any statistically significant differences between groups.

Creating Self-Efficacious Special Educators through Mentoring during Teacher Preparation

Novice special education teachers are required to enter the field with a solid understanding of how individuals with disabilities learn (Council for Exceptional Children, 2013). They are charged with the daunting task of presenting content across all disciplines for individuals with distinct learning styles and for understanding the vast characteristics of a multitude of disabilities. The novice special educator must also possess specific knowledge in the utilization of research-based interventions and data collection to monitor student progress. The unique responsibilities of special educators, isolation from general education teachers, and limited access to appropriate mentors often present insurmountable challenges for the novice special educator (Brownell, Ross, Colon & McCallum, 2005; Duffy & Forgan, 2005; Washburn-Moses, 2010). The effects of these challenges are high rates of teacher attrition in the field of special education and ongoing research regarding teacher self-efficacy and mentoring that may improve the resiliency of novice special educators.

Researchers report novice teachers leaving the profession at epidemic rates (Billingsley, 2003; Plash & Piotrowksi, 2006; Smith & Ingersoll, 2004). It is estimated that 30 percent of general education teachers leave the profession within the first three years of teaching. However, according to Smith and Ingersoll (2004), the rate of novice special educators leaving the profession is 2.5 times higher than that of novice general education teachers. A 2002 study by the Study of Personnel Needs in Special Education (SPeNSE) revealed that 6 percent of all novice special education teachers who were interviewed planned to leave their jobs immediately after the first year of teaching. This shortage of special education teachers is more severe than any other areas of teaching (Boe, Cook, & Sunderland, 2005), with the shortage of certified special education teachers ranging from 20–30% higher than the shortage of certified general education teachers. The special education teachers cited unmanageable workloads, excessive

paperwork, multiple categories of disabilities per classroom, inadequate preparation, and lack of mentoring as the primary reasons for leaving. A 16-year examination of long term trends in the attrition rates of special educators between the 1987/1988 school year through the 2002/2003 school year revealed a steady annual increase in special education teacher shortages (Boe, 2006). The attrition rates almost doubled from 7% in 1993/1994 to 13% in 2002/2003, which created a shortage of approximately 54,000 special educators nationwide.

Highly qualified special education professionals continue to be in high demand (U.S. Department of Education, 2011), but the effect of the shortage has created a practice of hiring alternatively certified or uncertified personnel to work with students with disabilities. Data from the U.S. Department of Education indicated an increase in uncertified special education teachers and showed that over 11% of all special educators were uncertified to work with students with special needs.

These alarming statistics and persistent gaps in student achievement nationwide, particularly among students with disabilities, have prompted further investigation into the preparation and retention of special educators. To meet the above mentioned challenges, several theories have been explored to improve teacher attrition and effectiveness. Teacher self-efficacy based on Bandura's (1997) cognitive theory of social learning has been researched extensively. High teacher self-efficacy has been considered a predictor of teachers who may be better able to deal with the challenges of the first years of teaching. Teacher self-efficacy is also considered to be an indicator of teacher motivation, resiliency, and effectiveness in the classroom (Lee, Patterson & Vega, 2011; Pendergast, Garvis & Keogh, 2011). High levels of teacher self-efficacy are associated with confidence in meeting student needs, improving student motivation, and higher levels of student achievement (Woolfolk, 2007). The ability of individuals to influence the world around them is strongly linked with belief in their ability to bring about change. A teacher's sense of self-efficacy has also been associated with personal goal setting and the persistence to meet these goals.

In response to the high novice teacher attrition rates, the theories and benefits of mentoring relationships have also been investigated in higher education and public education over the past two decades (Darling-Hammond, 2003; Ingersoll & Strong, 2011). The research indicated a positive relationship between mentoring and levels of teacher self-efficacy (Beckford & Roland, 2010; Pendergast et al., 2011). Mentoring relationships are defined as a collaborative model in which novice teachers are directly assisted by seasoned professionals to develop the required skills for effective teaching (Sweeney, 2008). The model should be a continuum beginning during initial certification preparation at the university level and include professional collaboration between pre-service teacher candidates, mentor classroom teachers, university mentors, and field supervisors (Beckford & Roland, 2010; Hudson & Skamp, 2003). A review of literature (Billingsley, 2003) recommended mentoring models for pre-service special education candidates that includes mentoring in role management, collaboration skills, and inclusion pedagogy.

Several recommended practices are currently being utilized and/or researched for effectiveness in mentoring pre-service teachers. Some models include professional development school-university partnerships, peer placements, dual certification, action research, and service learning.

The models may vary slightly in design; however, the underlying objectives are similarly grounded in integrated experiences, collaboration, community, linking theory to practice, and a mentoring continuum from pre-service through the first years of teaching (Hobson, Harris, Buckner-Manley & Smith, 2012). Although certain aspects of mentoring models for pre-service teachers address serving individuals with exceptionalities, there is relatively little research directed specifically at the mentoring and preparation of pre-service special education candidates. In an effort to adequately address the needs of special education pre-service teachers, the present study utilized a mentoring intervention in an attempt to develop efficacious special education teachers equipped to teach and remain in the profession.

Theoretical Framework

The study was organized and viewed through theories of experiential learning, social learning, and self-efficacy (Bandura, 1977; Dewey, 1938; Rotter 1954; Vygotsky, 1978). These learning theories emphasize the critical components of modeling and observation in learning behaviors. *Experiential learning theory* emphasizes participation in learning behaviors in which learners gain knowledge through active engagement and collaboration with skilled mentors. Pre-service special educators prepare for professional life through experiential programs such as school-university partnerships, service learning, and student cohorts.

Social learning theory describes a process of learning behaviors through social experiences as well as through reciprocal relationships of observing the characteristics, attitudes, and reactions of others. Social learning is achieved as pre-service special education candidates observe, rehearse, and adopt the modeled behaviors of experienced professionals.

Additionally, this study utilized the foundation of *self-efficacy theory* to investigate relationships among social learning, experiential learning, and changes in self-efficacy in pre-service special education teachers. The highly collaborative nature within the field of special education warrants this particular set of lenses for this study,

Research Questions and Hypotheses

The research study sought to answer the following research questions:

1. What is the effect of an intensive mentoring intervention on the teaching self-efficacy of pre-service special education teacher candidates?

2. Does age moderate an effect of treatment on teaching self-efficacy?

3. Does level within the preparation program (sophomore, junior, senior) moderate an effect of treatment on teaching self-efficacy?

These questions were guided by the following hypotheses:

a) H_0 : There is no difference in the change in teaching self-efficacy between the control and intervention groups.

b) H_0 : Age does not moderate an effect of treatment on teaching self-efficacy.

c) H_0 : Level within the preparation program (sophomore, junior, senior) does not moderate an effect of treatment on teaching self-efficacy

Methodology

Research Design

The quasi-experimental quantitative study employed a teacher efficacy instrument created to measure self-efficacy related to the responsibilities specific to special educators. Quantitative research consists of numerical data and quantifying relationships between variables (Mertens, 2010). The quantitative research design enabled the researcher to express relationships between variables using effect statistics such as correlations or differences between means in an effort to test the null hypothesis and identify any statistically significant differences (Cronbach, 1982; Field, 2013). This study sought to examine relationships between the changes in pre-service special educator self-efficacy prior to and following the provision of an intensive mentoring intervention during teacher preparation.

The quantitative quasi-experimental survey research design was chosen to compare repeated measurements between groups (comparison and intervention) before and after introducing an intensive mentoring intervention (Patten, 2011; Salant & Dillman, 1994). The quantifiable data warranted the research design and correlational analysis.

Setting and Participants

The study took place in an urban setting of a Midwestern state, primarily due to researcher accessibility. The city is the third largest in the state, with an estimated population of 120,235 (United States Census Bureau, 2012). The urban setting contains two institutions of higher education within the city limits. The study included pre-service special education teacher candidates enrolled in two accredited special education teacher preparation programs. The participants were undergraduate candidates seeking initial licensure in special education from one private and one public institution. They were enrolled in at least one of the nine sections of special education coursework with an associated semester-long clinical internship or student teaching practicum. The criteria for participation also included the requirement of the completion of a minimum of one clinical internship. This criterion ensured that the participants had some experience in the classroom and could provide responses based on practical experience and exposure to realistic roles of special educators. The candidates ranged in age from 19-22 years and were from sophomore to senior standing (second through fourth year).

The study included pre-service special education teacher candidates enrolled in two accredited special education teacher preparation programs. The participants were undergraduate candidates seeking initial licensure in special education from one private and one public institution. They were enrolled in at least one of the nine sections of special education coursework with an associated semester-long clinical internship or student teaching practicum. The criteria for participation also included the requirement of the completion of a minimum of one clinical internship. This criterion ensured that the participants had some experience in the classroom and could provide responses based on practical experience and exposure to realistic roles of special

educators. The candidates ranged in age from 19-22 years and were from sophomore to senior standing.

Sampling

Convenience sampling was used and based on researcher accessibility (Mertens, 2010). The similarities in state special education teacher licensure requirements and teacher preparation programs were also considered when choosing the university sample pool. University faculty from both institutions identified participants based on the above criteria. Approximately 75 pre-service special education teacher candidates from the private institution and 190 from the public institution were invited to take part in the study. Pre-service special education teacher candidates were recruited during internship orientation seminars near the beginning of the spring semester. They were recruited by invitation to complete the special education teaching efficacy scale and participate in the mentoring intervention group. The invitations were sent via email, with follow up email and class visits to encourage survey completion. The pre-service special education teacher candidates chose to join the intervention group or participate only in the survey portion of the study (comparison group). Pre-service special education teacher candidates were ensured of respectful and ethical practices while participating in the study and those who chose to participate in the mentoring group remained confidential. The self-efficacy scale was administered as an online survey, and participants were instructed to create an identification code to ensure anonymity of responses.

Instrument Construction

The survey instrument was created using recommended guidelines and consisted of 23 numerical scale (0-10) response items. (Bandura, 1997; Tschannen-Moran & Woolfolk Hoy, 2001; Woolfolk & Hoy, 1990). Discussion and interviews with pre-service special education teacher candidates were used to identify the domains of special education pre-service teacher efficacy and the challenges that impeded the perceived levels of teacher efficacy. Candidates revealed areas of professional preparation they believed needed further development prior to the first year of teaching. Input from pre-service candidates was compared to initial teaching standards for special educators (Council for Exceptional Children, 2013) and used to create survey items for the Special Educators Efficacy Scale employed in this study. This information was also used to design the mentoring intervention.

Reliability and Validity

Reliability was addressed through the administration of a pilot survey. The pilot Special Educators Efficacy Scale (SEES) instrument was reviewed by five professionals in the field of special education, survey creation, and statistical analysis. Suggestions from these scholars included the use of identification coding, item alignment with current standards, analysis, and item phrasing. The pilot survey was also completed by special education teacher candidates. A link to an electronic version of the SEES instrument was sent to special education teacher candidates at two universities, one public and one private via email. The item scores were analyzed to assess consistency of scores across the scale items. The pilot administration can later be compared to the results from the study to assess the degree of test-retest reliability.

Validity of the scores resulting from the SEES instrument was addressed through a factor analysis. The analysis was conducted on pilot scales to determine how pre-service special

educators respond to items and identify consistent factors. A longer scale was developed for pre-service teachers, as previous research indicated less validity in the factor structure among these respondents (Woolfolk & Hoy, 1990). The instrument items were aligned with current standards (Council for Exceptional Children, 2013) for added validity. The language used to construct survey items was consistent with descriptors provided in recent CEC Initial Level Special Educator Preparation Standards.

Construct validity is an ongoing process and is grounded in theory and hypothesis testing (Bandura, 1997). A principal axis factorial analysis was chosen and conducted on the 23-item SEES instrument to assess the dimensionality of the scale. The goal of the instrument was to remain true to the intended measure in an effort to represent face validity. The pilot administration of the instrument indicated a mean completion time of 5.4 minutes. An initial data screening revealed no missing values, a statistically significant Bartlett's measure of sphericity (< .001), and a determinant of the matrix large enough to suggest there were no multicollinearity problems within the data set (Field, 2013). The Kaiser-Meyer-Olkin statistic (KMO = .702) falls above the minimum criterion of .5, which indicated an adequate sample size for factor analysis with over 10 cases per variable.

The item correlation matrix indicated correlation coefficients that were not excessively large, so the researcher did not choose to eliminate any items as a result of the pilot study analysis. Both orthogonal and oblique rotations were employed for a comparison of correlation coefficients between factors (Field, 2013). The rotation results indicated correlations between three extracted factors, and the constructs being measured appeared to be interrelated. The researcher examined the item clusters with variables loading highly (standardized loadings > .4) and identified patterns associated with scale items among three factors that accounted for approximately 70% of the variance. The scree plot revealed a break and leveling off after the third component. A comparison of eigenvalues from the exploratory factor analysis and the criterion values from the parallel analysis support the researcher's decision to retain only three factors. The researcher used language from current CEC (2013) initial standards for special educators to create the SEES items. The pattern matrix was examined to identify themes and label subscales to align with these standards.

A reliability analysis was conducted to assess the reliability of the SEES items. The reliability analysis revealed the value of *Cronbach's alpha* (Subscale 1: $\alpha = .954$; Subscale 2: $\alpha = .895$; Subscale 3: $\alpha = .923$), which indicated the reliability of the scores obtained from the SEES instrument was good (Kline, 1999). The values of *Cronbach's alpha* when specific items were deleted did not substantially increase the overall alpha value. The researcher determined that it was not necessary to remove items to improve reliability.

Data Collection

The pre-test/post-test design consisted of a comparison group and an intervention group. The comparison group of special education pre-service teacher candidates followed the program requirements for early clinical internships (12 hours per week for 10 weeks) with an assigned cooperating teacher in the field to provide supervision. In addition to the program requirements for clinical internship hours and a supervising cooperating teacher, the intervention group of pre-service special education teacher candidates participated in a 10-week mentoring program

designed for developing teaching practices and the responsibilities unique to special education teachers, as defined in Chapter 1.

The SEES instrument was administered twice, first as a pre-test and later as a post-test. The pre-test was completed by the pre-service special education teacher candidates in both groups near the beginning of one academic semester in the spring. The post-test was administered to both the comparison and treatment group after the end of the 10-week mentoring intervention. The instrument was created using LiveText forms, a web-based data collection system. The electronic SEES instrument was launched publicly, and the link was emailed to pre-service special education teacher candidates. The instrument instructed participants to create an identification code (ID Code: Mother's first name and your birth month (i.e., MaryLou11) to allow for response matching while ensuring anonymity. Follow-up email correspondence and classroom visits were used to encourage survey completion.

Intervention Detail

Pre-service special educators were invited to join a 10-week mentoring intervention group for pre-service special education candidates. The two-hour weekly group meetings consisted of activities and presentations designed to build initial special educator teaching skills as defined by the Council for Exceptional Children (2013) and aligned with the InTASC Model Core Teaching Standards for teacher preparation. Pre-service special educators committed to the 10-week intervention, and the activities were conducted during the allotted or agreed upon time to ensure the entire group was able to participate in the experiences. The pre-service teachers who were unable to commit to the entire 10-week mentoring intervention group were not considered in the intervention group data.

Pre-service special educators in the intervention group had opportunities to collaborate with and support peers, practice teach, and benefit from additional peer and mentor feedback. The participants had the opportunity to facilitate and contribute to mock I.E.P. meetings focusing on data-driven decision making and writing measurable annual goals. Positive behavior interventions and supports as well as certification in non-violent crisis intervention techniques were provided to increase preparation for working with individuals with behavioral and emotional disorders.

The components of the mentoring intervention were based on Sweeney's (2008) guidelines for high impact mentoring programs. These components consist of, but are not limited to, modeling of effective practices, and demonstration of research based strategies for special education, resources, observation, and peer feedback. The intervention group participated in and experienced additional mentoring at the university level. Collaboration with special education professionals, agencies, and related program service providers who serve individuals with disabilities provided candidates in the intervention group multiple opportunities to demonstrate their capacity to integrate theory and pedagogical knowledge in real-life settings throughout the community. Candidates participating in the intervention group had opportunities during the group meetings to interact within not-for-profit organizations such as ARC, Best Buddies, and The Prism Project, which provide services to children and adults with disabilities in a variety of programs. The participants were encouraged to work with these agencies on their own time

outside of the intervention group on their own time only after the 10-week intervention was completed to avoid variations among mentoring time within the intervention group.

Presentations and panel discussions with professionals in the field provided additional information and preparation for the first years of teaching. University supervisors were included in the planning and presentation of topics in the mentoring intervention and were able to reinforce these skills in the field. Local agencies such as ARC, Best Buddies, and The Prism Project provided opportunities for experiences with individuals with disabilities and their parents within the community. Pre-service special education teacher candidates worked with local agencies and became involved with planning and participating in Disability Awareness events as a culminating activity to the mentoring group experience.

Data Analysis

Hypothesis testing for the study included an analysis of covariance (ANCOVA) and associated effect sizes to assess the effect of the intervention. Data were screened to ensure the required assumptions had been met. ANCOVA analysis was used to compare means for statistically significant differences between groups while controlling for another variable (covariate) such as age or level with the program (Field, 2013; Kline, 1999; Martin & Bridgmon, 2012; Mertens, 2010; Nicol & Pextman, 1999). The ANCOVA analysis also treated the pre-test scores as a covariate within the data analysis. This specific data analysis procedure was chosen to support a single dependent variable.

Findings

The findings presented include a quantitative analysis of the SEES survey results. Data screening and descriptive statistics were carried out on the survey responses. An analysis of covariance (ANCOVA), analysis of variance (ANOVA), and associated effect sizes were used to examine the research questions and hypotheses for the purpose of this study.

Description of the Sample

A total of 245 pre-service special education candidates from two universities in a Midwestern state participated in the study. The participants were completing an undergraduate program for initial special education teacher certification. Participants in both groups ranged in age from 19-22 and held sophomore through senior standings.

Data Screening and Descriptive Statistics

The data were initially explored to assess assumptions for the one-way ANCOVA analysis as well as to provide descriptive statistics. The initial data screening revealed no missing values, normal distributions, and homogeneity of variance (variance ratio < 2). Additional ANCOVA assumptions were addressed and examined to test for a linear relationship between the dependent variable and covariates and homogeneity of regression slopes.

The descriptive statistics were based on a comparison group of 202 useable surveys which represents a 76% response rate (both pre-test and post-test were matched using identification codes) and an intervention group of the 43 participants completing the entire 10-week mentoring intervention.

Presentation of Data

Findings for Research Question 1

> What is the effect of an intensive mentoring intervention on the teaching self-efficacy of pre-service special education teacher candidates?
>
> H_0 : There is no difference in the change in teaching self-efficacy between the control and intervention groups.

A one-way between groups ANCOVA was conducted for each of the subscales to examine the effectiveness of a mentoring intervention on the teaching self-efficacy of pre-service special education candidates. Mean scores for each of the previously identified subscales from the factor analysis were examined. Three separate analyses were conducted, to address the effect for each of the three subscales: Learner Development and Learner Differences, Instruction and Strategies, Curriculum Content and Planning. ANCOVA at the .05 probability level ($\alpha = .05$) was used to determine if there were statistically significant differences between the control and intervention groups on the SEES post-test scores. The analysis tested the effect of the fixed categorical independent variable (group) and a covariate (SEES pre-test) on the dependent variable (SEES post-test) for each subscale.

Preliminary investigations were conducted prior to each analysis to ensure that there were no violations of the assumptions of normality, linearity, homogeneity of variances and regression slopes, and reliable measurement of the covariate. Subscale 1 violated the assumptions of linearity and homogeneity of regression slopes. Therefore, scores for subscale 1 were transformed into rank values, and the ranked scores were used to conduct the analysis (Conover & Inman, 1982).

Levene's Test of Equality of Error Variances for subscale 1(Learner Development and Learner Differences) indicated this assumption was not violated ($p = .33$). A Test of Between-Subjects Effects for subscale 1 indicated the groups differed significantly, $F(1, 17) = 7.18$, $p < .01$ with the intervention group reporting a higher mean score. The null hypothesis was rejected for subscale 1. There was a statistically significant group difference in the SEES post-test scores. The effect size ($n^2 = .17$) indicated a large effect (Field,, 2013). This value also represented how much of the variance was explained by the independent variable. The value indicated that approximately 17% of the variance in the SEES post-test was explained by the independent variable (group).

Levene's Test of Equality of Error Variances was also conducted for subscale 2 (Instruction and Strategies) and indicated this assumption was not violated ($p = .13$). A Test of Between-Subjects Effects for subscale 2 indicated the groups differed significantly, $F(1, 9) = 6.14$, $p = .04$, and the null hypothesis was rejected. There was a statistically significant group difference in the SEES post-test scores with the intervention group reporting a higher mean score. The effect size ($n^2 = .03$) indicated a small effect (Field, 2013). This value also represented how much of the variance was explained by the independent variable. The value indicated that approximately 3% of the variance in the SEES post-test was explained by the independent variable (group).

Again, Levene's Test of Equality of Error Variances was conducted for subscale 3 (Curriculum Content and Planning) and indicated this assumption was not violated (p = .264*)*. A Test of Between-Subjects Effects for subscale 3 indicated the groups differed significantly, F *(*1, 11*)* = 5.64, p = .04 with the intervention group reporting a higher mean score. The null hypothesis was again rejected .There was a statistically significant group difference in the SEES post-test scores. The effect size ($n^2 = .34$) indicated a large effect (Field, 2013). This value also represented how much of the variance was explained by the independent variable. This value indicated that approximately 34% of the variance in the SEES post-test was explained by the independent variable (group).

Findings for Research Question 2

Does age moderate an effect of treatment on teaching self-efficacy?

H_0 : Age does not moderate an effect of treatment on teaching self-efficacy.

To identify any statistically significant moderating effect of age on the relationship between groups and teaching self-efficacy scores an ANCOVA analysis was again conducted across the three subscales. The age variable was transformed to a mean-centered value prior to the analysis.

Levene's Test of Equality of Error Variances was conducted for subscale 1 (Learner Development and Learner Differences) and indicated this assumption was not violated (p = .06*)*. A Test of Between-Subjects Effects for subscale 1 indicated the effect of the treatment did not differ significantly by age, F *(*6, 12*)* = 0.748, p = .40, and the null hypothesis was not rejected. Additionally, no main effect was evident for age, F (4, 12) = 2.59, p = .09.

Levene's Test of Equality of Error Variances was again conducted for subscale 2 (Instruction and Strategies) and indicated this assumption was not violated (p = .38*)*. A Test of Between-Subjects Effects for subscale 2 indicated the effect of the treatment did not differ significantly by age, F *(*4, 6*)* = 0.03, p = .87, and the null hypothesis was not rejected. Additionally, no main effect was evident for age, F (2, 6) = 0.948, p = .439.

Subscale 3 (Curriculum Content and Planning) was also analyzed, and Levene's Test of Equality of Error Variances indicated this assumption was not violated (p = .40*)*. A Test of Between-Subjects Effects for subscale 3 indicated the effect of the treatment did not differ significantly by age, F *(*4, 8*)* = 1.02, p = .34, and the null hypothesis was not rejected. Additionally, no main effect was evident for age, F (2, 8) = 2.01, p = .196.

Findings for Research Question 3

Does level within the preparation program (sophomore, junior, senior) moderate an effect of treatment on teaching self-efficacy?

H_0 : Level within the preparation program (sophomore, junior, senior) does not moderate

an effect of treatment on teaching self-efficacy

To identify any statistically significant moderating effect of grade level on the relationship between groups and teaching self-efficacy scores an ANCOVA analysis was again conducted across the three subscales.

Levene's Test of Equality of Error Variances was conducted for subscale 1 (Learner Development and Learner Differences) and indicated this assumption was not violated (p = .40). A Test of Between-Subjects Effects for subscale 1 indicated the effect of the treatment did not differ significantly by grade level, $F(5, 13) = 0.06$, p = .94, and the null hypothesis was not rejected. Additionally, no main effect was evident for grade level, F (2, 13) = 0.185, p = .834.

Levene's Test of Equality of Error Variances was also conducted for subscale 2 (Instruction and Strategies) and indicated this assumption was not violated (p = .31). A Test of Between-Subjects Effects for subscale 1 indicated the effect of the treatment did not differ significantly by grade level, $F(3, 9) = 0.096$, p = .763, and again the null hypothesis was not rejected. Additionally, no main effect was evident for grade level, F (1, 9) = 0.706, p = .423.

Subscale 3 (Curriculum Content and Planning) was also analyzed, and Levene's Test of Equality of Error Variances indicated this assumption was not violated (p = .40). A Test of Between-Subjects Effects for subscale 3 indicated the effect of the treatment did not differ significantly by grade level, $F(4, 8) = 0.11$, p = .75, and the null hypothesis was not rejected. Additionally, no main effect was evident for grade level, F (2, 8) = 0.161, p = .85.

Summary

In examining the teaching self-efficacy scores of pre-service special education candidates, statistically significant effects of the intervention were evident. The candidates participating in the mentoring intervention group reported a significantly higher post-test score on all three subscales: Learner Development and Learner Differences, Instruction and Strategies, and Curriculum Content and Planning. No statistically significant moderating effect of age or grade level on the intervention effect was evident for any of the subscales.

Discussion and Recommendations

Discussion

One goal of this study was to examine existing teaching self-efficacy instruments for an appropriate measure for pre-service special education candidates. As the review of literature for this study revealed, there was no teaching self-efficacy scale to date designed to measure special education teaching self-efficacy during teacher preparation. The SEES instrument was created using research based guidelines (Bandura, 1997) and CEC (2013) standards for the initial skill set of special educators. This study made contributions to the field of special education and teaching self-efficacy research by developing and accessing a new instrument to measure special education teaching self-efficacy.

The review of literature in preparation for this study also examined the evolution of teacher self-efficacy. The definitions of teaching self-efficacy include a careful consideration of appropriate and reliable measurement tools. The SEES instrument was designed specifically to assess special education teaching self-efficacy and to expand the meaning as it continues to evolve and interpret the power of this construct.

The primary goal of the current study as posed by research question one was to examine the effects of a mentoring intervention during teacher preparation on special education teaching self-efficacy. This study affirms the importance of a mentoring continuum beginning at the pre-service level and its relationship to teaching self-efficacy. The findings indicate that a specific mentoring intervention at the pre-service level produced positive effects on teaching self-efficacy among special education teacher candidates. The specific measure and mentoring intervention designed to meet the specific needs of pre-service special education candidates contributed to higher scores in special education teaching self-efficacy. The current study found that these mentees experienced higher teaching self-efficacy when the mentoring interventions addressed specific skill sets and the design allowed for flexibility to address the needs of the mentees.

In comparing the mean scores from the SEES between groups, the participants in the mentoring intervention group indicated a significantly higher sense of special education teaching self-efficacy between the pre-test and post-test across all three subscales. The higher mean score appeared to be closely related to activities and topics covered in the mentoring intervention group. These findings suggested that the detailed, skill-specific mentoring intervention framework helped facilitate professional growth and teaching self-efficacy among pre-service special education candidates (Hudson & Scamp, 2003). The design of the mentoring intervention purposefully allowed time to address the perceived needs of the participants (Duffy & Forgan, 2005). For example, items within the subscale Learner Development and Differences were explicitly covered throughout the mentoring intervention and yielded the greatest gains in mean scores among the intervention participants. Participants in the intervention group also indicated through discussion that these specific skills (i.e., I.E.P. meetings, documentation, behavior interventions, inclusion, collaboration, benchmarks, and goals) were also a great source of anxiety for teaching readiness and the desired skill set for initial special educators (CEC, 2013).

The findings from the current study add to the literature and are consistent with multiple studies that have reported positive outcomes on teaching self-efficacy at the pre-service level through intensive mentoring (Darling-Hammond, 2005; Hobson et al., 2012; Hudson & Hudson, 2013). Previous research investigated the relationship between mentoring experiences designed for specific skill sets and teaching self-efficacy (Hudson & Skamp, 2003; Parameswaran, 1998; Reid, Vasa, Maag & Wright, 1994). These studies argue that teachers (pre-service and in-service) who are given explicit mentoring and experiences associated with specific and unique teaching responsibilities demonstrated higher levels of teaching self-efficacy than their peers who did not experience the same mentoring opportunities. Only three of these studies focused on mentoring interventions in the area of special education (Parameswaran, 1998; Reid et al., 1994).

In a design similar to the current study, Hudson and Skamp (2003) focused on a specific mentoring intervention for teachers of primary science. Their mentoring intervention group was given a four-week intensive mentoring intervention on the teaching of primary science. The five

factor self-efficacy survey was then administered, and the findings suggested evidence of improved science teaching self-efficacy of the mentees included in the study. The researchers argued that a specific and intensive mentoring intervention may be effective in improving teacher self-efficacy even when administered over a relatively short period of time. The current study supports these findings and also reports a significant effect of a short-term mentoring intervention on teaching self-efficacy.

The findings from the current study also support previous studies in the area of special education (Parameswaran, 1998; Reid et al., 1994) that examined the teaching self-efficacy among pre-service and in-service teachers working with children displaying a variety of diverse learning needs. Parameswaran designed a specialized field experience for pre-service special education candidates during an educational psychology course. Parmeswaran's findings revealed a strong relationship between the specific skills practiced in the classroom and teaching self-efficacy for learners with diverse needs.

Reid and colleagues (1994) focused specifically on teaching self-efficacy for meeting the needs of students with Attention Deficit Hyperactivity Disorder (ADHD). Their findings revealed teachers with specific preparation in the area of ADHD felt a greater sense of teaching self-efficacy toward effectively reaching this population. As supported by the findings of the current study, Reid and colleagues also asserted that there is an influential relationship that appears to exist among teachers with access to an environment of mentoring, collaboration, and specific teaching skill sets. It is argued that these unique experiences enhance overall teaching self-efficacy. Across all of the above mentioned studies, teachers who did not have access to mentoring and specific learning opportunities did not report a strong sense of teaching self-efficacy for the given student populations. The current study reported similar findings among participants in the comparison group.

In the current study, the participants in the comparison group reported lower post-test scores than participants in the intervention group. These findings may be explained by the exposure during field experiences to the vast practical skills necessary to meet the diverse needs of the student (Pendergast et al., 2011). Preconceived notions and previous educational experiences may also contribute to an overestimated sense of self-efficacy and a realization of the need for further professional development and teacher preparation. A romanticized ideal of classroom teaching may exist due to positive personal educational experiences that may falsely inflate perceptions of special education teaching self-efficacy. The realization of the need for more preparation may come after practical experiences through internships in the classroom and lead to a much more accurate account of teaching self-efficacy.

Another goal of this study as posed by research questions 2 and 3 was to examine the moderating effects of demographic variables on differences in special education teaching self-efficacy between groups. The demographic characteristics of age and grade level were not found to have a statistically significant moderating effect on the difference in teaching self-efficacy scores between the comparison and intervention groups of pre-service special education candidates. A possible explanation for the lack of effect of grade level on teaching self-efficacy may be the design of special education internship experiences. Although the pre-service teacher candidates have had more practical experiences as they progressed through the programs, these internship

experiences are vastly different. Each internship may consist of different grade levels, settings, and categories of disabilities. These results are consistent with Tschannen-Moran and Woolfolk Hoy's (2001) findings that indicated demographic variables did not influence teaching self-efficacy. Consistent with the theoretical framework of the current study, these researchers also argue that knowledge and experiences have the greatest effect on perceived teacher self-efficacy.

The theoretical framework of this study is founded in theories of teaching self-efficacy, experiential learning, and social learning. The findings of this study are supported by these theories as they relate to learning through observing mentors, instruction from mentors, and practical experiences. As outlined in this study, within the framework of social and experiential learning, higher levels of special education teaching self-efficacy were associated with specific experiences and discipline specific mentors. The experiential and social learning experiences in the mentoring intervention were aligned with the standards-based instrumentation and addressed the unique skill set of special educators. The activities in the mentoring intervention were designed to address each of the four headings for initial preparation standards: Learner and Learning, Content Knowledge and Professional Foundations, Instructional Pedagogy, and Professionalism and Collaboration. There was a strong component of social learning as it relates to professional development built into the mentoring intervention. The mentoring sessions were designed to include observation as well as evoke discussion of special education teaching practices. The strategies included within the mentoring intervention were designed to promote collaboration among peers and mentors. The modeling of lessons, collaborative planning, practice teaching, and feedback circles provided ample opportunities to share and reflect on practical experiences.

As theories of experiential learning posit, learning how to teach requires first-hand experiences. Many traditional teacher preparation programs have not consistently or adequately allowed for experiential learning prior to student teaching. The special education mentoring intervention created an opportunity for pre-service teachers to be actively engaged in teaching experiences. Participants in the intervention group were able to practice skills specific to special educators and essential for entering into the profession, such as facilitating I.E.P meetings and paperwork and collaborating with other professionals and parents. The findings of this study suggest that specific learning opportunities promote confidence in one's abilities and create efficacious teachers.

Recommendations for Practice

The findings from the current study present implications for special education teacher educators, program developers, school leaders, students with disabilities, and policy makers.
The continuation of these pre-service mentoring interventions into the novice years of teaching along with continued research may reap benefits for all stakeholders.

The SEES instrument, aligned with teaching standards for the initial skill set of special educators, may prove valuable within teacher preparation programs. These recently adopted CEC (2013) standards, which include initial and advanced preparation standards, may be used to design mentoring interventions through several stages of teaching(interns, student teachers, novice teachers). Recommendations for special education teacher educators include the use of specific mentoring interventions at the pre-service level to reduce the current attrition rates and

special education teacher shortages. Mentoring interventions at the pre-service level should be non-evaluative and allow for some fluidity to address the needs and concerns of candidates as they arise. Careful consideration of mentoring intervention components such as qualified mentors and experiences designed specifically for the needs of special educators may also assist teacher educators in building teaching self-efficacy and a resilient novice special educator.

The short time frame for this study also provides implications for the possibility of positive outcomes, even when time limitations are a concern for providing mentoring interventions at the pre-service level. A well designed short-term mentoring intervention applied over several years during special education teacher preparation may produce greater effects on teaching self-efficacy.

If research confirms teaching self-efficacy can primarily be developed at the pre-service level, special education program coordinators may consider program designs that support this development in an effort to produce self-efficacious novice special educators. Program designs that include a mentoring component as early as the first professional semester may play a pivotal role in enhancing special education teaching self-efficacy.

Although the current findings suggest that a mentoring intervention benefits pre-service special education candidates, these benefits have implications for school leaders at the district and building levels as well. School districts expend a considerable amount of resources recruiting new teachers. This can be a costly endeavor when novice special educators are not remaining in the classroom. Building principals should carefully consider partnerships with teacher preparation programs to strengthen special education teaching self-efficacy. A collaborative effort between school districts and teacher educators to design a mentoring continuum as well as effective models of professional development schools specifically designed for preparing special educators may improve teacher quality and attrition rates.

Retaining special education teachers also has implications for the educational outcomes of students with disabilities, as student achievement has been linked to teacher quality. Students with special needs struggle to close gaps in academic achievement without experienced special educators. Highly qualified special educators have the potential to change the quality of life for individuals with disabilities.

Policy makers at both the federal, state, and university level should consider providing funding for an extended period of time to support a mentoring continuum beginning at the pre-service level. A partnership between policy makers and teacher education accreditation agencies with access to teacher preparation program data may prove beneficial in assessing the effectiveness of a mentoring continuum. Providing funding, mandating mentoring interventions beginning early within special education teacher preparation, and long-term data collection may provide the evidence needed to link mentoring to student achievement and bring about change.

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