

PRE-SERVICE AND ACTIVE TEACHERS' ATTITUDES TOWARD INCLUSIVE
EDUCATION FOR AUTISTIC STUDENTS: UNDERSTANDING THE MEDIATING ROLE
OF SELF-EFFICACY AND AUTISM KNOWLEDGE

by

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(Under the Direction of Ashley J. Harrison)

ABSTRACT

Pre-service and active general education teachers overwhelmingly report their lack of preparation to teach autistic students in an inclusive setting. Many factors increase teachers' preparedness, including positive attitudes, increased self-efficacy, and more knowledge. The purpose of this study was to evaluate if pre-service and active teachers' (N = 197) experiences in their teacher education program were associated with attitudes about teaching autistic students in general education. This study also examined whether participants' self-efficacy toward teaching students with autism and/or their knowledge about autism mediated the relation between experiences and attitudes. Self-efficacy fully mediated the pathway between inclusive education experiences and inclusive teacher attitudes, but autism knowledge did not. Findings have implications for pre-service teacher program of study development and future research examining teacher attitudes.

INDEX WORDS: inclusive education, autism spectrum disorder, teacher attitudes, self-efficacy, autism knowledge, pre-service preparation

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CHAPTER 1

INTRODUCTION

In 1997, the Individuals with Disabilities Act (IDEA) was reauthorized to ensure schools integrate students with disabilities in general education as much as possible (Knoblauch & McLane, 1999). Today, the IDEA has similar policies regarding inclusion. The policy states that inclusive education should occur unless the student's disability is too severe to allow for adequate learning in a general education classroom (IDEA, 2004). The IDEA has required inclusive education for over two decades, yet training programs for general education teachers tend to fall short of preparing teachers to make instructional accommodations for students with disabilities in their classrooms (Cook, 2002).

Teacher Program Experience

Theory and Application

Pre-service teachers are of particular importance as the effectiveness of their training holds great influence over the education of the rising generation. Research looking at the quality of teacher training in inclusive practices has found that practical experiences, such as field experience and direct interaction with students, are the most influential components of the training program (Conderman et al., 2013; Sokal et al., 2013; Swain et al., 2012). Typically, pre-service teachers are educated on specific topics through didactic courses, and then given the opportunity to observe, interact, and apply what they learned in an authentic classroom setting through a 'practicum.' This combination of coursework and practical experiences helps to bridge the gap between theory and practice (Kolb & Kolb, 2005).

Perceptions of Experiences

Although researchers outline a gold standard for teacher preparation practices, programs seem to be falling short on adequately preparing teachers with the skills they need to effectively teach students with diverse needs. For example, findings from qualitative studies reveal a disconnect between the number of training experiences and how the experience contributed to them professionally (Brown et al., 2015; Kildan et al., 2013). Participants in an interview study conducted by Kildan et al. (2013) shared that their school experiences did not contribute to their profession because the mentor teacher limited the pre-service teachers' ability to observe in their classroom. Thus, assessing teacher education program experiences must include an evaluation of the number and types of experiences, as well as the value of the experience to the student.

Pre-service teachers' perceived preparedness is another essential component that should be considered when examining course and practicum experiences in the teacher education program. Manasia et al. (2020) demonstrated that teachers' feeling of preparedness was linked to increased self-efficacy in the classroom. Perceived preparedness and self-efficacy were also found to improve with more valuable student teaching experiences (Brown et al., 2015). However, didactic and practicum experiences do not always influence teachers' understanding of inclusive education (Hayes et al., 2013), nor do these training components always target teachers' needs (Van Der Steen et al., 2020). To ensure a population of better trained teachers, the field needs an understanding of pre-service teachers' inclusive education experiences and how these experiences influence their feelings of preparedness to teach in an inclusive setting.

Preparing to Teach Autistic Students

In a study conducted by Cook (2002), pre-service general education teachers rated their perceived ability to teach students with learning disabilities significantly higher than their

perceived ability to teach students with emotional/behavioral disorders, intellectual disabilities, or multiple disabilities. This suggests that students with learning disabilities are easier to teach in a general education classroom compared to the other disabilities listed. If classroom management skills significantly influence the perceived ability to teach inclusive classes, teacher education programs should focus on preparing pre-service teachers to perform this essential skill. Without adequate training in necessary skills, teachers are left feeling unprepared to teach and manage students with emotional/behavioral disabilities in a general education classroom (Forlin et al., 2010; Roberts & Simpson, 2016; Swain et al., 2012).

Students on the autism spectrum are of particular interest as the prevalence of autism continues to increase (Maenner et al., 2023). Autism is among the largest reported disability category served under the IDEA (National Center for Education Statistics, 2023), with most of autistic students being placed in general education classes for at least 80% of the day (Bolourian et al., 2022). A previous study showed that pre-service teachers possessed the knowledge to teach students with autism; however, they felt unprepared to implement these learned skills in an inclusive setting (Hayes et al., 2013). These findings support the notion that practicum experiences should reflect real-world classrooms, so the next generation of teachers are prepared to manage the demanding needs of the students (Zagona et al., 2017).

Teacher Attitudes

Attitudes toward Inclusive Education

Many studies have examined teacher attitudes toward inclusive education (Avramidis & Norwich, 2002; Clark & Newberry, 2019; Cook, 2002, Forlin et al., 2010; Hayes, et al., 2013; Loreman et al., 2013; Lautenbach & Heyder, 2019; Roberts & Simpson, 2016; Saade, et al., 2021; Segall & Campbell, 2012; Swain et al., 2012; Yada et al., 2018). Most of these studies

report positive findings regarding general education teachers' attitudes toward including students with disabilities in their classrooms. However, compared to special education teachers, general education teachers hold more negative attitudes toward inclusion (Avramidis et al., 2019). This discrepancy is important to note as general education teachers are the primary implementers of inclusive practices. Varying factors in and out of the classroom influence teachers' attitudes, such as personal characteristics of the teacher (Cook, 2002), type of child disability (Avramidis & Norwich, 2002; Cook, 2002), past interactions with individuals with disabilities (Cook, 2002, Yada et al., 2018), and level of training in inclusive education (Forlin et al., 2010; Lautenbach & Heyder, 2019). Fortunately, several of these factors (i.e., interactions with students with disabilities and levels of training are factors) can be directly incorporated into teacher preparation programs.

The type of disability is a child-related factor that has been consistently found to influence teachers' attitudes toward inclusive education. Specifically, teachers feel less able to teach students with emotional/behavioral disorders in their general education classroom than students with learning disabilities (Avramidis & Norwich, 2002; Cook, 2002). Although different from the IDEA classification of Emotional/Behavioral Disorders (Section 300.8), some children with autism struggle with emotional and behavioral regulation, often resulting in disruptive behavior. Autism spectrum disorder is a neurodevelopmental disorder characterized by social communication differences and restricted and repetitive behaviors. Many autistic students are placed in general education classrooms due to their academic achievement; however, without proper support from the general education teacher, autistic students benefit less from the inclusive classroom. A lack of understanding of 'autistic' behaviors and knowledge about proactive strategies to teach autistic students leads to teacher frustration and stress

(Roberts & Simpson, 2016). Given the increase in ASD diagnoses in recent years (Maenner, et al., 2023), general education teachers must feel prepared to adapt their instruction and classroom management practices in order to address the unique needs of students on the autism spectrum.

Attitudes toward Evidence-Based Practices

Successful inclusive education relies on implementing empirically supported interventions, otherwise known as evidence-based practices (EBPs; Reinke et al., 2011). Unfortunately, EBPs for inclusive practices are not commonly implemented by general education teachers. For example, one study examined Georgia educators' use of EBPs and found that only about 7% of participants reported using scientifically based strategies to teach their autistic students (Hess et al., 2008). These results are very discouraging as strategies that lack empirical support lead to wasted time, energy, and resources – factors that teachers already report as stressors (Ansley et al., 2021; Peterson, 2012). Thus, understanding teachers' attitudes toward utilizing EBPs is essential to increasing the success of inclusive education.

Attitudes toward Change

The Theory of Planned Behavior (Ajzen, 1985) indicates that attitudes are precursors to the execution of the intended behavior; thus, teachers' attitudes toward inclusive education and EBPs are important topics. Previous studies that examined teacher attitudes toward inclusive education for autistic students only focused on broader education background variables that influenced teachers' attitude development (Segall & Campbell, 2012; Yada et al., 2018), as opposed to nuanced cognitive variables (e.g., beliefs, perceptions). Understanding the fundamental intrapersonal factors that construct an attitude, such as cognition, affect, and intention, will help make meaningful shifts in teacher attitudes (Ajzen, 2001). Similarly, these three factors are central to the readiness for change literature (Bouckenooghe et al., 2009; Ínandi

& Giliç, 2016; Kondakci et al., 2013), which focuses on one's attitude towards a behavior change. This literature purports that for a behavior change to occur, a person's cognition (i.e., beliefs about the outcome based on the change), affect (i.e., feelings toward the change), and intention (i.e., the amount of effort an individual is willing to invest in the change) should be aligned and consistent with the change effort (Ajzen, 2001; Bouckenooghe et al., 2009).

Researchers need to understand the multifaceted nature of attitudes and how each component influences the process of change for teacher practices (Kondakci et al., 2013). For example, pre-service teachers are more likely to engage in inclusive teaching when their attitudes are more positive about the change in their instruction outcome (Gilor & Katz, 2018).

'Change' is an integral term in education (İnandi & Giliç, 2016). From adapting curricula for individual students to reshaping teaching practices based on educational reforms, teachers are expected to adhere to constant change (Datnow, 2020). Negative attitudes toward any kind of change only creates resistance to new practices intended to improve students' education. With the continuation of novel EBPs entering the field and the consistent increase of ASD identification, general education teachers must possess positive attitudes toward regularly adjusting their curriculum, instruction, and classroom management approaches to meet the expectations of their students' educational development. Assessing a teacher's attitude toward inclusive education alone is insufficient for predicting the successful implementation of empirically supported inclusive approaches. Assessing attitudes toward inclusive education, EBPs, and educational change as one construct helps to fully understand a teacher's overarching attitude toward teaching students with autism in general education.

Teacher Self-Efficacy

Teacher efficacy is strongly associated with teacher attitudes, such that higher levels of efficacy in teaching inclusive practices are linked to more positive attitudes toward teaching in an inclusive classroom (Sharma et al., 2012). Multiple theories explain self-efficacy, including Bandura's Theory of Behavioral Change (Bandura, 1978). Bandura states that behavioral change occurs through supporting the two components of self-efficacy: efficacy expectations and efficacy outcomes. Efficacy expectations are the judgments one makes about their ability to perform a specific behavior, whereas efficacy outcomes are the judgments made about whether that behavior will lead to a specific outcome. Both types of judgments are determined before performing that behavior, thus one's efficacy highly influences whether or not a specific behavior will be performed. Successful implementation of EBPs relies on high teacher efficacy, as self-efficacy is strongly associated with teachers' willingness to engage in inclusive practices (Gilor & Katz, 2018). Soodak and Podell (1993) found a significant relationship between teachers' self-efficacy and their decision to refer a student for special education or continue to teach the student in general education. Additionally, if one believes the EBP will not produce the desired outcome, the EBP will not be implemented, ultimately impacting the student needing the intervention.

Previous researchers have examined pre-service teachers' self-efficacy regarding teaching inclusive education (e.g., Clark & Newberry, 2019; Gilor & Katz, 2018; Loreman et al., 2013, Sharma et al., 2012). Loreman et al. (2013) found that different components contribute to the level of efficacy for using inclusive instruction, managing behavior, and collaborating with other professionals. For example, prior special education training was associated with higher levels of efficacy for managing classroom behavior. However, a moderating effect for self-

efficacy was found in teachers with the highest levels of training and knowledge in inclusive education. The authors relate their findings to Brackenreed and Barnett, (2006) who reported that this could be explained by an increased awareness of the time, resources, and energy required to partake in inclusive practices. Teacher education programs should focus on building their pre-service teachers' efficacy so that factors such as time, resources, and energy do not deter them away from implementing inclusive practices.

Teacher Autism Knowledge

Both procedural and declarative knowledge are key elements to the successful implementation of EBPs in inclusive education. A teacher's ability to evaluate the knowledge they possess compared to the knowledge they lack can help guide the next steps for improving their practices. Individuals who know areas they want to change, hold more positive attitudes toward that behavioral change (Peterson, 2012). Teacher training programs can assess trainees' metacognition regarding inclusive practices. This will provide trainees information on which techniques to utilize to prevent wasted time and resources when they enter the teaching field. Once knowledge is obtained, stronger attitudes toward the topic begin to form. It is suggested that individuals with more knowledge, experience, and awareness about autism had more positive attitudes toward EBPs (Segall & Campbell, 2012); therefore, autism knowledge is considered a strong predictor of the use of EBPs.

Purpose of the Study

Without positive attitudes toward a behavior change (i.e., inclusion), successful implementation of inclusive practices will not occur, or at least not occur effectively. Successful inclusion also requires continuous adaptation to instruction and continuous learning of EBPs. As such, the purpose of this study was to evaluate if pre-service and active teachers' academic and

practical experiences in their teacher education program are associated with attitudes about teaching autistic students in general education. To assess attitudes more comprehensively among teachers, attitudes toward inclusion, attitudes to EBPs, and attitudes toward change were examined as a unitary construct. This study examined the factor structure of two latent constructs: (a) inclusive education experiences and (b) inclusive teacher attitudes. Another aim of this study was to examine whether their self-efficacy toward teaching students with autism and/or their knowledge about autism mediate the proposed relation between training experiences and attitudes. No studies to our knowledge have included the combination of mediating variables, nor have they conceptualized a latent construct of attitudes toward teaching autistic students in general education as proposed in this study. Findings will contribute to the literature regarding best practices for teacher education programs.

METHOD

Participants

Eligibility Criteria

Individuals were eligible to participate if they were over 18 years old, and currently self-identified as a pre-service teacher in a general education preparation program, or an active general education K-12 teacher. Active teaching was defined as currently teaching or having taught in the past five years. Special education pre-service and active teachers were excluded from this study since the primary implication of this study is to understand how to best prepare general education teachers to include autistic students in their classrooms.

Recruitment of Participants

Recruitment of these individuals involved a mixture of non-probability sampling strategies. A convenience sample of University of Georgia (UGA) students enrolled in introductory courses in learning and teaching were recruited through the College of Education research pool (i.e., Sona System). The lead researcher also requested help from professors and graduate instructors of record within UGA's College of Education to distribute online fliers to their students. Additionally, social media was used for online recruitment. More specifically, fliers were posted on the CAARE lab Facebook page and were distributed further via friends and colleagues to recruit active teachers specifically.

Participant Characteristics

Over three academic semesters, 230 individuals consented to participate in the study. Of the total who consented, 197 (31 excluded for missing data, 2 excluded for majoring in special

education) were included in the final analysis. The sample mostly consisted of female participants (86.3%) that ranged in age between 18 and 61 years old ($M=21.19$, $SD=5.41$). The sample included 184 undergraduate students (37.6% of second-year students; 5.1% of Elementary Education majors) and 13 active teachers. Active teachers' years of experience working with children in an educational setting ranged from 1 to 31 years ($M=10.23$, $SD=9.99$). Although the majority of participants endorsed having at least some experience/familiarity with ASD (33%) and have occasionally interacted with autistic individuals (31%), the majority (38.1%) had not received any specific training or learning opportunities related to ASD ($M=1.82$, $SD=3.08$). Refer to Table 1 for an overview of participant characteristics.

Table 1

Participant Demographics

	<i>N (%)</i>
Gender	
Male	24 (12.2)
Female	170 (86.3)
Non-Binary	2 (1.0)
Occupation	
Student	184 (93.4)
Teacher	11 (5.6)
Faculty	2 (1.0)
Year in School	
Undergraduate Year 1	25 (12.7)
Undergraduate Year 2	74 (37.6)
Undergraduate Year 3	41 (20.8)
Undergraduate Year 4	35 (17.8)
Master's Program	4 (2.0)
Doctoral Program	2 (1.0)
Major	
Agriculture	1 (.5)
Art	1 (.5)
Elementary Education	10 (5.1)
English	1 (.5)

German	5 (2.5)
History	1 (.5)
Mathematics	1 (.5)
Middle Grades	4 (2.0)
Speech Language Pathology	5 (2.5)
Highest Education Completed	
Some High School	3 (1.5)
High School Graduate (includes GED)	5 (2.5)
Some college credit, no degree	20 (10.2)
Associate degree/ VET	1 (.5)
Bachelor's Degree	9 (4.6)
Master's Degree	9 (4.6)
PhD, PsyD, EdD, MD, etc.	2 (1.0)
Emphasis of Degree	
General Education	4 (2.0)
Early Childhood Education	6 (3.0)
Psychology	2 (1.0)
Other	9 (4.6)
Familiarity with ASD	
No experience	30 (15.2)
Little experience	55 (27.9)
Some experience	65 (33)
Moderate experience	34 (17.3)
Great deal of experience	13 (6.6)
	<hr/> <i>M (SD)</i> <hr/>
Age	21.19 (5.41)
Years of Experience in Education	2.91 (4.79)
Number of ASD Training Opportunities	1.82 (3.08)

Measures

Sociodemographic Information

Participants indicated their current occupation, education level, and the number of years teaching in an academic setting. Additionally, participants provided demographic information,

such as age and gender, for the purpose of providing sample descriptions. Participants also answered questions regarding previous training and familiarity with autism.

Teacher Attitudes

Successful implementation of inclusive practices is linked to positive attitudes toward including autistic students in the general education classroom (see Lautenbach & Heyder, 2019 for a review) and an increase in readiness to adopt these educational changes (Hustus & Owens, 2018). Successful inclusive education requires the utilization of EBPs (Reinke et al., 2011). Thus, this study conceptualizes inclusive teacher attitudes as a combination of attitudes toward (a) inclusive education, (b) EBPs, and (c) educational change.

Teacher Attitudes Toward Inclusive Education. The *Teacher Attitudes Toward Inclusive Scale (TATIS)*; Cullen et al., 2010) is a 14-item survey designed to measure respondents' perceptions and beliefs about the inclusion of students with disabilities in general education classrooms. Higher scores indicate participants' attitudes are highly supportive of inclusive education, whereas lower scores indicate participants' preference toward traditional service models. Cullen et al. (2010) reported good internal reliability for the total scale ($\alpha = .82$) and component loadings that supported its three factors (Mean factor loading = .72; Cullen et al., 2010). Other studies that have used the *TATIS* reported acceptable alphas in their samples (Saade et al., 2021). The current sample demonstrated a similar internal consistency ($\alpha = .87$).

Teacher Attitudes Toward Evidence-Based Practices. The *Evidence-Based Practice Attitude Scale (EBPAS)*; Aarons, 2004) is a 15-item self-report rating scale, developed initially to assess mental health and social service providers' attitudes toward evidence-based therapy/treatment. Participants rate their attitudes toward using new interventions on a scale from *Not at All* (0) to *A Very Great Extent* (4), with higher scores indicating positive attitudes toward

using new EBPs. The original development of this measure had acceptable internal reliability for the total scale ($\alpha = .77$; Aarons et al., 2004). Studies that followed also demonstrated construct validity through acceptable model fit (Aarons et al., 2007) and acceptable internal reliability ($\alpha = .76$) from various samples (Aarons et al., 2010).

For this study, ‘therapy’ was replaced with ‘intervention’, and ‘clients’ was replaced with ‘students’ to make the rating scale more applicable to teachers. Due to a software error, this version of the *EBPAS* only included the first 8 items (i.e., Openness and Divergence subscales). Removal of items 9 through 15 (i.e., Requirement and Appeal subscales) resulted in minimally acceptable internal consistency ($\alpha = .56$) and an inter-item correlation mean of .14 (see Ponterotto & Ruckdeschel, 2007 for a review). Despite the lower internal consistency, adequate factor loadings for the two subscales (factors ranging from .37 to .74) provided support for the 8-item structure.

Teacher Attitudes Toward Educational Change. The Intentional, Cognitive, and Emotional subscales of the *Readiness for Change (RFC)* (Kondakci et al., 2013) scale measured participants’ attitudes toward educational change. Participants rated their attitudes toward planned educational change on a scale from *Strongly Disagree* (1) to *Strongly Agree* (5), with higher scores representing more readiness (i.e., more positive attitudes) toward educational change. Unlike the other scales, unidimensional scores are not recommended for this scale. Thus, three summed factors were used to assess intentional (n items = 5), cognitive (n items = 4), and emotional readiness (n items = 3) for change. Kondakci et al. (2013) reported support for a three-factor model with acceptable to excellent internal reliability ($\alpha = .90, .87, \text{ and } .75$). The current study confirmed the proposed three-factor structure and demonstrated acceptable internal

reliability for the intentional ($\alpha = .78$), cognitive ($\alpha = .70$), and emotional readiness ($\alpha = .76$) factors.

Teacher Inclusive Education Experience

The teacher education literature is clear that the number of experiences matters because more training is linked to more positive outcomes regarding attitudes, knowledge (see Lautenbach & Heyder, 2019 for a review; Segall & Campbell, 2012), and self-efficacy (Loreman et al. 2013; Yada et al., 2018). However, the quality of those experiences also matters because pre-service teachers have variable opportunities and instructor/mentor quality within those experiences, influencing their takeaways from those experiences (Kildan et al., 2013). Finally, the perception of preparedness contributes to increased teaching self-efficacy (Brown et al, 2015). In this study, teacher experience is conceptualized as a combination of (a) the number of educational experiences, (b) the quality of these experiences, and (c) teachers' self-reported perception of preparedness.

Number of Experiences. To quantify the number of experiences received in a teacher education program, the author developed a Program Experience Questionnaire. Sixteen items from the current measure were selected from two different teacher education program evaluation assessments (Teacher Education Exit Survey, 2005; Teacher Education Exit Survey, n.d.). One item was developed and included in the current measure based on recommendations in Sharma et al. (2008). We conceptualized training as comprising of a broad number of acquired skills in the areas of classroom management, curriculum, evidence-based practices, cultural diversity, collaboration, professional development, ethics, child development, and inclusive education. The survey also included questions about field experience. These concepts were organized in the domains of theory (n items = 12) and application (n items = 4). In addition, one question

examined support from faculty. The two program evaluation assessments were coded based on skill/concept area to ensure that the resulting measure had questions from each domain (each measure examined different skills to varying degrees). The final measure included a total of 17 items. Participants indicated whether they had experienced the item described (e.g., ‘As a student, I have experienced instruction in cultural diversity and multicultural education’) by selecting *Yes* (1) or *No* (0) (i.e., highest score possible = 17). The sample demonstrated good internal reliability with this measure ($\alpha = .88$).

Quality of Experience. The Program Experience Questionnaire was also developed to measure participants’ perceptions of the quality of their inclusive education experiences. For all items endorsed as ‘Yes’ (i.e., having experienced that item), participants rated the value or helpfulness of the inclusive education experience on a five-point scale from *Not at All* (1) to *A Very Great Extent* (5). Higher scores are indicative of participants’ positive perceptions toward their inclusive education experiences. Excellent internal reliability was found for this scale ($\alpha = .92$).

Perceptions of Preparedness. The Inclusive Education Subscale (Zagona et al., 2017) assessed the construct of teacher preparedness. This 8-item survey was adapted from a larger survey assessing teachers’ preparedness and their perceptions of the importance of acquiring specific inclusive education teaching skills (Conderman & Johnston-Rodriguez, 2009). This study did not include the collaboration subscale due to the lack of relevancy. Participants rated how prepared they felt to demonstrate the skill presented (i.e., ‘Individualize instruction for students with significant disabilities.’) on a scale from *Not Prepared* (1) to *Very Prepared* (4). Similar to the original study ($\alpha = .93$; Zagona et al., 2017), the current study demonstrated high

internal consistency ($\alpha = .94$). A factor analysis of the current sample supported a one-factor structure of the items, with item loadings on this factor ranging from .76 to .88.

Mediating Variables

Teacher Self-Efficacy. The *Autism Self-Efficacy Scale for Teachers (ASSET)*; Ruble et al., 2013) was used to assess teachers' confidence in teaching autistic students. This measure asked participants to rate their level of certainty to perform tasks regarding teaching autistic students (i.e., 'Implement positive behavioral supports for this student.'). The original measure included a continuous scale of 0 to 100. Ruble et al. (2013) also supported a six-point categorical scale by demonstrating strong internal consistency ($\alpha = .96$) and validity. The current study opted to use the 6-point scale because participants in the original study did not utilize the whole scale, limiting the variability of responses (Ruble et al., 2013). Other studies have reported similarly good psychometrics for this measure (Saade et al., 2021; Kisbu-Sakarya & Doenyas, 2021) Participants indicated their level of confidence by selecting a rating between *Cannot Do at All* (0) to *Highly Certain Can Do* (5). In accordance with the original study, this sample supports one dominant factor and demonstrates excellent internal reliability ($\alpha = .99$).

Teacher Autism Knowledge. The *Autism Stigma and Knowledge Questionnaire (ASK-Q)*; Harrison et al., 2017) assessed participants' beliefs and understanding of autism spectrum disorders. This 49-item dichotomous measure asks participants to *Agree* (1) or *Disagree* (0) with the statement presented (i.e., 'Some children with autism may lose acquired speech'). Higher scores on the knowledge subscales suggest an adequate understanding of autism, and a higher score on the stigma subscale suggests less endorsement of stigma toward autism. This measure had solid validity and reliability in the original study and in subsequent research (Harrison et al.,

2017; Harrison et al., 2019; Yu et al., 2020). The current sample also demonstrated good internal consistency ($\alpha = .81$).

Procedures

This study targeted pre-service and active teachers to best understand the influence of inclusive education experiences in a teacher education program on teachers' attitudes toward autistic inclusive education. Per the UGA Institutional Review Board's (IRB) recommendation, this study was exempted by an external source called Sterling IRB. After obtaining consent, participants completed five self-report surveys and some demographic questions which took approximately 20 to 30 minutes to complete. Self-report surveys were distributed through UGA's Qualtrics technology service, a web-based survey tool that is offered free to UGA students. Upon completion of the study, participants received compensation with course credit if recruited through the Sona system, or otherwise with an electronic Amazon gift card.

Analysis plan

This study included three tiers of analysis. The analysis began with the examination of two latent traits: (a) inclusive education experiences and (b) inclusive teacher attitudes. The inclusive education experience latent trait consisted of the number of inclusive education experiences, the quality of inclusive education experiences, and the perceptions of preparedness to teach in inclusive classrooms. The inclusive teacher attitudes latent trait included attitudes toward inclusion (*TATIS*), attitudes towards evidence-based practices (*EBPAS*), and readiness for change (*RFC*), which comprised three subdomains (i.e., *RFC Cognition*, *RFC Affect*, and *RFC Intention*). The first set of analyses examined the structure of these latent traits using confirmatory factor analysis.

The next set of analyses examined the relation between the attitude and experience constructs. This second analysis examined this initial pathway using structural equation modeling. The third and final analysis tested potential factors mediating the relation between teacher experience and attitudes. Mediating variables examined included self-efficacy (*ASSET*) and ASD knowledge (*ASK-Q*).

Confirmatory Factor Analysis

The employment of structural equation modeling using Maximum Likelihood Method (MLM) estimation tested the factor structure of the two latent traits through Mplus8 software. Researchers often use a factor-loading cut-off score of .30 or above (DiStefano et al., 2009; Lambert et al., 1991) to determine how much the factor contributes to the construct (Yong & Pearce, 2013). Yong and Pearce (2013) also provide the option of establishing a cut-off significant loading as a means of interpretation.

The first latent variable, ‘inclusive education experiences’, tested in the confirmatory analysis included three-factor model with three independent indicators comprised of the number of inclusive education experiences (“Quantity”), the helpfulness of inclusive education experiences (“Quality”), and the perceptions of preparedness to teach in inclusive classrooms (“Prepared”). Given the assumption that the more inclusive opportunities experienced, the more valuable the experiences would be perceived, the relation between Quality and Quantity was also tested in the inclusive education experience CFA. The second latent construct, ‘inclusive teacher attitudes’, tested in the confirmatory model initially included five factors consisting of the indicators derived from measure sums from the *TATIS*, *EBPAS*, *RFC Cognition*, *RFC Emotion*, and *RFC Intention*.

Mediation Model

Pathway analysis conducted through structural equation modeling examined the direct relation between education experience and attitudes. The study employed the Maximum Likelihood Method (MLM) estimation to analyze the model using due to a disruption of the assumption of normality among several of the study variables (Muthen & Muthen, 2012). With this type of estimation, traditional fit statistics (i.e., Chi-squared statistic) are inappropriate for interpretation. Cutoff criteria from model fit indices, such as the root mean square error of approximation (RSMEA), comparative fit index (CFI), and Tucker-Lewis index (TLI), assessed model fit across the three models. Relatively good model fit is represented by an RSMEA value less than .06, and a CFI and TLI larger than .95 (Hu & Bentler, 1999). The Log Likelihood (LL), Akaike (AIC), and Bayesian (BIC) statistics demonstrate any change in the model fit when more controls are added (McNabb & Murayama, 2021).

Following the confirmation of direct associations between the latent constructs, participants' self-efficacy (i.e., *ASSET* sum) and autism knowledge (i.e., *ASK-Q* sum) were concurrently evaluated in the model via a mediation analysis (Hopwood, 2007) to determine a full, partial, or no mediating relationship. Model fit statistics were then compared between Models 2a and 3 to determine which attitude(s) accounts for more variance in the model fit. Better model fit is determined when the statistic becomes smaller as the model changes.

Power Calculation

The sample size for the current study was determined based on the general rule of thumb of 20 participants per pathway tested in SEM analyses (Kline, 2016; Kyriazos, 2018). The analysis tested five pathways, including the correlation between inclusive education experiences and teacher attitudes, and autism knowledge and/or participant self-efficacy as two independent

possible mediators. Thus, this rule suggested a sample size of 100. Additionally, researchers recommend a sample of 200 participants to conduct the CFAs (Kyriazos, 2018). G Power software also suggested a sample of $N = 220$ with an effect size of .30 and a significance value of .05. Thus, this study aimed to recruit at least 220 participants.

RESULTS

Preliminary Analyses

A preliminary data analysis of descriptive statistics of the observed variables established testable means and variances. The average variable scores for the sample are as follows (see Table 2): Preparedness $M = 19.13$ ($SD = 6.54$), Quantity $M = 11.78$ ($SD = 4.45$), Quality $M = 47.46$ ($SD = 21.99$), TATIS $M = 43.61$ ($SD = 11.91$), RFC Cognition $M = 15.54$ ($SD = 2.6$), RFC Emotional $M = 9.67$ ($SD = 2.61$), RFC Intentional $M = 19.51$ ($SD = 3.1$), EBPAS $M = 21.28$ ($SD = 4.4$), ASSET $M = 96.25$ ($SD = 35.37$), and ASK-Q $M = 39.29$ ($SD = 5.44$).

Table 2

Descriptive Statistics of Predictor and Outcome Observed Variables

Variable	N	Min	Max	M	SD
Preparedness	197	8	32	19.13	6.54
Quantity	197	0	17	11.78	4.45
Quality	197	0	85	47.46	21.99
TATIS	196	14	75	43.61	11.91
RFC Cognition	192	4	20	15.54	2.6
RFC Emotional	196	3	15	9.67	2.61
RFC Intentional	189	5	25	19.51	3.1
EBPAS	197	8	32	21.28	4.4
ASSET	197	0	178	96.25	35.37
ASKQ	197	17	48	39.29	5.44

Excluded from the dataset included participants with more than 20 percent of their data was missing (Dong & Peng, 2013). This led to the exclusion of 31 participants (13.5% of the sample). For the remaining sample, missing data was imputed as part of the SEM analyses.

Examining the skewness statistic of each observed variable sum allowed for testing of the normality of the data. Skewness and kurtosis absolute values ranged between 0.27 to 8.33 across predicted and outcome variables. *Quant*, *RFC Cognitive*, *RFC Intentional*, and *ASK-Q* were skewed (statistic > absolute 3.29; Kim, 2013). Transformations (e.g., Log, Square Root) were performed but did not correct any variables.

Latent Constructs

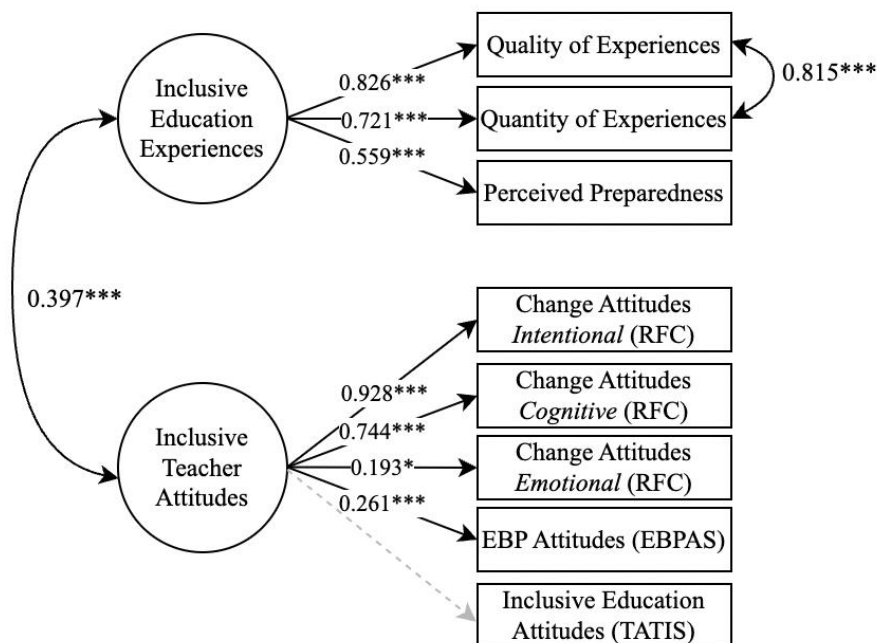
The first latent construct, ‘inclusive education experiences,’ comprised of the number of inclusive education experiences (“Quantity”), the helpfulness of inclusive education experiences (“Quality”), and the perceptions of preparedness to teach in inclusive classrooms (“Prepared”), All factors loaded adequately (.72, .83, and .56) onto the inclusive education experience latent construct and were all statistically significant (p 's < .05) as seen in Model 1 (Figure 1). This provided evidence that these measures could be combined to form a unitary construct of education experience.

The ‘inclusive teacher attitude’ latent construct included five indicators derived from measure sums from the *TATIS*, *EBPAS*, *RFC Cognition*, *RFC Emotion*, and *RFC Intention*. Results revealed that only four of the five factors significantly loaded onto the inclusive teacher attitude latent construct: *TATIS* ($p = .37$), *EBPAS* ($p < .01$), *RFC Cognition* ($p < .01$), *RFC Emotion* ($p = .03$), and *RFC Intention* ($p < .01$). As a result of the low *TATIS* loading, this variable was removed from the latent structure and the factor loading was reexamined. After removing the *TATIS*, the four factors all demonstrated statistical significance (p 's < .05) and

revealed the following factor loadings: *RFC Intentional* = .94, *RFC Cognition* = .74, *RFC Emotional* = .18, *EBPAS* = .26. The *TATIS* remained as an independent outcome variable in subsequent analyses because of the measure's relevance to the main aims of this study.

Figure 1.

Model 1: CFA of Inclusive Education Experiences and Teacher Attitudes



Mediation Models

Three mediation models were conducted to examine the relation between teacher experiences and their attitudes.

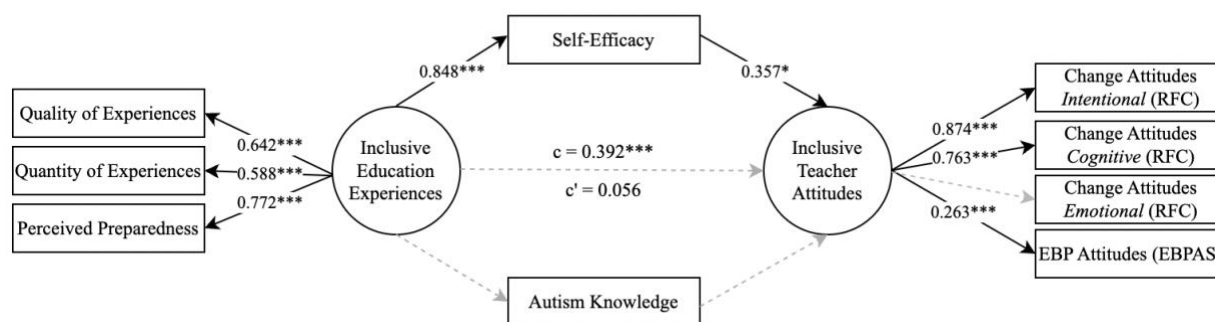
Four-Factor Inclusive Teacher Attitude Latent Construct

Pathway c in Model 2a examined the direct relation between the inclusive education experiences and the 4-factor inclusive teacher attitudes latent constructs. A moderate and significant association between the two constructs existed ($p = .000$). Pathway c' examined the indirect relation between these two latent constructs via self-efficacy and autism knowledge. Factors loaded onto each construct with statistical significance (p 's < .001), except for *RFC*

Emotional ($p = .18$); however, this variable was retained because of the initial significance identified in the attitude latent construct CFA and due to theoretical support explaining that all three readiness factors are essential to understanding attitudes toward inclusive education (e.g., Ajzen, 2001; see de Boer et al., 2011 for a review). A mediation analysis revealed that self-efficacy, as measured by the *ASSET*, fully mediated the relation between inclusive education experiences ($p = .000$) and inclusive teacher attitudes ($p = .042$). Autism knowledge, as measured by *ASK-Q*, was not significantly related to either inclusive teacher attitudes ($p = .336$) or inclusive education experiences ($p = .591$); thus, autism knowledge did not mediate the relation between experiences and attitudes. Overall, this model demonstrated a good fit (RSMEA = 0.116, CFI = 0.906, and TLI = 0.853).

Figure 2.

Model 2a: Mediation Model With EBPAS



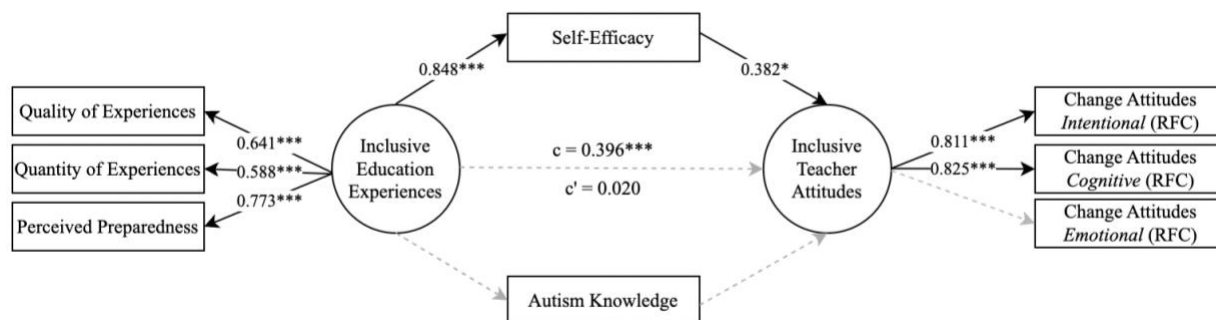
Three-Factor Inclusive Teacher Attitude Latent Construct

Model 2b replicated Model 2a but without the inclusion of the *EBPAS* into the inclusive teacher attitude construct (Figure 3). Given the measure's low internal consistency, it was important to assess whether this variable accounted for most of the significance in the Model 2a pathway c. The direct pathway (exhibited by pathway 'c' in Figure 3) between inclusive education experiences and the inclusive teacher attitude construct demonstrated a moderate and

significant association ($p = .000$). When the mediators were included in the model, *RFC Intentional* and *RFC Cognitive* loaded onto each construct with statistical significance (p 's < .001). As in Model 2a, *RFC Emotional* did not significantly load onto the inclusive education construct ($p = .13$). This model demonstrated similar findings to Model 2a in that self-efficacy (i.e., *ASSET*) fully mediated the relation between inclusive education experiences ($p = .000$) and inclusive teacher attitudes ($p = .030$). Autism knowledge (i.e., *ASK-Q*) did not demonstrate any significant relations, suggesting no mediating effect. Furthermore, model fit statistics also represented good fit (RSMEA = 0.090, CFI = 0.956, and TLI = 0.923). These findings showed there was still a mediating relation even when the *EBPAS* was taken out of the model.

Figure 3.

Model 2b: Mediation Model Without EBPAS



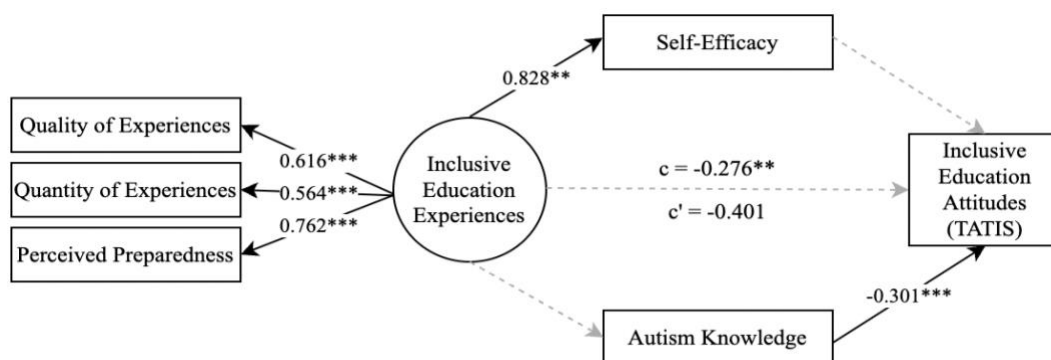
TATIS as the Outcome Variable

Given that the *TATIS* did not significantly load onto the inclusive teacher attitude latent trait, this variable was examined separately as depicted by Model 3 (Figure 4). A weak but significant association was found between the inclusive education experiences construct and the *TATIS* ($p = .003$). A mediation analysis assessed the indirect relation between inclusive education experiences and the *TATIS* via self-efficacy and autism knowledge. With regard to

self-efficacy as a mediator, the pathway between inclusive education experiences and self-efficacy (i.e., *ASSET*, $p = .000$) was statistically significant. The autism knowledge (i.e., *ASK-Q*) mediator only significantly correlated with the inclusive education experience construct ($p = .000$). The direct effect of pathway *c* was no longer significant when mediators were introduced to the model ($p = .073$). Together, these results indicate neither variable mediated the relation between experiences and attitudes. However, overall model fit statistics revealed good model fit (RSMEA = 0.018, CFI = .999, and TLI = .998).

Figure 4.

Model 3: Mediation Model with TATIS



Model Comparison

Loglikelihood, AIC, and BIC statistics were used to compare model fitness between Models 2a (i.e., broader attitude construct), and Model 3 (i.e., *TATIS* as the observed outcome). The more comprehensive attitude model (Model 2a; $L = -3592.002$, AIC = 7230.004, BIC = 7304.072) demonstrated a better representation of the proposed hypothesis compared to Model 3 ($L = -4173.787$, AIC = 8389.574, BIC = 8458.415).

DISCUSSION

Researchers have worked toward understanding barriers that explain the gap between training and successful implementation of evidence-based practices in efforts to improve inclusive education (e.g., Lukins et al., 2023). Results from this study demonstrate that teachers' inclusive education experiences significantly relate to their attitudes toward teaching autistic students, as well as the complexity of what factors likely contribute to this association. More specifically, these results show that this relation between teachers' attitudes and their inclusive education experiences is mediated by self-efficacy. The finding of training and self-efficacy as essential components to predicting positive attitudes expands upon previous research that demonstrates positive attitudes toward teaching autistic students contribute to teachers' willingness to include autistic students in their general education classroom (Kisbu-Sakarya & Doenyas, 2021). Without positive self-efficacy, inclusive education experiences do not have as strong of an influence on teachers' attitudes; thus, teacher education programs and trainings should focus on improving pre-service and active teachers' confidence in their abilities to teach autistic students.

Findings from this study also provide a model for how to measure the complex constructs of inclusive education experiences and inclusive teacher attitudes by using various components to better understand the multifaceted phenomena. This study revealed that the training experience consists not only of the number of didactic and practicum opportunities centered around inclusive education, but also the value/helpfulness of these experiences, and participants' perceived preparedness to teach in inclusive settings. This meaningful finding broadens the

literature as other studies that examine training experiences focus on a narrower assessment of this construct (Clark & Newberry, 2019; Sokal & Sharma, 2017). Unsurprisingly, in this study, perceptions of preparedness accounted for most of the variance in the relation between experiences and teacher attitudes. This indicates that teacher training programs should consider assessing teachers' perceived preparedness as feeling prepared strongly relates to teachers' self-efficacy (Manasia et al., 2020).

In addition, teacher attitudes can represent as a gateway to the successful implementation of evidence-based inclusive practices (Ajzen, 2001; Avramidis & Norwich, 2002). This study demonstrates a need to reconsider how researchers conceptualize teachers' attitudes toward inclusive education for autistic students. This is the first study to examine a cluster of attitude constructs that likely all relate to inclusion. Most studies that have examined teacher attitudes toward inclusion only included one measure that broadly assesses the topic as opposed to a range of specific components that when all combined, likely lead to successful inclusive practices (Forlin et al., 2010; Sokal & Sharma, 2017; Swain et al., 2012; Yada et al., 2018). Given the complexity of attitude development (Ajzen, 2001), it seems insufficient to definitively conclude teachers' attitudes toward inclusive education for autistic students with one measure. Results from this study demonstrate that while attitudes toward EBPs and change factors all relate significantly to one another, attitudes toward inclusive education generally do not. Perhaps this is because both the items on the *RFC Intention* scale and the *EBPAS* target the person's behavior and willingness to engage in the concept; whereas items on the *TATIS* regard more of a philosophical assessment of attitudes toward inclusive education. Findings from this study revealed the relevancy for all factors in assessing inclusive teacher attitudes; however, one construct does not represent all factors.

Knowledge about autism showed a significant association specifically with teacher attitudes toward inclusion (e.g., *TATIS*), which is consistent with previous findings that suggest the more autism knowledge pre-service and active teachers have, the more supportive their attitudes and beliefs will be toward the inclusion of students with disabilities (Cullen et al., 2010; Segall & Campbell, 2012). However, autism knowledge did not mediate the relation between inclusive education experiences and inclusive teacher attitudes in this study. Contrary to previous research documenting that general education pre-service teachers learn about autism through required coursework in special education (Pugach et al., 2011), the individuals in this study did not display this. This could be because many programs do not include autism as a core emphasis of the training (Barned et al., 2011; Busby et al., 2012; Jaffal, 2022). The lack of autism training speaks to the need for teacher education programs to incorporate adequate course and practicum experiences to increase pre-service teachers' knowledge about autism and how to teach these students effectively. Furthermore, autism knowledge is a narrow concept and was shown not to influence broad attitudes toward inclusion. Future research might use a knowledge composite that more comprehensively assesses a broader knowledge composite that matches the broad attitudes composite.

A strength of the study included the use of a structural equation model to assess the relation of multiple components of inclusive education experiences on teacher attitudes. This type of modeling allowed for the examination of two different latent constructs. The significant results provide us with greater understanding about the necessary factors to improve teacher attitudes toward teaching autistic students. Although results showed promising suggestions, attitude toward inclusive education (i.e., *TATIS*) did not contribute to the overall construct of teachers' attitudes. When *TATIS* was assessed in the mediation model as an individual outcome,

teacher autism knowledge significantly related to the *TATIS*, but self-efficacy did not. Perhaps a greater understanding of autistic students' capabilities increases teachers' positive beliefs about including them in their general education classroom.

Limitations

This study presents several limitations. First, due to a software error, half of the *EBPAS* measure did not get included in the analysis. This resulted in a lower alpha coefficient for the shortened version. Although the shortened *EBPAS* significantly correlated to the other factors in the teacher attitudes latent construct, the factor loading was low. Future studies should replicate the design and incorporate the *EBPAS* as the original authors' intended. Furthermore, the *RFC Affect* subscale significantly loaded onto the teacher attitudes construct in the initial CFA; however, the factor lost its significance in the mediation analysis. The original authors of this measure also found this subscale to have weak and/or insignificant correlations with other factors (Kondakci et al., 2017).

The recruitment of both pre-service and active teachers allowed for diverse experiences and attitudes to be assessed; however, an insufficient number of each prevented an examination of these groups separately. Recruitment of more active teachers would have been beneficial given research that shows the length of time in the field is associated with readiness for change (Peterson, 2012), and the inclusion of more seasoned teachers might have contributed more variability to this construct. Additionally, variability in type of active teacher (e.g., faculty) could have skewed the results based on years of experience, changes in teacher training program, and accuracy of participants' memory.

Finally, interpretations of the findings are purely based on self-report surveys. Self-report data presents issues related to the validity of the measured construct and to participants' accuracy

of their responses (Chan, 2010). The utilization of only self-report measures may increase bias based on preconceived attitudes. Additionally, given the cross-sectional nature of the study, statements of causation and determination of the direction of the association cannot be concluded. For example, positive attitudes might shape the participants' positive perspectives about their training program experiences. Future research should focus on longitudinal designs that track the impacts of teacher self-efficacy, knowledge, and attitudes toward inclusive education.

Conclusion

Teacher attitudes and factors that shape these attitudes are well studied in the literature. This study supports the vast findings that self-efficacy is a crucial contributor to the development of teachers' attitudes. Knowing that attitudes are facilitators or barriers to successful implementation, teacher education programs must focus on building efficacy in their trainees. Future research should investigate the factors that improve one's belief in their capability to impact autistic students' academic trajectories. Knowing these factors can inform teacher education programs about the necessary components to include in their pre-service teachers' programs of study.

REFERENCES

- Aarons, G. A. (2004). Mental health provider attitudes toward adoption of evidence-based practice: The evidence-based practice attitude scale (EBPAS). *Mental Health Services Research, 6*(2), 61–74. <https://doi.org/10.1023/b:mhsr.0000024351.12294.65>
- Aarons, G. A., McDonald, E. J., Sheehan, A. K., & Walrath-Greene, C. M. (2007). Confirmatory factor analysis of the Evidence-Based Practice Attitude Scale (EBPAS) in a geographically diverse sample of community mental health providers. *Administration and Policy in Mental Health, 34*, 465–469. <https://doi.org/10.1007/s10488-007-0127-x>
- Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In: Kuhl, J., Beckmann, J. (Eds.), *Action Control, From Cognition to Behavior* (pp. 11-39). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-69746-3_2
- Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology, 52*, 27–58. <https://doi.org/10.1146/annurev.psych.52.1.27>
- Ansley, B. M., Houchins, D. E., Varjas, K., Roach, A., Patterson, D., & Hendrick, R. (2021). The impact of an online stress intervention on burnout and teacher efficacy. *Teaching and Teacher Education, 98*. <https://doi.org/10.1016/j.tate.2020.103251>
- Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration/inclusion: a review of the literature. *European Journal of Special Needs Education, 17*(2), 129–147. <https://doi.org/10.1080/08856250210129056>
- Avramidis, E., Toulia, A., Tsihouridis, C., & Strogilos, V. (2019). Teachers' attitudes towards inclusion and their self-efficacy for inclusive practices as predictors of willingness to

- implement peer tutoring. *Journal of Research in Special Educational Needs*, 19(S1), 49–59. <https://doi.org/10.1111/1471-3802.12477>
- Bandura, A. (1978). Self-Efficacy: Toward A Unifying Theory of Behavioral Change. *Advances in Behaviour Research and Therapy*, 1(4), 139-161. [https://doi.org/10.1016/0146-6402\(78\)90002-4](https://doi.org/10.1016/0146-6402(78)90002-4)
- Barned, N. E., Knapp, N. F., & Neuharth-Pritchett, S. (2011). Knowledge and attitudes of early childhood preservice teachers regarding the inclusion of children with autism spectrum disorder. *Journal of Early Childhood Teacher Education*, 32(4), 302–321. <https://doi.org/10.1080/10901027.2011.622235>
- Barnes, J., Conrad, K., Demont-Heinrich, C., Graziano, M., Kowalski, D., Neufeld, J., Zamora, J., & Palmquist, M. (2005). *Understanding generalizability and transferability*. Writing@CSU. Colorado State University, Retrieved August 29, 2023, from <https://writing.colostate.edu/guides/guide.cfm?guideid=65>
- Bolourian, Y., Losh, A., Hamsho, N., Eisenhower, A., & Blacher, J. (2022). General Education Teachers’ Perceptions of Autism, Inclusive Practices, and Relationship Building Strategies. *Journal of Autism and Developmental Disorders*, 52, 3977–3990. <https://doi.org/10.1007/s10803-021-05266-4>
- Bouckenooghe, D., Devos, G., & Van den Broeck, H. (2009). Organizational Change Questionnaire-Climate of Change, Processes, and Readiness: Development of a New Instrument. *The Journal of Psychology*, 143(6), 559–599. <https://doi.org/10.1080/00223980903218216>
- Brackenreed, D., & Barnett, J. (2006). Teacher stress and inclusion: Perceptions of pre-service teachers. *Developmental Disabilities Bulletin*, 34(1&2), 156–176. <https://eric.ed.gov/?id=EJ815716>

- Brown, A. L., Lee, J., & Collins, D. (2015). Does student teaching matter? Investigating pre-service teachers' sense of efficacy and preparedness. *Teaching Education*, 26(1), 77–93. <https://doi.org/10.1080/10476210.2014.957666>
- Busby, R., Ingram, R., Bowron, R., Oliver, J., & Lyons, B. (2012). Teaching elementary children with autism: Addressing teacher challenges and preparation needs. *The Rural Educator*, 33(2), 27–35. <https://doi.org/10.35608/ruraled.v33i2.416>
- Clark, S., & Newberry, M. (2019). Are we building preservice Teacher self-efficacy? A large-scale study examining Teacher education experiences. *Asia-Pacific Journal of Teacher Education*, 47(1), 32–47. <https://doi.org/10.1080/1359866X.2018.1497772>
- Chan, D. (2010). So why ask me? Are self-report data really that bad? In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity and fable in organizational and social sciences* (pp. 309-332). Taylor & Francis Group.
- Cole, D. A., Ciesla, J. A., & Steiger, J. H. (2007). The Insidious Effects of Failing to Include Design-Driven Correlated Residuals in Latent-Variable Covariance Structure Analysis. *Psychological Methods*, 12(4), 381–398. <https://doi.org/10.1037/1082-989X.12.4.381>
- Conderman, G., & Johnston-Rodriguez, S. (2009). Beginning teachers' views of their collaborative roles. *Preventing School Failure: Alternative Education for Children and Youth*, 53(4), 235–244. <https://doi.org/10.3200/PSFL.53.4.235-244>
- Conderman, G., Johnston-Rodriguez, S., Hartman, P., & Walker, D. (2013). Honoring voices from beginning special educators for making changes in teacher preparation. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children*, 36(1), 65–76. <https://doi.org/10.1177/0888406412473311>

- Cook, B. G. (2002). Inclusive Attitudes, Strengths, and Weaknesses of Pre-service General Educators Enrolled in a Curriculum Infusion Teacher Preparation Program. *Teacher Education and Special Education, 25*(3), 262–277.
<https://doi.org/10.1177/088840640202500306>
- Cullen, J., Gregory, J., & Noto, L. (2010). The Teacher Attitudes Toward Inclusion Scale (TATIS) Technical Report. In *Eastern Educational Research Association*.
<https://eric.ed.gov/?q=ED509930>
- Datnow, A. (2020). The role of teachers in educational reform: A 20-year perspective. *Journal of Educational Change, 21*, 431–441. <https://doi.org/10.1007/s10833-020-09372-5>
- de Brey, C., Snyder, T. D., Zhang, A., & Dillow, S. A. (2021). Digest of Education Statistics 2019 (NCES 2021-009). *National Center for Education Statistics, 70*. Retrieved August 1, 2023, from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2021009>
- de Boer, A., Pijl, S. J., & Minnaert, A. (2011). Regular primary schoolteachers' attitudes towards inclusive education: a review of the literature. *International Journal of Inclusive Education, 15*(3), 331–353. <https://doi.org/10.1080/13603110903030089>
- DiStefano, C., Zhu, M., & Mîndrilă, D. (2009). Understanding and using factor scores: Considerations for the applied researcher. *Practical Assessment, Research, and Evaluation, 14*(20). <https://doi.org/10.7275/da8t-4g52>
- Dong, Y., & Peng, C.-Y. J. (2013). Principled missing data methods for researchers. *SpringerPlus, 2*(222). <https://doi.org/10.1186/2193-1801-2-222>
- Forlin, C., Cedillo, I. G., Romero-Contreras, S., Fletcher, T., & Rodríguez Hernández, H. J. (2010). Inclusion in Mexico: Ensuring supportive attitudes by newly graduated teachers. *International Journal of Inclusive Education, 14*(7), 723–739.
<https://doi.org/10.1080/13603111003778569>

- Gilor, O., & Katz, M. (2018). Pre-service Teachers' Willingness to Engage in Inclusive Teaching: An Explanatory Model. *Journal of International Special Needs Education*, 22(2), 77–89. <https://eric.ed.gov/?id=EJ1234928>
- Harrison, A. J., Bradshaw, L. P., Naqvi, N. C., Paff, M. L., & Campbell, J. M. (2017). Development and Psychometric Evaluation of the Autism Stigma and Knowledge Questionnaire (ASK-Q). *Journal of Autism and Developmental Disorders*, 47(10), 3281–3295. <https://doi.org/10.1007/s10803-017-3242-x>
- Harrison, A. J., Paff, M. L., & Kaff, M. S. (2019). Examining the psychometric properties of the autism stigma and knowledge questionnaire (ASK-Q) in multiple contexts. *Research in Autism Spectrum Disorders*, 57, 28–34. <https://doi.org/10.1016/j.rasd.2018.10.002>
- Hayes, J. A., Baylot Casey, L., Williamson, R., Black, T., & Winsor, D. (2013). Educators' Readiness to Teach Children with Autism Spectrum Disorder in an Inclusive Classroom. *The Researcher*, 25(1), 67–78.
- Hess, K. L., Morrier, M. J., Heflin, L. J., & Ivey, M. L. (2008). Autism treatment survey: Services received by children with autism spectrum disorders in public school classrooms. *Journal of Autism and Developmental Disorders*, 38(5), 961–971. <https://doi.org/10.1007/s10803-007-0470-5>
- Hopwood, C. J. (2007). Equation modeling: Applications for early intervention research. *Journal of Early Intervention*, 29(3), 262–272.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Hustus, C. L., & Owens, J. S. (2018). Assessing readiness for change among school professionals and its relationship with adoption and reported implementation of mental

- health initiatives. *Child and Youth Care Forum*, 47(6), 829-844.
<https://doi.org/10.1007/s10566-018-9463-0>
- İnandı, Y., & Giliç, F. (2016). Relationship of teachers' readiness for change with their participation in decision making and school culture. *Educational Research and Reviews*, 11(8), 823–833. <https://eric.ed.gov/?id=EJ1099893>
- Individuals with Disabilities Education Act, 20 U.S.C. § 1412 5a (2004)
- Jaffal, M. A. (2022). Barriers general education teachers face regarding the inclusion of students with autism. *Frontiers in Psychology*, 13, 873248.
<https://doi.org/10.3389/fpsyg.2022.873248>
- Kildan, A. O., İbret, A. O., Pektaş, B. Ü., Aydınöz, M., İncikabı, D., & Reçepoğlu, L. (2013). Evaluating Views of Teacher Trainees on Teacher Training Process in Turkey. *Australian Journal of Teacher Education*, 38(2), 51–68. <https://doi.org/10.14221/ajte.2013v38n2.10>
- Kim, H.-Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics*, 52–54.
<https://doi.org/10.5395/rde.2013.38.1.52>
- Kisbu-Sakarya, Y., & Doenyas, C. (2021). Can school teachers' willingness to teach ASD-inclusion classes be increased via special education training? Uncovering mediating mechanisms. *Research in Developmental Disabilities*, 113, 103941.
<https://doi.org/10.1016/j.ridd.2021.103941>
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press.
- Knoblauch, B., & McLane, K. (1999). An overview of the individuals with disabilities education act amendments of 1997 (P.L. 105-17). *ERIC Clearinghouse on Disabilities and Gifted*

- Education*. Retrieved August 29, 2023, from <https://files.eric.ed.gov/fulltext/ED433668.pdf>
- Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning and Education*, 4(2), 193–212. <https://doi.org/10.5465/AMLE.2005.17268566>
- Kondakçi, Y., Beycioglu, K., Sincar, M., & Ugurlu, C. T. (2017). Readiness of teachers for change in schools. *International Journal of Leadership in Education*, 20(2), 176–197. <https://doi.org/10.1080/13603124.2015.1023361>
- Kondakçi, Y., Zayim, M., & Caliskan, O. (2013). Development and validation of readiness for change scale. *Elementary Education Online*, 12(1), 23–35.
- Kukull, W. A., & Ganguli, M. (2012). Generalizability: The trees, the forest, and the low-hanging fruit. *Neurology*, 78, 1886–1891. <https://doi.org/10.1212/WNL.0b013e318258f812>
- Kyriazos, T. A. (2018). Applied Psychometrics: Sample Size and Sample Power Considerations in Factor Analysis (EFA, CFA) and SEM in General. *Psychology*, 9(8), 2207–2230. <https://doi.org/10.4236/psych.2018.98126>
- Lambert, Z. V, Wildt, A. R., & Durand, R. M. (1991). Approximating confidence intervals for factor loadings. *Multivariate Behavioral Research*, 26(3), 421–434. https://doi.org/10.1207/s15327906mbr2603_3
- Lautenbach, F., & Heyder, A. (2019). Changing attitudes to inclusion in preservice teacher education: a systematic review. *Educational Research*, 61(2), 231–253. <https://doi.org/10.1080/00131881.2019.1596035>

- Loreman, T., Sharma, U., & Forlin, C. (2013). Do pre-service teachers feel ready to teach in inclusive classrooms? A four country study of teaching self-efficacy. *Australian Journal of Teacher Education*, 38(1), 27–44. <https://doi.org/10.14221/ajte.2013v38n1.10>
- Lukins, J. M., Able, H., & Hume, K. (2023). Novice Teachers' Implementation of Evidence-Based Practices in Autism Education: Examining the Roles of Preparation and Perception. *Focus on Autism and Other Developmental Disabilities*, 38(1), 5–16. <https://doi.org/10.1177/10883576221144734>
- Maenner, M. J., Warren, Z., Williams, A. R., Amoakohene, E., Bakian, A. V., Bilder, D. A., Durkin, M. S., Fitzgerald, R. T., Furnier, S. M., Hughes, M. M., Ladd-Acosta, C. M., McArthur, D., Pas, E. T., Salinas, A., Vehorn, A., Williams, S., Esler, A., Grzybowski, A., Hall-Lande, J., ... Shaw, K. A. (2023). Prevalence and characteristics of autism spectrum disorder among children aged 8 years - Autism and developmental disabilities monitoring network, 11 sites, United States, 2020. *Morbidity and Mortality Weekly Report. Surveillance Summaries (Washington, D.C. : 2002)*, 72(2), 1–14. <https://doi.org/10.15585/mmwr.ss7202a1>
- Manasia, L., Ianos, M. G., & Chiciooreanu, T. D. (2020). Pre-service teacher preparedness for fostering education for sustainable development: An empirical analysis of central dimensions of teaching readiness. *Sustainability*, 12(1), 166–190. <https://doi.org/10.3390/SU12010166>
- Matherson, L., & Windle, T. M. (2017). What do teachers want from their professional development? Four emerging themes. *The Delta Kappa Gamma Bulletin: International Journal for Professional Educators*, 83(3), 28–32.
- McNabb, C. B., & Murayama, K. (2021). Unnecessary reliance on multilevel modelling to analyse nested data in neuroscience: When a traditional summary-statistics approach

- suffices. *Current Research in Neurobiology*, 2, 100024. <https://doi.org/10.1016/j.crneur.2021.100024>
- Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Muthén and Muthén.
- National Center for Education Statistics. (2023). Characteristics of Public School Teachers. *Condition of Education*. U.S. Department of Education, Institute of Education Sciences. Retrieved August 1, 2023, from <https://nces.ed.gov/programs/coe/indicator/clr>
- National Center for Education Statistics. (2023). Students With Disabilities. *Condition of Education*. U.S. Department of Education, Institute of Education Sciences. Retrieved August 29, 2023, from <https://nces.ed.gov/programs/coe/indicator/cgg>.
- Peterson, S. M. (2012). Understanding Early Educators' Readiness to Change. *NHSA Dialog*, 15(1), 95–112. <https://doi.org/10.1080/15240754.2011.636492>
- Ponterotto, J. G., & Ruckdeschel, D. E. (2007). An overview of coefficient alpha and a reliability matrix for estimating adequacy of internal consistency coefficients with psychological research measures. *Perceptual and Motor Skills*, 105(3), 997–1014. <https://doi.org/10.2466/pms.105.3.997-1014>
- Pugach, M. C., Blanton, L. P., & Correa, V. I. (2011). A historical perspective on the role of collaboration in teacher education reform: Making good on the promise of teaching all students. *Teacher Education and Special Education*, 34(3), 183–200. <https://doi.org/10.1177/0888406411406141>
- Reinke, W. M., Stormont, M., Herman, K. C., Puri, R., & Goel, N. (2011). Supporting Children's Mental Health in Schools: Teacher Perceptions of Needs, Roles, and Barriers. *School Psychology Quarterly*, 26(1), 1–13. <https://doi.org/10.1037/a0022714>
- Roberts, J., & Simpson, K. (2016). A review of research into stakeholder perspectives on inclusion of students with autism in mainstream schools. *International Journal of*

- Inclusive Education*, 20(10), 1084–1096.
<https://doi.org/10.1080/13603116.2016.1145267>
- Ruble, L. A., Toland, M. D., Birdwhistell, J. L., McGrew, J. H., & Usher, E. L. (2013). Preliminary study of the autism self-efficacy scale for teachers (ASSET). *Research in Autism Spectrum Disorders*, 7(9), 1151–1159. <https://doi.org/10.1016/j.rasd.2013.06.006>
- Saade, S., Bean, Y. F., Gillespie-Lynch, K., Poirier, N., & Harrison, A. J. (2021). Can participation in an online ASD training enhance attitudes toward inclusion, teaching self-efficacy and ASD knowledge among preservice educators in diverse cultural contexts? *International Journal of Inclusive Education*, 1–16.
<https://doi.org/10.1080/13603116.2021.1931716>
- Segall, M. J., & Campbell, J. M. (2012). Factors relating to education professionals' classroom practices for the inclusion of students with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 6(3), 1156–1167. <https://doi.org/10.1016/j.rasd.2012.02.007>
- Sharma, U., Loreman, T., & Forlin, C. (2012). Measuring teacher efficacy to implement inclusive practices. *Journal of Research in Special Educational Needs*, 12(1), 12–21. <https://doi.org/10.1111/j.1471-3802.2011.01200.x>
- Sokal, L., & Sharma, U. (2017). “Do I really need a course to learn to teach students with disabilities? I’ve been doing it for years.” *Canadian Journal of Education*, 40(4), 739–760. <https://www.jstor.org/stable/90018386>
- Sokal, L., Woloshyn, D., & Funk-Unrau, S. (2013). How important is practicum to pre-service teacher development for inclusive teaching? Effects on efficacy in classroom management. *Alberta Journal of Educational Research*, 59(2), 285–298.
<https://doi.org/10.11575/ajer.v59i2.55680>

- Soodak, L. C., & Podell, D. M. (1993). Teacher efficacy and student problem as factors in special education referral. *The Journal of Special Education, 27*(1), 66–81.
<http://doi.org/10.1177/002246699302700105>
- Swain, K. D., Nordness, P. D., & Leader-Janssen, E. M. (2012). Changes in Preservice Teacher Attitudes Toward Inclusion. *Preventing School Failure: Alternative Education for Children and Youth, 56*(2), 75–81. <https://doi.org/10.1080/1045988X.2011.565386>
- Teacher Education Exit Survey (2005). *California State University, Long Beach*.
https://www.csulb.edu/sites/default/files/document/document_ced_accreditation_csuexitsurveymultiplesubject-2009.pdf
- Teacher Education Exit Survey (n.d.). *University of Georgia Qualtrics*.
- Van Der Steen, S., Geveke, C. H., Steenbakkens, A. T., & Steenbeek, H. W. (2020). Teaching students with Autism Spectrum Disorders: What are the needs of educational professionals? *Teaching and Teacher Education, 90*, 103036–103045.
<https://doi.org/10.1016/j.tate.2020.103036>
- Wilson, K. L., Lizzio, A., & Ramsden, P. (1997). The development, validation and application of the Course Experience Questionnaire. *Studies in Higher Education, 22*(1), 33–53.
<https://doi.org/10.1080/03075079712331381121>
- Yada, A., Tolvanen, A., & Savolainen, H. (2018). Teachers' attitudes and self-efficacy on implementing inclusive education in Japan and Finland: A comparative study using multi-group structural equation modelling. *Teaching and Teacher Education, 75*, 343–355. <https://doi.org/10.1016/j.tate.2018.07.011>
- Yong, A. G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology, 9*(2), 79–94. <https://doi.org/10.20982/TQMP.09.2.P079>

Yu, L., Stronach, S., & Harrison, A. J. (2020). Public knowledge and stigma of autism spectrum disorder: Comparing China with the United States. *Autism, 24*(6), 1531-1545.

<https://doi.org/10.1177/1362361319900839>

Zagona, A. L., Kurth, J. A., & MacFarland, S. Z. C. (2017). Teachers' views of their preparation for inclusive education and collaboration. *Teacher Education and Special Education, 40*(3), 163–178. <https://doi.org/10.1177/0888406417692969>