

# Licensed but Unprepared: Special Educators' Preparation to Teach Autistic Students

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Boston College  
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Program of  
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Licensed but Unprepared:  
Special Educators' Preparation to Teach Autistic Students

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## ABSTRACT

### **Licensed but Unprepared: Special Educators' Preparation to Teach Autistic Students**

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The number of autistic students receiving special education services increased 478% between the years 2000 and 2013 (National Center for Education Statistics, 2016). U.S. schools and teachers are educating more autistic students with complex educational needs resulting from differences in communication, social interaction and behavior. As a result, schools need increasing numbers of teachers who are equipped to educate them. Quality special education teacher preparation is critical for teachers of autistic students, because it can affect the quality of education and outcomes for this highly unique student population.

Very little research has been conducted to determine the extent to which special education teacher preparation programs provide teachers with preparation to teach autistic students, or about the extent to which special educators feel prepared to teach this population at the point of conclusion of their preparation programs. This study used a mixed methods sequential explanatory design to examine the perceptions of special educators about their preparedness to teach autistic students based on preparation program/licensure, specialized autism coursework, and on-the-job experiences after licensure programs. A researcher-created survey was followed by interviews to explore participants' survey responses more deeply. Survey data ( $n = 121$ ) were used to inform both question construction and participant selection

for a purposive sample of follow-up interviews ( $n= 10$ ). Regression analyses, means, summary scores, and thematic coding were employed to analyze the survey data. Results indicated that the majority (77%) of special education teachers felt unprepared to teach autistic students at the end of their licensure programs. However, specialized autism coursework was a significant predictor of teachers' sense of preparedness. Limitations of the study and implications for special education teacher preparation and education are discussed.

Dedicated to  
Reishaun Michael Hopkins

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## CHAPTER ONE

### Special Education Teacher Preparation and Autism

In classrooms across the United States, there are increasing numbers of autistic students<sup>1</sup>, a population with complex educational needs resulting from differences in communication, social interaction, and behavior. These characteristics manifest with great variability in individuals, resulting in a range of significant needs that can affect curricular considerations and educational placements as well as long-term outcomes. The increase in number of students with autism is significant: from 2000 to 2013, the number of autistic students receiving special education services under the Individuals with Disabilities Education Act (IDEA) increased 478% across the nation (National Center for Education Statistics, 2016).

This trend is consistent with a reported increase in prevalence in the US, based on epidemiological studies conducted by the Centers for Disease Control and Prevention (CDC). In 2014, CDC reported the prevalence of autism as 1 in 68 children, an increase from 1 in 150 in 2000. These numbers have risen precipitously in recent years, increasing nearly 300% over the last decade in the US (CDC, 2014). There are questions about whether this represents a true increase, whether we now have better methods of identification, or whether the increase is due to a combination of factors (Boat & Wu, 2015; CDC, 2015). Regardless of the reasons, however, given the IDEA data, it is clear that more autistic students who have highly complex educational needs are receiving special education services in US schools. As a result, schools need teachers who are equipped to educate autistic students, and given their complex educational needs, many researchers and scholars have suggested that teachers need highly specific, highly specialized knowledge and training about autism spectrum disorder (ASD) (Henderson, 2011; Scheuermann,

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<sup>1</sup> Identity first language is used here on the recommendation of self-advocate colleagues and the Autistic Self-Advocacy Network [ASAN] (ASAN, nd). The language is explicitly intended to disrupt typical language used in academia and the field. .

Webber, Boutot, & Goodwin 2003; Simpson, 2003; Simpson, Mundscenk, & Heflin 2011).

This study examines the perceptions of educators who teach autistic students in order to determine how their preparation experiences influence their sense of preparedness, their knowledge about autism, and their beliefs about autistic students. This study contributes to the field of general teacher preparation and special education teacher preparation and also has important implications for policy and practice.

### **Research Problem**

Within the context of increasing numbers of autistic students in US schools, there are many factors that contribute to the research problem this study addresses. As described below, chronic special education teacher shortages, shifting licensure trends across the US, variations in states' approaches to preparing teachers, and historically different philosophical views about autism have resulted in the lack of consensus about how special educators should be prepared to teach autistic students.

### **Teacher Shortages and Licensure Issues**

The US has experienced “a severe, chronic shortage” (McLeskey, Tyler & Flippin, 2003, p. 9) of special education teachers (Boe, 2014; United States Department of Education [USDOE] Office of Postsecondary Education, 2017). Since the time that data collection on teacher shortages began, special education has been a high need field. For the 2017-2018 academic year, nearly all US states reported teacher shortages in special education (USDOE Office of Postsecondary Education, 2017). The pervasive special education teacher shortage has been considered the most significant problem in special education (Boe, 2006; 2014; Office of Special Education Programs [OSEP], McLeskey, Tyler, & Flippin, 2003). The shortage has resulted in cyclic problems in “teacher supply and demand” (Boe & Gilford, 1992), which includes issues

related to preparation, qualifications, and turnover of teachers. In special education, the “demand” for special education teachers is estimated based on the actual number of students in different disability classifications (Boe, 2014). The “supply” has to do with the responsibility of the profession to produce enough teachers to meet these estimates and to “satisfy the demand by disability, instructional level, and geographic location” (Boe, 2014, p 68). The significant increase in the number of autistic students receiving services under IDEA coupled with the enduring special education teacher shortage has created a nearly impossible situation in terms of teacher supply.

For example, in 2011, the US Department of Education’s *National Assessment of IDEA Overview* indicated that 46% of school districts were unable to find qualified licensed special education teachers in the area of autism. Similar shortages are reflected at the state level. In Massachusetts, where the prevalence of ASD has historically been higher than the national rate (AFAM, 2005), school districts have reported special education as a teacher shortage area for more than ten years (USDOE, 2014). According to data mined from the Massachusetts Department of Elementary and Secondary Education Student Information Management System (2015), over the previous ten years, the number of autistic children being educated in Massachusetts schools rose from 5,467 in 2005 to 17,365 in 2015. This reflects a 217% increase, emphasizing that there is a need for an increased focus on preparing licensed special educators to teach autistic students.

Recent licensure trends across the US reflect a move toward broader licensing in special education teacher preparation in order to meet the demand for special education teachers (Boe, 2014; USDOE Office of Postsecondary Education, 2014; McLeskey, Tyler & Flippin, 2003). Broader licensure trends translate into preparation that involves less knowledge about specific

disability types. In other words, the solution to the shortage of special education teachers has been to increase the “supply” by making preparation broader and more general (Geiger et al., 2014) rather than highly specific. This model of special education teacher preparation is not based on what specific knowledge and skills teachers need, but driven by supply and demand. Along these lines Ball and Forzani (2010) have suggested that the “sheer need for teachers” has always “overshadowed the need to refine their training” (p. 8). This means that many special education teacher education programs focus on general education content curriculum as opposed to highly specific, categorical disability content (Geiger, 2002). Previously, licensure programs prepared special educators in specific disability areas with highly specialized information about a particular disability. However, the national teacher shortage coupled with the highly qualified teacher requirements of the No Child Left Behind Act (2001) and with the requirements of the Individuals with Disabilities Education Act (2004) moved the field toward general content knowledge for special education teachers. One study of special education teacher education found that only seven of 31 states required a minimum number of credit hours in special education, which ranged from 18-30 credit hours, the content of which was not indicated (Geiger et al., 2014). This means that, despite researchers’ recommendations, specialized preparation for teachers educating autistic students is not required or readily available. The result is that many US schools have no choice but to hire teachers who are likely unequipped to respond to autistic students’ unique educational needs (Scheuermann et al., 2003; USDOE, 2011).

Across the US, states take different approaches to licensure (Brownell et al., 2010; Geiger, 2006; Geiger et al., 2014), including non-categorical or categorical licensure options, bundling varying ages, grade levels, and disability groups into non-specific categories (Geiger et al., 2014), and disability-specific endorsements (Geiger et al., 2014). Massachusetts has adopted

a non-categorical licensure model for special education, meaning that teachers can be licensed in “moderate” or “severe” disabilities; historically the competencies for these licenses (known as the *subject matter knowledge requirements*) have required more focused special education content in the severe disabilities license (Massachusetts Department of Education, 2016). Different states have adopted different approaches; the result is a great deal of variation in special education teacher education programs across the country (Barnhill, Polloway, & Sumutka, 2011; Barnhill et al., 2014; Barnhill, Hart, & Malian, 2013; Muller, 2005).

Approaches in higher education to preparing educators to teach autistic children include autism specific coursework, autism content embedded in more general special education coursework, or autism certificate programs (Barnhill et al., 2011; Barnhill et al., 2014; Muller, 2005). These approaches are intended to prepare teachers to educate autistic students, who are historically taught in variety of educational settings including both general and special education (Hehir, Grindal & Eidelman, 2012; Massachusetts Department of Elementary and Secondary Education [MA DESE], 2015; Morrier, Hess & Heflin, 2011). Regardless of the setting, however, it is special education teachers, whose roles and expertise traditionally extend across a wide range of instructional contexts, content and educational interventions (Brownell, Ross, Colon, & McCallum, 2005; Lignugaris/Kraft & Harris, 2014; Newton, Kennedy, Walther-Thomas & Cornett, 2012), who are primarily responsible for the education of autistic students. Simpson (2008) has suggested that “skilled and qualified teachers...are *sine qua non* requirement of high quality programs for students with ASD (p. 9).” However, researchers and education scholars in the field of autism have suggested that special education licensure alone may not prepare teachers to educate autistic students (Barnhill, Polloway, & Sumutka, 2011; Hendricks,



2011; Morrier, Hess, & Heflin, 2011; Marder & deBettencourt, 2012; Scheuermann, et al., 2003; Simpson, 2008).

Preparing special education teachers to teach autistic students and determining the content of their respective teacher education programs are not straightforward tasks, because there is no single educational method that is effective for every autistic child (National Research Council [NRC], 2001; Schreibman et al., 2015; Kasari & Smith, 2013; Simpson 2005). In addition, there are differing philosophies about autism itself, and there are ardent debates in the field about the superiority and/or efficacy of particular educational supports and interventions. This has resulted in the use of a wide array of educational methods with autistic students, some of which some researchers claim are unorthodox and even dangerous (US Food and Drug Administration, 2014). Despite philosophical differences about approaches to preparing teachers of autistic students, the research literature suggests that specialized preparation that is beyond and/or different from standard preparation for initial teacher licensure in special education is needed (Simpson, 2003; Scheuermann et al., 2003; Simpson, Mundschenk, & Heflin 2011; Hendericks, 2011; Shyman, 2015). Reflecting on the gap among research, practice, and those who are the “consumers of interventions,” Polsgrove (2003) suggested that teacher educators need to “take a more active role in separating the ‘noise’ from the ‘signal’” (p. 340), indicating the need for a focused research agenda related to validated professional standards.

### **Contrasting Efforts to Improve Autistic Students’ Education: Standards and Evidence Based Practices**

There have been two national efforts that are relevant to this study of teachers’ preparedness to work with autistic students. These efforts have different purposes, origins, intentions and underlying philosophies. However, each is relevant to the way we think about

developing the knowledge of teachers. One relevant initiative has to do with the development by the nation's largest professional special education organization, the Council for Exceptional Children (CEC), of national professional standards for special educators who teach autistic students. The second relevant initiative has to do with the development of "evidence-based practices" for teaching autistic students; this effort has focused on the identification of educational "interventions" that ought to be used with autistic students. While the development of professional standards for teachers and the development of evidence based practices are very different initiatives, both are relevant to consideration of what special educators who teach autistic students need to know and be able to do.

The first initiative, the creation of national professional standards on autism, was *directly* intended to guide the practice of special educators who teach autistic students (CEC, 2015). As the nation's largest professional special education organization, CEC has the responsibility for setting national standards for professional practice for special education teacher preparation programs. CEC's autism standards were developed jointly by CEC and the Autism Society of America and were first released in 2009 (Autism Society of America, 2009; CEC, 2009). They were intended to provide substantial guidance to teacher preparation programs for building the knowledge and professional practice of autism teachers, and they were endorsed by the National Council for the Accreditation of Teacher Education (NCATE), a major national accreditor of teacher preparation programs at the time. In 2009 in a press release highlighting the release of the standards, Cathy Pratt, President of the Board of the Autism Society of America said,

as the incidence of autism has increased, universities and colleges created their own version of competencies to guide program development... [However] with the release of these competencies and through the leadership of the Autism Society and the CEC, there

is now a national standard that can be used for both course and program creation.

(Indiana University, para. 3)

The development of the CEC standards is an example of a major professionalization effort in the field of special education, similar to other major efforts to professionalize teaching that occurred in general education. Professionalization refers to the process of the field “claiming and acquiring jurisdictional authority for defining, thinking about, and action on specific problems of practice” (Yinger & Hendricks-Lee, 2000). Professionalization involves the transformation of an occupation into the elevated status of a profession, which requires legitimacy, professional knowledge, and professional jurisdiction (Abbott, 1988; Yinger, 1999; Yinger & Hendricks-Lee, 2000). Connelly and Rosenberg suggested that one dimension of professionalization is induction into teaching, which includes requirements regarding teachers’ knowledge and professional training. As a clear example of professionalization, the CEC standards attempt to lay out the consensus in the field about what special education teachers need to know and be able to do.

The CEC standards are currently used for national educator preparation program accreditation in concert with the Council for the Accreditation of Educator Preparation, which succeeded NCATE and is a national accreditor of teacher education programs in the US (Council for the Accreditation of Educator Preparation, 2013). However, because national accreditation of teacher education programs is voluntary in most US states, CEC’s autism standards are also voluntary for use in teacher education programs unless they seek national accreditation. While state accreditation is a requirement for teacher preparation programs in every state, some states have adopted autism standards for special education teachers. State approaches to the preparation of autism educators, which reflect a range of philosophies, also include a range of approaches, including state level categorical licenses (i.e., a teaching license focused on only one disability

area), non-categorical licenses (i.e., a generic teaching license in special education), and autism endorsements (i.e., a specialization indicating specialized knowledge and skill in the area of autism) (Geiger, et al., 2014; Muller, 2005). A small number of states has recently developed autism endorsements as one approach to providing well-prepared teachers who are equipped to meet the needs of the growing number of autistic students in schools (Barnhill et al., 2014; Muller, 2005).

To respond to the growing number of autistic students and to elevate the knowledge of special education teachers about autism, Massachusetts recently created an autism endorsement for teachers, which is a voluntary addition to a special education license (Massachusetts Department of Elementary and Secondary Education, 2015). The endorsement, which includes both coursework and required field experience for licensed special education teachers, aims to ensure that special education teachers are prepared to meet the unique and complex educational needs of students with autism in the least restrictive environment. This new endorsement was designed to align with the CEC professional teacher standards for (Massachusetts Department of Elementary and Secondary Education, 2016). However, because the endorsement is voluntary, it does not guarantee the quality and equity of autistic students' education in schools across the state, and there remains a great deal of variation in the philosophies, approaches and requirements of autism programs in higher education. Determining the content of autism endorsement programs and licensure-related preparation is challenging.

While many researchers and teacher education scholars have argued that teachers need highly specific, highly specialized knowledge and training about ASD (Henderson, 2011; Scheuermann et al., 2003; Simpson, 2003; Simpson, Mundscenk, & Heflin 2011), there are historical disagreements in the field of autism about the best way to educate autistic students and

about what educators of autistic students need to know and be able to do. The educational needs of autistic students may vary dramatically from one student to the next, given significant variability in both diagnosis and presenting characteristics of the spectrum. As a result, researchers and educators in the National Autism Center (2009) and the National Professional Development Center on Autism Spectrum Disorders (2010), began to focus on developing behaviorally-based guidelines for autism-specific evidence based practices (EBPs). The goal was to differentiate between effective and ineffective educational interventions for autistic children based on scientific research (National Professional Development Center on Autism Spectrum Disorders, 2015).

It is important to note that efforts to develop evidence-based practices were *not* intended to be an approach to teacher preparation, and they are very different from the promotion of professional standards described above. However, the development of evidence based practices for work with autistic students are relevant to this study because they speak to the knowledge and skills teachers of autistic students should have. The initiative to identify autism-specific evidence-based practices grew from the emphasis on evidence-based practices in general education, which was accelerated by the No Child Left Behind Act in 2001 and emphasized in the reauthorization of IDEA in 2004. The use of evidence-based practices in education involves the application of “replicable research and proven methods of teaching and learning for children with disabilities” (Individuals with Disabilities Education Act, §1400 (c) (5)). This requirement, which occurred partly in response to concerns about autism ‘treatments’ that were ineffective and faddish (Simpson, 2008), led to the formulation of guidelines about evidence-based practices in autism.

As its name suggests, the goal of National Professional Development Center is to promote the use of evidence-based practices through a “comprehensive professional development process at state and local levels” (NPDC, nd). The professional development offered on the NPDC website is a collection of strategies, explanation of methods, related materials and professional development modules related to providing resources to those working with autistic students – a group that extends beyond teachers, to “therapists and technical assistance providers” (NPDC, nd) who work with autistic students. NPDC identified 27 practices that were supported by evidence regarding their effectiveness and designed to improve the achievement of autistic students for use by teachers, parents, and other professionals (NPDC, 2014). NPDC’s website refers to the language of IDEA to describe the EBPs: “The interventions that researchers have shown to be effective are called evidence-based practices (EBPs). One reason for using EBPs is because, by law, teaching practices must be based on evidence of effectiveness.” In this way the NPDC is offering a framework for knowledge of specific practices that those working with autistic students, including teachers, need to have.

NPDC researchers have emphasized that evidence based practices (EBPs) are the *only* practices that teachers and others should utilize with autistic students. However, there are many concerns about this recommendation, including questions about the underlying methodology of many EBPs (Dawson, 2004; Institute of Education Sciences, 2010), concerns that such interventions may be inappropriately limited to behavioral principles (OSEP, 2015), and concerns by researchers and self-advocates with ASD who have raised ethical questions about the nature of EBPs (Autistic Self-Advocacy Network, 2015; Dawson, 2004; Fenton & Krahn, 2007). There is also disagreement about whether EBPs are appropriate as the “gold standard” of educational intervention (Dawson, Mottron, & Gernsbacher, 2007; Dawson & Gernsbacher,

2010) and of preparation of educators of autistic students (Shyman, 2012, 2015). Many EBPs were established based on the efficacy of interventions in research studies conducted primarily in “treatment” contexts (NPDC, 2016) rather than in classroom settings, and a large majority of the studies that established practices as evidence based were single-case studies (Wong et al., 2014). Importantly, while EBP guidelines identify the practices that educators and others should use to educate autistic students, very little attention has been paid to how educators should be prepared to implement the practices. As a result, there are many questions in the field about how EBPs actually translate beyond intervention and treatment contexts into classroom settings (Callahan, Henson, & Cowan, 2008; Stahmer et al., 2014; Suhrheinrich et al., 2013).

In spite of the fact that researchers have indicated that the evidenced-based practices are the only practices that should be used with autistic students, little consideration has been given to how and where this training should occur for teachers, who arguably have the most interaction with autistic students in education settings. Simpson (2008) suggested that teacher preparation programs educating teachers to work with autistic students “may be a viable starting point for an examination and evaluation of various treatment and educational programs in terms of its existing and/or emerging research support” (p. 4). In a study examining the use of evidence based practices in teacher education programs, Barnhill and colleagues (2014) identified higher education programs as positioned to “disseminate information on evidence-based practices and to provide the appropriate training needed for individuals who work with persons on the autism spectrum throughout the life span” (p. 42). Conversely, Shyman (2014) suggests that the conclusion that teachers should be trained in practices grounded in only behavioral methods was “premature and confounded by various methodological considerations including low sample sizes, lack of fidelity of implementation measures between research and practice, and

questionable methods of data analysis techniques, making it dubious to consider such approaches as the only approach worthy of inclusion in a teacher preparation program” (p. 2).

There are also questions about how practices that require teachers to follow implementation guidelines very closely can work in concert with traditional teaching (Lehrman et al., 2004). Although some researchers have promoted teachers’ exclusive use of EBPs with autistic students, there is growing evidence to suggest that educators do not use EBPs in their classrooms (Callahan, Henson, & Cowan, 2008; Morrier, Hess, & Heflin, 2011), do not use EBPs consistently (Stahmer et al., 2014), and that EBPs require significant ongoing coaching and support for teachers to implement them effectively (Lehrman et al., 2004; Suhheinrich et al., 2013). In short, EBPs, which were developed by researchers in one-on-one contexts, may not be easily incorporated into teachers’ repertoires and/or they may translate poorly to classrooms.

### **Preparation of Teachers of Autistic Students**

As noted, the two initiatives described above are very different from another. The CEC standards were developed to establish consensus about what the teachers of autistic students should know and be able to do. The development of EBPs was intended to establish a set of research-supported practices that were effective with autistic students. Regardless of their different intentions, however, both of these national efforts to improve the education of autistic students are relevant to the preparation of teachers of autistic students and both have influenced the ways special education teachers are prepared to teach autistic students. Thus it is worthwhile to consider their underlying notions of knowledge and practice.

One concept that is helpful in unpacking these initiatives is the distinction between more complex and more technical views of teaching. Technical views of teaching assume that teacher behaviors and skills are “the beginning point and pupil learning the endpoint of classroom



exchanges” (Cochran-Smith & Lytle, 2009, p.80; Cochran-Smith, 2016). As a number of scholars in the field of research on teaching have argued over the years, more technical views of teaching are based on the assumption that specific teacher techniques or behaviors are correlated with student achievement regardless of educational context, subject matter, and variations among students themselves (Gage, 1963; Shulman, 1987; Cochran-Smith & Lytle, 2009). More complex views of teaching characterize teaching as an “inherently intellectual and relational activity” (Cochran-Smith, 2016, p. 4) that requires decision-making and judgment and in which educational contexts, techniques, knowledge, content, and strategies interact to influence how teachers’ problem solve to support student learning (Cochran-Smith, 2016; Cochran-Smith et al., 2016). Both technical views of teaching and more complex views rely on the premise that good teaching is a learned activity that includes a repertoire of teaching techniques and strategies. However, one main distinction between them is that complex views of teaching include the idea that teaching involves “making decisions about when, why, under what circumstances, and for whom these techniques might and might not be appropriate (Cochran-Smith, 2016, p. 4).” The two initiatives described above can be unpacked using technical and complex views of teaching.

The CEC professional knowledge standards, which are sometimes called “specialty sets,” were designed to “delineate the essential knowledge and skills that beginning special education professionals must possess to be ready to begin their practice” in specific areas such as “specialized content, issues, vocabulary, interventions, and settings of different specialty areas” (CEC, nd). These standards rely on CEC’s foundational Preparation Standards (which define what a special education candidate must know and be able to do to begin teaching). They specify that teachers should “possess appropriate pedagogical skills, demonstrate mastery of the liberal arts through a bachelor’s degree from an accredited institution, master appropriate core

academic general and specialized curricula, and undertake a systematic and structured discipline-specific period of induction” (CEC, 2010). CEC views the professional careers of special education teachers as a continuum, which begins with initial licensure through university based teacher preparation, followed by induction and mentoring, and enhanced by continuous professional growth (CEC, 2004). Their foundational preparation standards lay out the professional knowledge base across special education disciplines utilizing seven areas to outline what all special education teachers need to know and be able to do. CEC developed the Autism Specialty Set, which refers to the “idiosyncratic knowledge and skills” (CEC, 2012) required for effective practice with autistic students in addition to the foundational standards for special education teachers, which lay out the professional knowledge base for all special education teachers.

These standards are based on the premise that there is specialized knowledge and skill that professionals must master, which is specific to autism. The expectation is that the standards “increase the probability that new teachers...enter the classroom with the skills and knowledge needed to educate students across the autism spectrum (Indiana University, para. 4, 2009).” The initiative to create national professional standards is more aligned with the complex view of teaching, which suggest that although good teaching may indeed involve using particular techniques, whether, how and when these should be implemented varies considerably across contexts and depends on teachers’ judgments about students, curriculum and content. Based on this more complex view of teaching autistic students, it is assumed that teachers of autistic students should be taught techniques, but should also be taught to pose and solve problems in the context of practice and in ways that are consistent with the strengths and needs of their students (Shyman, 2015; Scheuermann, 2003). This view assumes that specific solutions to educational

challenges “cannot be fully stipulated ahead of time...are not fully predictable, or stable (Cochran-Smith, 2016, p. 5).” A complex view assumes that that teachers need to learn to make “deliberative decisions about how to understand and act on who their students are, and what they bring to school” (p. 4). This view additionally assumes that solutions to educational challenges “cannot be fully stipulated ahead of time...are not fully predictable, or stable (p. 5).”

In contrast, one of the aims of the project to develop evidence-based practices for teaching autistic students is stability and uniformity. In this model, “in order to realize the promise offered by research on intervention and instructional efficacy, teachers must implement the practices in their classroom in a way similar to that intended by the purveyors” (Odom, 2008, p. 2). The autism specific evidence-based practices are defined as recommended interventions for students with ASD, because they have been determined to have “scientific merit,” which means the research upon which they were based has “variables [that] are so well-controlled that independent scholars can draw firm conclusions from the results” (National Autism Center, 2009, p. 16), or because they have been deemed efficacious according to “rigorous criteria” (NPDC, nd) which includes an examination of the methodological design, the participants, interventions, settings, and the outcomes (Wong et al., 2014). Researchers have emphasized that in order for EBPs to be effective, they must be implemented correctly and with fidelity, which means implemented as closely as possible to how they were developed.

The professional development focus of NPDC is based on the premise that the people who use EBPs should be well-trained to perform practices that are effective in working with autistic students. In this way, NPDC places emphasis on the role of teachers, therapists, coaches and technical assistance providers in implementing the practices, with significant resources devoted to the development of training resources, such as the Autism Focused Intervention

Resources and Modules (AFIRM) (NPDC, 2016). Online learning modules are available for all 27 of NPDC's EBPs, and they are intended to guide teachers and others who work with autistic students in "how to use the practices by focusing on the three specific steps of planning, using, and monitoring" (NPDC, 2016). The modules contain highly specific, highly ordered information about the practices and how they should be used, including the key components of each focused intervention, a list of behaviors and skills that can be addressed using the intervention, and a step by step process for applying the intervention (NPDC, nd), which boils the EBPs down to a set of steps for the teacher to follow. For these reasons, this initiative is an example of a more technical approach to teaching, and refers to an implementation approach involving a static, specific set of procedures, approaches and strategies that require teachers to implement them correctly to boost autistic students' achievement across contexts and content (NPDC, nd; Wong et al., 2014; Odom et al., 2010; Lerman et al., 2004). The technical view of teaching autistic students assumes that teachers should be taught to implement a specific set of techniques or practices in the "right" way, closely aligned with the intentions and methods of those who developed the techniques (Odom, 2008).

It is clear that the CEC standards and the development of EBPs reflect different ideas about the nature of teaching autistic students. Along these lines Simpson (2008) has suggested that different philosophies and approaches contribute to "steady diet of mixed and confusing information" that has "made it difficult for professionals and others to accurately understand ASD and its myriad issues, including strategies and methods to successfully address the needs of learners identified as having an autism-linked disability" (p. 3). Differing approaches to the preparation of educators of autistic students, which have been documented across higher education programs in the US (Barnhill et al., 2011; Barnhill et al., 2014; Muller, 2005) may be

the direct result of different understandings of teaching, such as more technical or more complex views, but they also may involve disparate philosophical beliefs and approaches.

The variation in teacher preparation across the US, multiple forms of teacher education, including professional development, endorsements, and certificate programs in autism spectrum disorders, and the many competing ideas about the “right” approaches to teaching autistic students highlight the conflicting ideas and information about what constitutes an educator who is “well-prepared” to teach autistic students. These issues may have contributed to differences and unevenness in the ways teachers are prepared and may result in differences in how autistic children are educated in the schools. With the increasing number of autistic students in schools coupled with a growing shortage of US special education teachers, we need to know what kind of preparation, education, and experiences teachers of autistic students have had, what knowledge they have developed as a result, and whether they report that their training and experiences adequately prepare them to teach autistic students. Research along these lines is necessary in order to determine how to guide teacher preparation for educators of autistic students.

### **Research Questions**

In order to understand special educators’ preparation for teaching autistic students, the extent to which they felt prepared to teach this population, and the extent of their knowledge and beliefs about autistic students, I conducted a pilot study in the Fall of 2013 that focused on these issues. I surveyed 65 special education teachers in Massachusetts who had completed a special education licensure program and who had taught at least one autistic student. The majority of those surveyed had completed university based teacher preparation programs in special education, some with and some without additional study in autism, either beyond or within their

licensure programs, which encompassed a variety of foundational approaches and models. All of the teachers surveyed indicated that they believed that specialized training, beyond standard teacher licensure in special education, was required to effectively educate students with ASD. These preliminary data suggested that many teachers may lack the necessary knowledge and skills they believe they need to teach autistic students. The teachers in the pilot survey reported that they had had varying educational experiences either during their own teacher preparation programs or beyond preservice preparation in professional development programs or in both contexts, which had boosted their knowledge of autism. Teachers also reported being exposed to various activities, some aligned with views of teaching as technical and some with views of teaching as complex. Consistent with previous studies about teachers' implementation of evidence-based practices, only approximately 50% of the teachers surveyed reported feeling prepared to use evidence-based practices in their classrooms. Those who felt prepared indicated that they used some EBPs but not all of the evidence-based practices they had learned about during their preparation programs. Further exploration of these issues may indicate the reason for this disparity, which is important to understand given the emphasis on the use of evidence based practice to promote improved student outcomes.

This dissertation research built on the pilot study by examining the experiences and perceptions of preparedness of special educators who teach autistic students. This study employed a researcher-developed survey of 121 licensed special educators who teach autistic students, as well as interviews with 10 of them. The study was guided by the following questions and hypotheses, for which I provide a rationale (where appropriate) following the questions:

- RQ1. What preparation and professional development experiences do Massachusetts special educators have to teach autistic students?

RQ2. To what extent do Massachusetts special educators feel prepared to teach autistic students based on their initial preparation, and their experience in the field/professional development?

- a. Is autism coursework a significant predictor of teachers' sense of preparedness as new teachers?

*I expected that autism coursework is associated with higher levels of teachers' sense of preparedness.*

- b. Is autism coursework a significant predictor of teacher's beliefs about autistic students?

*I expected that autism coursework is associated with higher levels of teachers' belief about autistic students.*

RQ3. What knowledge of the CEC standards and evidence-based practices do Massachusetts special educators report having?

- a. What differences exist between educators with moderate versus severe licensure with regard to knowledge of CEC standards and evidenced based practices?

*I expected that initial preparation including Massachusetts licensure in Severe Disabilities is associated with higher levels of knowledge of CEC knowledge standards and EBPs.*

RQ4. Does type of license predict preparedness, knowledge and/or beliefs? To what extent?

*I expected that type of license is a significant predictor of preparedness, knowledge or beliefs and that initial preparation including Massachusetts*

*licensure in Severe Disabilities would be associated with higher levels of preparedness to teach autistic students.*

My hypotheses were that autism coursework would predict teachers' sense of preparedness and beliefs. While it might seem obvious that teachers who had specialized autism training would be better prepared to teach, this deserved further attention because initial teacher licensure may or may not include any coursework content about autism, and little to no research has been done about the preparedness of special educators to teach autistic students or the relationship of specialized autism coursework and preparedness. Similarly, I predicted that a license in Severe disabilities would result in increased sense of preparedness. I anticipated this outcome because of the higher amounts of focused special education content outlined in the subject matter knowledge requirements in Massachusetts.

In the chapters that follow, I take up these research questions. Chapter 2 describes the conceptual framework and related research. Chapter 3 provides detail about the research design. Chapter 4 presents the findings of the study, and Chapter 5 presents discussion of the findings, limitations of the study, and its implications.



## CHAPTER TWO

### Related Frameworks and Literature

The conceptual framework that guides this research is the *professionalization* of teaching. Professionalization refers to the process of “claiming and acquiring jurisdictional authority for defining, thinking about, and action on specific problems of practice (Yinger & Hendricks-Lee, 2000). It is the transformation of an occupation to the elevated status of a profession, which requires legitimacy, professional knowledge, and professional jurisdiction (Abbott, 1988; Yinger, 1999; Yinger & Hendricks-Lee, 2000). This framework is useful for my study as a lens through which to understand how teachers’ preparedness is related to efforts to develop standards for educators of autistic students. In many ways, the multitude of ideas, challenges, philosophies and efforts to create standards described in the previous chapter mirror the trajectory of the efforts to professionalize teaching.

In this chapter I elaborate on the *professionalization of teaching* as a useful framework for understanding evolving special education licensure models to answer the chronic teacher shortage, and the impact this has had on the preparation of special educators teaching autistic students. Below, I provide a brief history of the professionalization of teaching to illustrate the parallel between the history and the issues and context of preparing special educators to teach autistic students. With the historical perspective, the context I describe in Chapter 1, including the chronic special education teacher shortages, shifting licensure trends across the US, variations in states’ approaches to preparing teachers, and the field’s historically different philosophical views on autism can be viewed as attempts toward professionalization.

Professionalization of teaching is an idea that can be traced to the beginning of formal teacher education with the establishment of Horace Mann's 'normal' schools in 1839 for the exclusive purpose of preparing well-educated and professionally trained teachers (Darling-Hammond, 2006; Darling-Hammond & Berry, 1998; Labaree, 2008). The demand for increasing numbers of common schools, which were the first schools established in the 1800's to serve colonial communities (Labaree, 2008; Herbst, 1989) prompted the need for more programs to prepare teachers to serve the common schools. These teacher preparation programs, referred to as "normal" schools, were intended as instruments of professionalization (Herbst, 1989) by setting "the standard – the norm- for good teaching" (Labaree, p.292).

The first teacher preparation program offered at the normal school was a combination of liberal arts coursework, designed to provide teachers with foundational content knowledge of curriculum, and courses specific to the profession of teaching (Labaree, 2008; Borrowman, 1956). The establishment of the normal schools accelerated the initial concept of professionalization, but as the demand for new teachers grew, it was necessary to choose what Labaree (2008) refers to as "relevance over rigor" (p. 293). In other words, the normal schools shifted from preparing teachers in local rigorous contexts to broader, accelerated training programs designed to produce larger numbers of teachers. In doing so, they produced more teachers who had less preparation, and were therefore less qualified, in order to answer market-based demands for more teachers. This is a parallel to the shifting models of special education and the resulting supply/demand in special education and with special educators qualified to teach autistic students.

Over time, there was increased pressure for normal schools, whose existence was dependent on student tuition to expand by offering liberal arts coursework to non-teachers based

on the disinterest of the taxpayers in subsidizing educators' professional training (Herbst, 1989), the growing demand for education, and the lack of access to colleges and universities for consumers (Labaree, 2004; 2008), promoting the "evolution of the normal school into a people's college" (p. 294). The expansion of liberal arts in the normal school led to a model of teachers' colleges that mirrored the already-existing liberal arts college model; normal schools became teachers' colleges, and later, state colleges and finally, state universities (Labaree, 2008, p. 295). By the 1950's, most normal schools had been assimilated by university models, and this shift resulted in what some educational philosophers and historians reflect on as an abandonment of the primary commitment to teacher education (Borrowman, 1956, 1965; Herbst, 1989; Labaree, 2008). This is important because it ultimately led to teacher education being situated within the university model with other professional programs, such as medicine and law. The 1950's movement toward university preparation represented a significant departure from apprenticeship preparation of the 19<sup>th</sup> century, and in the university, teacher education became canonized as a profession (Labaree, 2008). From the 1960's through the 1980's, teacher education was also focused on the identification of a teacher's attributes and effectiveness, and in turn the identification of the attributes of a "good" teacher education program and the methods that were effective to ensure that teacher education imparted effective strategies to prospective teachers (Cochran-Smith, 2001).

In the 1980's, attention turned to identifying what teachers needed to know and be able to do and accordingly the knowledge base for teacher education (Barnes, 1989; Christensen, 1996; Cochran-Smith, 2001; Grossman, Wilson, & Shulman, 1989; Shulman, 1987; Yinger & Hendricks-Lee, 2000), which "generates and legitimizes the establishment of standards for the profession" (Yinger & Hendricks-Lee, 2000, p.97). During this time, the movement to

professionalize teaching gained traction, and Shulman (1987), a key proponent of teacher professionalization, suggested that the “knowledge base for teaching” was “a codified or codifiable aggregation of knowledge, skill, understanding, and technology, of ethics and disposition, of collective responsibility - as well as a means for representing and communicating it” (p. 4). The focus on knowledge – what teachers know and need to be able to do – has been a central focus in preparing special educators to teach autistic students, for a range of reasons, from districts hiring unqualified teachers, to the lack of shared conceptions of the “right” way to educate students. Actions related to this, such as adjusting licensing models, and the recognition that standards should be developed, are evidence of the field moving toward professionalization.

The surge toward professionalism was based on the premise that, by treating teaching as a profession, the quality of public education could be improved (Herbst, 1989; Labaree, 1992). Conceptualizing teaching as a profession therefore promised to help the nation more effectively achieve and address social goals “that Americans...traditionally assigned to public schools: social efficiency...social mobility...and political equity” (Labarbee, 1992, citing Larabee, 1990). Professionalization as a movement was intended to improve commitment to teaching as a career and to elevate the status of the profession, to improve teacher motivation, commitment and performance; some researchers have suggested that this can ultimately lead to improvements in student learning (Carnegie Forum 1986; Darling-Hammond, 1984; Darling-Hammond, 1988). Teacher education scholar Darling-Hammond (1988) suggests that the professionalization of teaching

represents the extent to which members of an occupation share a common body of knowledge and use shared standards of practice in exercising that knowledge.... It

incorporates conditions of specialized knowledge, self-regulation, special attention to the unique needs of clients, autonomous performance, and a large dose of responsibility for client welfare. In all occupations that claim the term, professionalism exists in some tension with alternative forms of regulation and accountability, with continual adjustments made on all sides to enhance the public good (p. 4).

As this quotation suggests, the professionalization of teaching refers to the elevation of teaching to a respected occupation on par with other professions such as medicine, law, and engineering. Professionalization also involves the assumption that the field itself must establish and widely implement shared professional “standards by which the education and performance of teachers must be judged can be raised and clearly articulated” (Shulman, 1987, p. 3-4). This aspect of professionalization presents somewhat of a tension with the establishment of evidence-based practices for autistic student. These are framed by NPDC as “professional development” but are intended for stakeholders beyond the education community, despite the fact that they are special education practices.

The move toward standards was also reflected in response to harsh and mounting criticism of education, including the dire picture of education that was painted by the National Commission in Excellence in Education’s (1983) publication, *A Nation at Risk*, which suggested that the rapid decline of the education system put the US at risk of irrelevancy and threatened “our very future as a Nation and a people” (United States Department of Education, 1983). To remedy this, the Carnegie Forum on Education and Economy (1986) proposed a call to action for the professionalization of teaching through the establishment of high and rigorous standards (Darling-Hammond, 1986; Yinger & Hendricks-Lee, 2000). Soon after came an avalanche of

like-minded reports, commissions and councils (see for example Holmes Group, 1986; Interstate Teacher Assessment and Support Consortium, 1987; National Commission on Teaching & America's Future, 1996; Teacher Education Accreditation Council, 1997; National Board of Professional Teaching Standards, 1998) and the establishment of accreditation standards (Christensen, 1996), paving the way for what Robert Roth characterized as "the age of standards" (1996).

From the 1980's forward, the effort to establish teaching as a profession was accelerated by a series of debates and shifts about how teachers should be prepared for professional practice (see for example Ball & Cohen, 1999; Ball & Forzani, 2009; Cochran-Smith, 2001; Cochran-Smith & Fries, 2011; Grossman, Compton, Igra, Ronfeldt, Shahan, & Williamson, 2009; Yinger & Hendricks-Lee, 2000; Zeichner, 2012), which continue to present day. Studies of professional practice have concluded that professions share common features, including "proprietary knowledge, autonomy of practice, internal control of training and entry into practice, licensure and certification standards, and a code of ethical practice" (Yinger, 1999, p. 86). However, Abbott (1988), whose sociological analysis of professionalization processes of modern professions was used by Yinger (1999) to interpret trends of teacher education, certification and licensure, specifically highlighted the role of standards in the professionalization process. This was based on Abbott's (1998) argument that the application of abstract knowledge, which generates new ideas and inference and treatment, was grounded in what he referred to as a profession's *jurisdictional authority* in the claims to act on the "problems" of a profession, and suggested that "only a knowledge system governed by abstractions can redefine its problems and tasks, defend them from interlopers, and seize new problems" (p.9). A profession, suggests

Abbott, is further defined as an exclusive group that applies such abstract knowledge to jurisdictional authority, and that jurisdiction is the link between a profession and its work.

However, teaching as a profession has suffered from jurisdictional issues and low status (Ball & Cohen, 1999; Ball & Forzani, 2009; Connelly & Rosenberg, 2009; Grossman et al., 2009; Herbst, 1989; Labaree, 2004, 2008; Yinger, 1999; Yinger & Hendricks-Lee, 2000 ). This tension still exists in teacher education today to some degree, as teacher educators and teacher education programs balance the demand for quantity with the demand for quality and the need to develop thorough and credible preparation (Labaree, 2008; Ball & Forzani, 2010). However, despite the early effort to position teaching alongside other professional programs, it has never quite achieved the status of counterparts that it is frequently compared to (Ball & Forzani, 2010; Labaree, 2008; Milner, 2013; Yinger, 1999; Yinger & Hendricks-Lee, 2000).

In response to criticisms about professional education, Grossman and colleagues (2009) conducted a study examining cross-professional comparisons of occupations, including teaching, which were devoted to ‘human improvement.’ They noted that, compared to clergy or clinical psychologists, teachers “have less direct control over the terms of the relationship” (p. 2057) since they do not choose their students, and therefore face specific challenges about identifying ways to connect with them. Teaching, they suggest, involves “complex practice under conditions of uncertainty...requiring that novices exercise professional judgement in responding to their [students]” (p. 2058). To enable novices to identify the complex elements of the work, they identify three key concepts useful in unpacking pedagogy in professional education: representations, decompositions, and approximations of practice.

While special education teacher education has developed differently from general education teacher preparation (Brownell, Ross, Colon, Macallum, 2005; Brownell, Sindelair,

Kiely, & Danielson, 2010; Zigmond & Kloo, 2011), the emphasis on professionalization has followed a similar trajectory (Connelly & Rosenberg, 2009). The field is facing major pressures, including determining who is/is not qualified to teach students with disabilities and the degree of “scrutiny and rigor” devoted to preparing special education teachers prior to credentialing. Many special education researchers and scholars have argued that special education in particular requires specialized standards of preparation (Connelly & Rosenberg, 2009; Council for Exceptional Children, 2004; Polsgrove, 2003; Shyman, 2012) and researchers agree that teachers of autistic students need specialized preparation due to the complex educational needs of autistic students (Barnhill, Polloway, & Sumutka, 2011; Barnhill, Sumutka, Polloway & Lee, 2014; Hendricks, 2011; Morrier et al., 2011; Marder & deBettencourt, 2012).

However, similar to the trajectory of the normal school expansion, the history of teacher preparation for teaching students with autism has focused primarily on the problem of meeting the demand for enough teachers to teach the increasing numbers of autistic students in U.S. schools instead of on exactly how teachers are actually developing the necessary expertise to do so (Shyman, 2012). One example of how efforts to address the problem of the need for more ASD teachers of autistic children are state policies developed to provide an endorsement credential in autism as an add-on to the special education license (An Act Relative to Assisting Individuals with Autism and Other Intellectual or Developmental Disabilities, 2014; Barnhill et al 2011; Muller, 2005). While state credentialing reflects a step toward responding to the increased demand for teachers who are knowledgeable about autism, these state policies have varying requirements for teachers seeking to receive the credential, ranging from university coursework, previous experience, knowledge tests, or various combinations of these (MA DESE, 2016; Michigan Department of Education, 2016; Florida Department of Education,



2016), and most do not reflect clear and specific alignment to the CEC standards. In short, there is an increasing push for state policy that addresses the growing need for autism teachers, and at the same time, there are dramatically differing perspectives about the preparation of autism teachers . Given this context, using concepts and ideas from teacher professionalization provides a framework for unpacking the commonalities and differences of approaches to the preparation of autism teachers, including what teachers report as a result of these experiences, including the knowledge, perceptions and views they develop. The establishment of professional standards in order to improve the performance of teachers and student achievement is a good example of the field's perspectives about the activity of teaching itself and beliefs about what special education educators who teach autistic students need to know and be able to do to teach well.

The use of standards in the preparation of special educators who teach autistic students reflects some of the ideals of the professionalization framework, in part by emphasizing the role that the teacher plays as a facilitator of student success. Much like teacher education scholars who have suggested that the quality of teachers' preparation has a relationship to student achievement (Darling-Hammond, 2000), autism researchers and scholars have suggested, in various ways, that outcomes for autistic students are related to the quality of their teachers (Simpson, 2007; Shyman, 2012; Scheuermann et al., 2003). It is possible that uneven training experiences among ASD teachers may lead to a range of outcomes for some students, which illuminates a related social justice issue, whereby some students have access to highly trained teachers, and some do not. These competing ideas of what teachers of autistic students need to know and be able to do therefore has a larger agenda – understanding the purposes of schooling for autistic students – that can be understood by utilizing a professionalization framework. Proponents of professionalization have suggested that, as previously stated, a knowledge base for

teaching exists that reflects a range of the skills which teachers should reflect when well-prepared— a combination of knowledge, skill, and understanding, but also disposition, ethics and duty to the profession – which can be ‘coded’ or documented (Shulman,1987).

There are examples of the emergence of professionalization in the field of special education teacher preparation and autism, such as the development of CEC autism professional standards. These standards have to do with elevating the knowledge of professionals who teach autistic students by codifying the specific knowledge needed for effective practice with autistic students, a complex view. This view also relies on evidence-based practice, and is framed within a professional continuum, as suggested by a CEC white paper on the ‘well-prepared special educator,’ which describes the expectation for special educators’ foundational knowledge:

Special educators understand the field as an evolving and changing discipline based on philosophies, *evidence-based principles* [emphasis mine] and theories, relevant laws and policies, diverse and historical points of view, and human issues that have historically influenced and continue to influence the field of special education and the education and treatment of individuals with exceptional needs both in school and society (CEC, 2004, p. 3).

Nuances in the way “evidence based” is defined are important. For example, evidence-based practices have been defined as “specific interventions or instructional approaches designed to promote skills acquisition for individual children” (Odom, Boyd, Hall, & Hume, 2010). Most of the accompanying literature describing evidence based practices implies that teachers must implement the practices “with a high degree of fidelity” (Odom et. al, 2012, p. 288). These

practices were not intended for teachers per se. Rather they were intended to provide guidance around practices that were sound in the wake of fad, unconventional, and even dangerous approaches. However, the practices require specific actions of teachers, who are the technicians of the practices with the expectation of a predictable outcome. However, there are various other conceptions of how “evidence-based” is defined; for example, Shyman (2012) suggests that the definition is “a strategy or intervention designed for use by special educators and intended to support the education of individuals with exceptional learning needs” (p.191). In this view, teaching is not ‘technical’ though they may utilize techniques, but perhaps with a less predictable outcome.

There are conflicting views in the research literature about teacher preparation for educators of autistic students that describes the work of special education teachers in dramatically different ways and operates from different views about how they should be prepared. The professionalization framework helped to identify the ways in which autism teacher preparation reflect different attempts to establish teachers of autistic students as a distinct group of professionals who have specialized knowledge and work within the boundaries of the standards of their profession. Additionally, it helped to unpack any distinctions which may arise in the study between a “technical” view of teaching autistic students, which describes the work of autism teachers as faithful implementers of specific strategies (Odom, 2008) and a “complex” view, which suggests that how such strategies are implemented requires teachers’ judgments about students, curriculum and content.

In this study, concepts and ideas about teacher professionalization were used to discern differences and similarities between various approaches to the preparation of teachers to educate autistic students. The study illuminates the ways in which Massachusetts teachers were prepared,

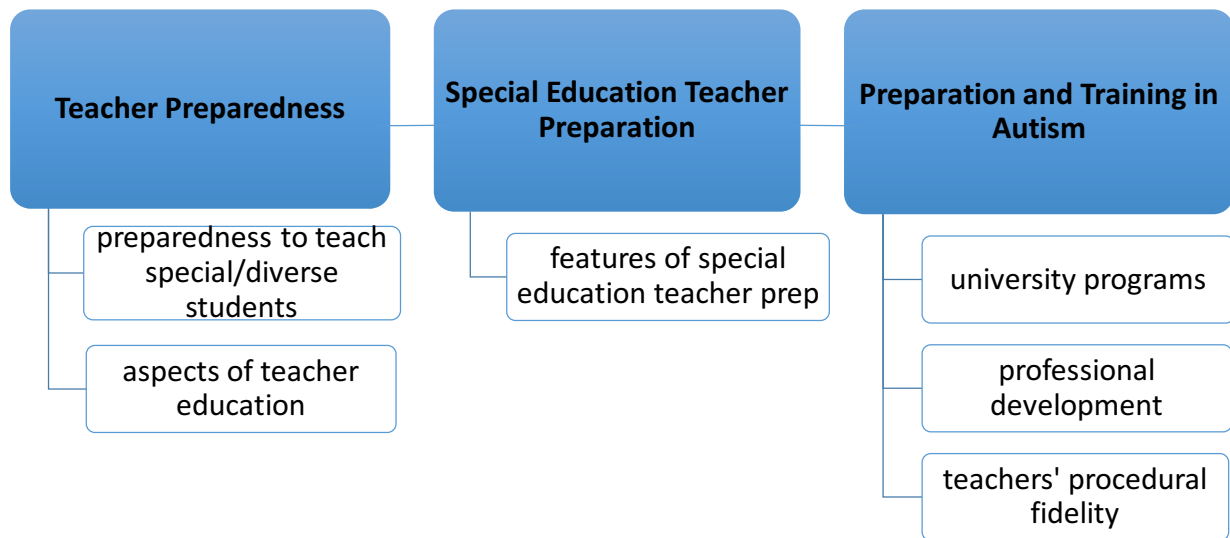
including what curriculum teachers' preparation programs emphasized for teaching autistic students, what they report about their sense of preparedness to enter the profession, and how their preparation programs and subsequent work experiences may have influenced their knowledge of and beliefs about autism and autistic students. Using teacher professionalization as a framework helped me to understand the differences in the ways autism teachers are being prepared, and how different approaches to practice may influence the knowledge that teachers develop, the choices that they make, and the beliefs that they hold.

To understand these differences, it is critically important to examine ASD teachers' experiences, through the lens of professionalization - how did the efforts to develop standards and identify practices influence the knowledge of teachers? This helped me to unpack how special educators' different preparation experiences have resulted in dimensions of preparedness, beliefs about autistic students, and foundational knowledge as they work to "negotiate their images of themselves as professionals with the images reflected to them by their programs" (Ronfeldt & Grossman, 2008). This is reflective of research on the construction of professional identities, which suggests that novices must "navigate among the different images of professional identity offered by their programs and practitioners in the field" (Ronfeldt & Grossman, 2008, p. 41). In order to prepare effective educators equipped to teach autistic students, balance needs to be achieved between overall teaching standards, the autism competencies established by CEC, and autism researchers' views (Shyman, 2012). Using this lens helps to clarify the distinctions between the preparation experiences of educators of autistic students, including their knowledge of and beliefs about autism, their orientation to a particular set of professional standards, and their general feeling of preparedness to teach autistic students.

## Review of the Literature

Three areas of previous empirical research are relevant to this study: (1) research on teacher perceptions of preparedness (2) special education teacher preparation research generally, and (3) research on the preparation of educators of autistic students (a subset of special education teacher preparation). The literature in these areas informed my development of the survey and potential topics for interviews following the survey data. Each of these areas of the literature was divided into subgroups which are described in their respective sections and represented by Figure 1.

*Figure 2.1. Literature review.*



### *Locating the Research*

This section describes how I located the research used in the review and the overall criteria I used to identify the literature. Each of the separate literature review sections which

follow contain specific criteria used to select and identify the specific literature employed for that aspect of the review.

Since this study is focused on the way in which special education teachers are prepared to work with autistic students in the U.S., specifically, in Massachusetts, the literature limited to research conducted in the United States. This limitation is important given several factors. The first is that there are educational policies and processes specific to the U.S. which guide teacher preparation and affect the way teachers are prepared, including differences in how teachers are licensed at the state level. Additionally, public and approved private special education schools in the U.S. are governed by federal law specific to special education, namely the Individuals with Disabilities Education Act (IDEA). IDEA sets forth specific requirements requiring teachers and schools to follow regulatory guidelines for students who receive special services, from educational processes such as identification of an individualized educational program, to the determination of educational placements which are led by a range of licensed teachers, including both special educators and general educators. These regulations make the US context different from other countries. Secondly, in the United States, diagnostic criteria for autism spectrum disorder is established by the American Psychological Association in the Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition (DSM-5). Although the DSM-5 is influential outside of the U.S. (National Autistic Society, 2016; Kapp & Ne'eman, 2012) , the World Health Organization's International Classification of Diseases, 10<sup>th</sup> edition (ICD-10)<sup>2</sup> is used more widely internationally. While the DSM-5 and ICD-10 are similar, their diagnostic criteria are not the same (World Health Organization, 2015; Kapp & Ne'eman, 2012). In each area I reviewed research published These studies utilized for the review were identified using the ERIC/EBSCO

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<sup>2</sup> At this writing, the ICD-11 is in draft form and available for review online. While there are additional changes to the Autism Spectrum Disorder diagnostic criteria, they are not perfectly aligned with DSM-5.

database. The first level of identification involved conducting searches of key terms specific to each area for publications published in peer-reviewed journals between 1980 and 2016. Since the 1980's were referred to as "the age of standards" (Roth, 1996) and, as I explained previously, standards have been linked to the professionalization movement, I utilized 1980 as the beginning point for the literature review.

### **Section One: Teacher Preparedness/Perceptions of Preparedness**

In this section, I review literature that examines teacher preparedness, especially the ways in which teachers report their perceptions of preparedness. There were two broad categories: (a) studies that focused on the preparedness of teachers to educate diverse groups of students and (b) studies of teachers' preparedness based on aspects of teacher education programs.

#### **Overview of Teacher Preparedness**

Teacher's sense of preparedness can indicate the extent to which their training and preparation prepared them to meet the "complex and changing demands they face in their classrooms" (US DOE, 1999, p. 47). Though many studies have suggested that up to 50% of new teachers leave the field within five years (Boe, Cook, & Sunderland, 2008; Darling-Hammond, 2000), there is evidence that well-prepared teachers are more likely to remain in the profession (NCATE 2006). There is a body of research that suggests that preparation has influenced teachers' sense of preparedness regarding practice, decision making, content knowledge, and development (Ronfeldt, Schwartz, & Jacob, 2014; Tillman, Richards, & Frank, 2011). Examining the aspects of teacher preparation that contribute to teachers' sense of preparedness as they enter the profession helps to get at how teachers learn to teach and what preparation experiences are meaningful for them, which has implications for what teacher education programs should emphasize. Early career teachers are expected to be "ready" to teach

on day one as they enter the field despite no universal agreement on what that means (American Association of Colleges of Teacher Education, 2015; Council of Chief State School Officers, 2015; USDOE, 2014). This expectation about new teachers' preparedness has significant implications for teacher preparation, because it means teacher education programs are expected to produce teachers whose knowledge and practice is fully developed as they enter the classroom. Teacher education quality and the ability to produce prepared, quality teachers have been the focus of many education reforms over the last two decades (Cochran-Smith et al. 2016; Westheimer & Suurtamm, 2009).

Current education reform rhetoric claims that schools, teachers, and teacher education programs lack quality (Duncan, 2016; NCTQ, 2015), which perpetuates a public perception of the relative low status of teaching (Grossman et al., 2009; Yinger & Hendricks-Lee, 1999) and strains efforts toward professionalization. As a result, teachers and teacher preparation programs are under intense scrutiny (Cochran-Smith, et al., 2016; Connelly & Rosenberg, 2009) and increasing numbers of policy reforms have zeroed in on allegedly low levels of teacher quality to answer concerns about "America's failing schools" (see Hanushek, 2010) and the effectiveness of teacher education programs' ability to prepare teachers.

Milner (2013) suggests that a responsibility of university-based teacher preparation is to ensure that teachers are prepared to "make professional judgements, meet the full range of student needs, build positive working conditions, and negotiate and balance multiple layers of bureaucratic pressures" (p. ii). Mining data about teachers' preparation experiences is essential to understanding what contributes to a well-prepared teacher.

Teacher preparedness has been linked to teacher quality in numerous studies (NCATE 2009; Darling-Hammond, 2000; Lewis, 1999; USDOE, 1999). Research on teacher



preparedness, which is frequently explored via teachers' perceptions of their readiness for teaching, usually following their preparation and training to become a teacher (Darling-Hammond et al., 2002; Ronfeldt et al., 2014; Tillman et al., 2011), offers an approach to gathering data about what the content of teacher education programs should be. Evaluating the extent to which candidates feel prepared may reveal the extent to which their licensure/certification program has or has not readied them to address the complexities of the classroom (USDOE, 1999).

Many researchers have concluded that studying teacher preparedness is one way to evaluate how specific aspects of teacher preparation have influenced teachers' practice, decision making, content knowledge, and development, particularly for early career teachers (Ronfeldt, Schwartz, & Jacob, 2014; Tillman, Richards, & Frank, 2011; United States Department of Education National Center for Education Statistics [USDOE NCES], 1999). Teacher preparedness research also provides useful information about program improvement, including aspects of teacher education programming that need review and revision, or those which are contributing to producing well-prepared teachers. For example, some studies of teacher preparedness examine how well a program is aligned to professional standards (Manning et al., 2009; Guardino, 2015; Lee et al., 2012; Tillman et al., 2011). Professional standards were developed to guide the preparation of teachers. They also help to define the roles and expectations of teachers, and programs' alignment with standards can be an important measure of teacher education quality (Massachusetts Department of Elementary and Secondary Education, 2015a; Council for Exceptional Children, 2016). However, they do not alone determine whether teachers are adequately prepared to enter the classroom. Research studies focused on teachers' entrée into the classroom offer a way to examine how teacher preparation

program alignment to such standards has affected the development of teachers' professional identities, including their familiarity with and use of content, and the ways in which they make pedagogical decisions. As a result, researchers have focused on teachers' preparedness, including the extent to which teachers feel ready to manage the expectations of such standards, as well as the demands of the classroom, to better understand how educators' reflections of their preparation experiences are linked to teacher preparedness and teacher quality.

The majority of the empirical studies of teachers' preparedness utilized survey research as the main source of data. One study in each group used semi-structured interview as the main source of data study (Sandoval-Lucero et al. 2011; Hamilton-Jones & Vail, 2013); in addition to interviews, Hamilton-Jones and Vail additionally utilized document analysis within a case study design. Seven of the studies utilized mixed-methods research (Brown et al., 2015; Faez & Valeo, 2012; Justice et al., 2003; Kahn & Lewis, 2014; Onchwari, 2010; Siwatu, 2011; Tillman et al., 2011) and two additional studies recommended additional quantitative data and/or mixed methods approaches (Kea et al., 2002; Siwatu, 2011). Five other studies which utilized survey or qualitative methods alone indicated their single method approach was a limitation (Dunst & Bruder, 2013; Guardino, 2015; Lee et al., 2012; Manning et al, 2009; Sandoval-Lucero et al., 2011). These studies made clear that mixed methods, particularly survey, has been established as a primary method for researching teacher preparedness, and reinforced the design for my study, which I outline in Part Three.

All of the studies in the following two categories focus on teacher *perceptions* of preparedness. The research on perceptions of preparedness is somewhat limited, and is often related to research that has teacher beliefs, perspectives, quality, self-efficacy as central foci. However, while at times the literature uses these terms interchangeably, there are examples of

studies that define them as distinct concepts. For example, many studies suggest that preparedness predicts or is strongly correlated to a teacher's sense of efficacy (Darling-Hammond, et al 2002; Raudenbush, Rowen, & Cheong, 1992; Siwatuu, 2011). For example, Darling-Hammond et al (2002) found that "feelings of preparedness are also significantly related to teachers' sense of efficacy and their confidence about their ability to achieve teaching goals" (p. 296). To differentiate between preparedness and self-efficacy, Faez and Valeo (2012) defined preparedness as "a general term to refer to teachers' overall sense of preparedness to teach," and efficacy to refer to "specific classroom expectations" (p.457). Distinctions between perceptions and beliefs also emerged; for example, Dunst and Bruder (2014) found that teachers' perceptions of preparedness were connected to their beliefs about inclusion. Given this, I limited the selection of studies to those that focus on perceptions as a central research theme.

Many themes emerged across the studies, but were emphasized or addressed in slightly different ways in the two groups. The major themes across all twenty-four studies included a) an emphasis on specialized training for specialized populations or "boutique" (i.e. highly specialized) areas of teacher education; b) the use of or reference to standards; c) how perceptions of preparedness can influence program content and evaluation in teacher education; d) the relationship of preparedness to self efficacy, and its relationship to student outcomes; and e) the importance of field experiences and student teaching in producing well-prepared teachers.

### **Perceptions of preparedness to teach diverse student populations.**

The literature in this category included eleven studies focused on teachers' perceptions of preparedness to teach "special student populations," in two groups: *students with disabilities* (including students with emotional disabilities and stress profiles), which comprised eight studies, and *diverse student groups* (socioeconomically, culturally, linguistically), which

comprised three studies. All of these studies occurred with pre-service or in-service teachers and involved teachers who had received/were receiving their license in a traditional teacher education program. Ten of the eleven studies utilized survey research, eight of which were researcher-created.

Three major topics were apparent in this category of studies: a) specialized preparation for specialized populations; b) the use of standards in determining measures of preparedness in educators of students of special populations and c) how perceptions of preparedness can influence program content and evaluation in teacher education.

Specialized preparation for specialized populations was addressed by all eleven studies. Collectively, the studies shared a similar conclusion: that specialized populations require specialized content in teacher education programs, which echoes scholars' conclusions about the field of autism (Henderson, 2011; Scheuermann, Webber, Boutot & Goodwin 2003; Simpson, 2003; Simpson, Mundscenk, & Heflin 2011). In this group of studies, specialized content highly correlated with well-prepared teachers (Dunst & Bruder, 2014; Faez & Valeo, 2012; Guardino, 2015; Gable, Tonelson, Sheth, Wilson, & Park, 2012; Hamilton-Jones & Vail, 2013; Kahn & Lewis, 2014; Kea, Trent & Davis, 2002; Manning, Bullock, & Gable, 2009; Jung, 2007; Onchwari, 2009; Siwatu, 2011). However, the studies arrived at this conclusion in different ways. Teachers generally reported feeling less prepared to teach students with disabilities (Dunst & Bruder, 2014; Gable et al; 2012; Guardino, 2015; Kahn & Lewis, 2014) than diverse student groups. An interesting finding emerged in studies of other specialized student populations. For example, in some studies, teachers reported feeling unprepared to teach English Language Learners and students in urban school contexts (Siwatu, 2011); in other studies, teachers reported feeling well-prepared to teach the same groups (Faez & Valeo, 2012).

For example, in three studies that focused on culturally and linguistically diverse learners and preparedness to teach in urban vs. suburban settings, there was variation in degrees of perceptions of preparedness in their participating teachers (Faez & Valeo, 2014; Kea, Trent & Davis, 2002; Siwatu, 2011). In two of the studies, teachers were recruited from general and special education teacher education programs, and reported varying levels of preparedness with regard to different special student populations. In both studies, teachers reported they felt well-prepared to teach African American and Caucasian students, but only somewhat prepared to teach Latinex students and English Language Learners. Kea, Trent and Davis (2002) additionally reported that teachers felt less prepared to teach students with disabilities. In these studies, teachers reported varying degrees of experiences in different school settings and with different populations, and in both, the more experience and interaction with the students, the more prepared teachers reported feeling. In contrast, in Faez and Valeo's (2014) study, where the content coursework and field experiences of the teacher education program were highly specific to English language learners, teachers reported feeling well-prepared. Taken together, this suggests that broad approaches to teacher preparation may not be effective in preparing teachers to teach diverse groups, and that where content or experiences were highly matched to the specific student population, teachers' perceptions of preparedness were higher. Where teachers reported feeling underprepared, there was a correlating lack of specific coursework or field experiences (Faez & Valeo, 2014; Hamilton-Jones & Vail, 2013; Kahn & Lewis, 2014).

Many studies concluded that the content of teacher education programs needed to reflect the same specificity as the students that the teachers were being prepared to educate (Faez & Valeo, 2012; Guardino, 2015; Gable, Tonelson, Sheth, Wilson, & Park, 2012; Hamilton-Jones & Vail, 2013; Kahn & Lewis, 2014; Kea et al., 2002; Manning, Bullock, & Gable, 2009; Jung,

2007; Onchwari, 2009; Siwatu, 2010). This explicitly connects teachers' preparedness to the teacher education programs that produce them. Siwatu (2011) suggested that the nature of teacher education plays a major role in its' completers preparedness to teach, meaning that programs with broad approaches will not prepare educators who are able to teach a variety of different student populations in different educational contexts. Explicit examples of this include Guardino (2015) and Gable et al. (2012). Guardino reported that over 50% of respondents who reported that their teacher education program had prepared them "slightly" to "not at all" to teach deaf students with disabilities had no coursework that specifically prepared them to teach that student population. Gable and colleagues (2012) found that while the teachers in their study agreed on and emphasized the use of specific practices to teach students with emotional disabilities, over 80% of them were not prepared to implement them, leading them to conclude that the problem rested with their preparation.

Manning et al. (2009) concluded that the content of teacher preparation could be made highly specific by evaluating teachers' perceptions of uniform standards and certification requirements, a theme that was addressed by eight of the eleven studies. Many of the studies explicitly used standards as a measure of teachers' preparedness, by developing instrumentation based on accrediting programs' standards (Guardino, 2015; Hamilton-Jones & Vail, 2013; Kea et al. 2002; Manning et al., 2009;) or evidence-based practices (Gable et al., 2012); and by calling for the role of professional associations and regulatory bodies in teacher education (Kahn & Lewis, 2014; Faez & Valeo, 2012). Despite the fact that standards exist for all of the areas of teacher preparation represented in these studies, some studies utilized them and others did not; among the studies that used them, they were employed with varying levels of depth by researchers, the majority of whom are faculty in these teacher education areas. These variances

in emphasis on standards may in turn affect teachers' beliefs around the value of standards in their own work.

The fact that these themes emerged so clearly across these studies suggests a high amount of agreement about what the literature says about teacher perceptions of preparedness to teach special populations. Teacher perceptions can be helpful in reflecting aspects of a teacher's experiences that indicate useful content and important experiences for teacher education programs to consider. This information can also lend perspective to the development of or revision of standards. However, it's also important to consider that survey is self-report, a fact that many studies identified as a limitation. Teachers' perceptions of preparedness may or may not relate to their actual preparedness, and may also be influenced by their experiences following leaving their teacher preparation program, so that the way that they reflect back on them could influence the results. The use of mixed methods can help to unpack how teachers report their knowledge, probe further into their reported perceptions, and provide the opportunity to expand on or identify the motivation behind the perception that may be hidden by a quantitative measure alone. While some studies identified this, few studies recognized the need for measures or ways of connecting how a teacher perceives their preparedness with a teachers' actual preparedness for the classroom.

#### **Teacher preparedness based on aspects of teacher education programs.**

The literature in this category included thirteen studies which focused on teachers' perceptions of preparedness based on aspects of teacher education. Major themes represented in this category of studies include (from list above) b) the use of or reference to professional standards; d) the relationship of preparedness to self efficacy, and its influence on student outcomes; and e) the importance of field experiences and student teaching in producing well-

prepared teachers. These studies were primarily either *comparison studies* of in-service teachers' perceptions of preparedness to teach based on their route to licensure, and *field experience studies* of how student teaching experiences contributed to their preparedness.

The *comparison studies* group is comprised of eight empirical studies, focused primarily on in-service teachers. These studies make comparisons of teachers' perceptions of preparedness based on routes to licensure. In each of the studies, traditional teacher preparation is compared to another model, including alternative certification, emergency certification, professional development schools, and/or teacher-in-residence programs.

The comparison studies of routes to licensure included generally found that teachers' perceptions of preparedness were overall higher when they had been prepared in traditional university settings as opposed to a range of alternatives including alternative certification, emergency certification, professional development schools, and/or teacher-in-residence programs (Darling Hammond, Chung & Frelow, 2002; Darling-Hammond, Eiler, & Marcus, 2002; Isaacs, Elliot, McConney, Wachholz, Greene, & Greene, 2007; Iyer & Soled, 2007; Justice, Greiner, & Anderson, 2000; Kee, 2012; Ronfeldt & Reininger, 2012; Sandoval-Lucero, Shanklin, Sobel, Townsend, Davis, & Kalisher, 2011; Yerian & Grossman, 1997). Teachers reported variation in the level of preparedness for certain tasks related to methods classes (Darling-Hammond et al. 2002; Sandoval-Lucero et. al 2011) and with certain populations, such as students with disabilities, and English Language Learners, based on lack of coursework (Darling-Hammond et. al, 2002; Isaacs et al. 2007). Along these lines, Iyer and Soled found only slight differences in reported preparedness of teachers completing traditional and alternative routes, but significant differences in dispositions related to social justice and ethics. This was specifically connected to coursework that participants had been required to take and aligned with the results in Kee's



(2012) study, which concluded that first year teachers who had taken fewer education courses felt less prepared than teachers whose “pedagogical preparation” was more complete. In many of these studies, type of coursework was directly correlated with increased perceptions of preparedness, suggesting that the methods and content courses in traditional teacher preparation does have an impact on teachers’ preparedness.

Despite the conclusions of the studies in which teachers reported feeling better prepared in traditional vs. alternative routes, it is important to note that alternative routes persist as an alternative to traditional preparation, which is important because it reflects both continued dissatisfaction with and criticism of traditional routes. Within the studies, while traditional preparation was found to result in better prepared teachers, researchers noted unevenness and differences within traditional programs they studied (Darling-Hammond et al. 2002; Kee, 2012; Sandoval-Lucero et al., 2011), but while the majority (twelve of thirteen) of the studies refer to or use standards, they do not identify them as a potential source of shared language, foundational content, and potentially a way to bring consistency to programs. The use of standards across the majority of these studies was important - standards were prominently represented, though much like the previous category, they were used to develop areas which serve as measures of teachers’ preparedness (Iyer & Soled, 2007; Sandoval-Lucero et al., 2011), as “quality control” or a way to bring consistency to various programs (Darling-Hammond et al., 2002; Ronfeldt & Reininger, 2012) by developing instrumentation based on accrediting programs’ standards (Brown et al., Lee et al., 2012; Isaacs et al., 2007; Tillman et al., 2011) or evidence-based practices (Gable et al., 2012); and by calling for the role of professional associations and regulatory bodies in teacher education (Darling-Hammond et al., 2002).

The field experience studies category was comprised of five empirical studies focused on the experiences of pre-service teachers. The literature in this section represents a theme that emerged across all thirteen studies, in that it focuses on “practice teaching,” an aspect of what Dunst and Bruder (2014) referred to as the “professional preparation equation” (p. 129). Exploring teachers’ perceptions of preparedness via their routes to teaching and their opportunities to “practice” during their program experiences helps to develop a richer understanding the determinants of preparedness. The studies overwhelmingly concluded that quality field, “clinical” or practica experiences significantly contribute to teachers’ perceptions of preparedness for teaching (Brown, Lee & Collins, 2015; Ronfeldt & Reininger, 2012; Ronfeldt, Schwartz, & Jacob, 2014; Lee, Tice, Collins, Brown, Smith & Fox, 2012; Tillman, Richards, & Frank, 2011). Teachers’ perceptions of preparedness to teach increased in all of studies following the field experience, even when perceptions of preparedness were relatively high prior to beginning it (Brown, et al. 2015; Ronfeldt & Reininger, 2012; Tillman et al., 2011). Two studies found that increasing field experience by a week resulted in a significant increase in teachers’ perceptions of preparedness (Ronfeldt & Reininger, 2012; Ronfeldt et al., 2014) and that one extra week of practice teaching resulted in an increase in retention to the profession; Kee (2012) found that the major distinction between teachers’ perceptions of poorly prepared to well prepared increased by the number of weeks of the field experience. Brown et al (2015) and Lee et al. (2012) found that, in addition to preparedness, perceptions of pedagogical knowledge improved following the field experience. These studies suggest clear agreement that as methods courses and practice teaching increases, so does preparation. In addition, they outline ways in which data about teachers’ perceptions of preparedness should be reflected in teacher education, including using the data to influence program evaluation and redesign (Tillman et al.2011)

assigning pre-service teachers to highly qualified in-service teachers (Lee et al., 2012), and include more methods courses and/or practical experiences in teacher education program (Ronfeldt et al., 2014; Ronfeldt & Reininger, 2012 ) particularly that help to develop teachers' self-efficacy (Brown, et al., 2015) and to their ability to teach underserved groups (Ronfeldt & Reininger, 2012).

Lastly, these studies emphasized the inextricable link between teachers' perceptions of preparedness to the development of teacher self-efficacy. This is important for many reasons, but was emphasized across the studies in two visible ways: teachers' confidence/feelings about teaching and its direct relationship to attrition from the profession (Brown et al., 2015; Darling-Hammond et al., 2002; Justice et al., 2003; Ronfeldt et al., 2014; Sandoval-Lucero et al., 2011). This theme is very straightforward. The experiences that lead teachers to feel well-prepared include increased number of methods courses, increased clinical time to "practice" teaching via practica experiences (Ronfeldt et al., 2014), the quality of relationship with cooperating teacher and university supervisor, and experiences that are specific to the populations that teachers expect to teach (Ronfeldt & Reininger, 2012). These experiences translate to teaching, and, teachers who perceive they are well prepared have healthier sense of self-efficacy, and thus are able to manage the challenges of the classroom easier ((Darling-Hammond et. al, 2002a; Darling-Hammond et. al, 2002b; Ronfeldt & Reininger, 2012), address the needs of a wider variety of students, and are retained in the field longer (Darling-Hammond et. al, 2002a; Darling-Hammond et. al, 2002b).

## **Section Two: Special Education Teacher Preparation**

In this section, I review literature that examines special education teacher preparation. The previous section's exploration of teachers' preparedness addressed aspects of special

education teacher preparation that are inherently similar to the studies explored in this section. However, there is a conceptual research base that was worth exploring to enhance my knowledge of the field as a whole. Since my study is interested in how well traditionally prepared special education teachers feel to teach autistic students following their preparation experience, I focused my search on literature that is concerned with traditional contexts. To access this literature, as with the previous areas, I conducted an online search of the ERIC/EBSCO database for peer-reviewed, empirical studies, published in academic journals, and limited to research conducted in the US. I began by searching *special education* and *teacher education*, and also *special education teacher education*, but an initial search using those keyword identifiers and a title search of academic journals yielded 4,187 and 5,489 results, respectively, the ERIC database, published in peer-reviewed academic journals in English. I narrowed the search criteria by changing ‘*education*,’ to ‘preparation’ given that my studies examines teachers in their initial licensure programs, which yielded 597 studies. This search yielded some helpful conceptual literature which helped me to construct an overview of the field, below, but overall included studies that were too narrowly defined. For example, focusing on a specific aspect of content within teacher preparation, such as vehicles for delivering coursework, as well as international studies, policy studies, and studies of intersectionality. Since I was primarily interested in studies which provide context for the critical features of *special education teacher preparation*, I further narrowed the search terms to reflect this, which yielded 198 studies.

I conducted a title and abstract search to separate conceptual from empirical literature. Again, there were a significant number of conceptual articles, many of which have been used to provide the overview, below. I included empirical studies for the literature review which focused on critical features of special education, in which teacher education research directly or

indirectly takes up the question, “what should special education teachers know and be able to do?” related to program design, outcomes, and standards. I excluded international studies and studies primarily focused on alternative routes (unless they focused a research question on traditional special education teacher preparation). After a title and abstract search, and application of exclusion criteria mentioned previously, only six empirical studies remained. While this is a small number, it is consistent with other literature review conclusions (see for example Brownell et al., 2014).

### **Overview of Special Education Teacher Preparation**

Special education teacher preparation is a relatively “young” profession, beginning with the preparation of the first special educators in residential/clinical settings for people with disabilities and shifting in response to disability law governing the rights of students with disabilities in the early 1970’s (Brownell et al 2010; Us Bureau of Education for the Handicapped, nd). The trajectory of special education service delivery has changed significantly over the years, and has evolved significantly from its original conception, the medical model. This model was born of the settings where people with disabilities were – institutional, clinical, residential and hospital settings, “which employed medical and psychological discourses to frame educational disabilities as conditions of individual deficit or defect” (Danforth, 2008, p. 46) with the goal of education focused on “remediating” or “fixing” the student. As beliefs about disability have changed over the years, models of educating students with disabilities have as well. The emergence of the social model of disability (Oliver, 1983), which frames disability as “the variety of social interpretations of human difference that construct disability by assigning to it particular linguistic, interpersonal, and political meanings, often limiting the access, status, and participation of disabled persons” (Danforth, 2008, p. 46) was reinforced by a social-justice

focused disability rights movement (Blatt, 1979). The disability rights movement has experienced acceleration of late (Ruderman, 2015), especially in the field of autism given scholars' and self-advocates' emphasis on neurodiversity (Brown, 2013; Fenton & Krahn, 2007; Robison, 2015). Neurodiversity, which is closely tied to the civil and disability rights movement (Fenton & Krahn, 2007) seeks to “construe autism as a positive attribute, and to stress the natural difference from non-autistic (often called neurotypical) experience and identity” (Ortega, 2009, p. 427). This nearly 180 degree turn means that as our conceptions of disability have changed, so have our understandings and expectations about what special education teachers need to know and be able to do.

There has been a long time focus in the field of teacher preparation about what teachers should know and be able to do (Barnes, 1989; Cochran-Smith & Lytle, 1999; Darling – Hammond & Bransford, 2007; NCATE, 2009;). As ideas about the “knowledge base for teaching” (Shulman, 1987) were being developed, knowledge competencies for special education teachers were emerging separately (Blanton, Pugach, & Boveda, 2014; Council for Exceptional Children, nd). It was not until the 1990's that a knowledge base for special education teachers was proposed (Blanton, Pugach, & Boveda, 2014; Reynolds, 1990).

Special education teacher preparation, compared to general education teacher preparation, could still be considered to be in its professional adolescence. Like general education, as a field, special education teacher preparation has much less research literature (Brownell et al, 2005; Linguaris/Kraft et al 2014) and is “not an established area of inquiry” (Brownell, Ross, Colon, & McCallum, p. 12, 2005), though many researchers believe that addressing this is a critical and urgent need (Brownell et al, 2003; Newton et al 2012; Reynolds, 1990). Although there is a significant literature base for understanding general education teacher

preparation (see Cochran-Smith & Zeichner, 2005), “special education has no similar conceptual or research base on which to draw” ((Brownell, Ross, Colon, & McCallum, p. 12, 2005). For example, in a literature review focused on dimensions of teacher quality, Brownell and colleagues (2014) found 75 studies focused on teacher qualifications, teacher knowledge, and teacher practice in general education, but located only seven in special education. Similarly, the first *Handbook of Research on Teacher Education*, (Houston, Ed., 1996) was published in 1996 in contrast to the first *Handbook on Research of Special Education Teacher Preparation*, which was published in 2014 (Sindelar, McCray, Brownell, and Lignugaris/Kraft, Eds.).

There are unique features of special education teacher preparation which differentiate it from general education teacher preparation, partly because differences exist between the professional responsibilities of special and general educators (Brownell et al. 2005; Sindelar et al. 2014; Zigmond & Kloo, 2011). Young (2011) has argued that distinct and separate teacher education programs in general and special education have perpetuated this. Among the differences between general education and special education teachers are “licensure structures, students needs, teacher roles and service delivery systems” (Sindelar et al 2014; p. 7), as well as legal responsibilities, advocacy, and collaboration as a central aspect of the professional role. Beginning or early career special educators often find themselves in complex positions, responsible for fulfilling a variety of roles and a multitude of students with diverse needs (Brownell et al, 2005; Sindelair et al 2005).

Special education teacher preparation has experienced a significant evolution since its conception. Categorical - or disability specific - models of licensure were predominant across the states in earlier years of special education teacher preparation, but by 2002 (the date of the most recent study of special education teacher licensure patterns) 45 states had moved in the

direction of primarily non-categorical licensure models, which cover a range of disabilities (Geiger, et al, 2014; Brownell et al, 2010). A major recharacterization of special education teachers' roles, and thus, special education teacher preparation, has occurred in the last twenty years in concert with the movement to educate students with disabilities in general education settings (Brownell et al, 2010; Danforth & Rhodes, 1997; Heston et al 1998). The fledgling research literature in special education teacher preparation does suggest a strong connection between teacher effectiveness and special education teacher preparation (Sindelar, Wasburn-Moses, Thomas & Leko, 2014; Feng & Sass, 2012; Boe, Shin & Cook, 2007), but more research is needed.

#### **Across the studies.**

The majority of the empirical studies on special education teacher preparation employed surveys as the prevailing data collection method in the teacher preparedness groups (Bishop, Brownell, Klingner, Leko & Galman, 2010; Boe, Shin & Cook, 2007; Brown, Welsh, Hill & Cipko, 2008; Conderman, Johnston-Rodriguez, Hartman, & Walker, 2012; Zabel & Zabel, 2001). Two of these studies used survey in their mixed methods design (Bishop et al., 2010; Conderman et al. 2012). The remaining study used q-sort methodology (Sayeski & Higgins, 2013).

Many themes which emerged across the studies which were similar to the themes of the preparedness category, but were emphasized or addressed in different ways in these studies, either by the use of different language or different emphases on the results of the studies. Three major themes across the studies included a) how perceptions of preparedness can influence program content and evaluation in teacher education; b) the relationship of preparedness to self



efficacy, and teachers' confidence and attitudes and c) the role of guidelines such as federal law and those produced by accrediting bodies or professional organizations.

There were several similarities in this group of studies to the teacher preparedness studies. Four of these studies focused either directly or indirectly on teacher perceptions of preparedness. Two studies (Boe, Shin & Cook, 2007; Conderman, Johnston-Rodriguez, Hartman & Walker, 2012) had research question (s) devoted to teacher preparedness; a third did not explicitly state their research questions (Bishop et al., 2010). A fourth study (Brown et al., 2008) focused on candidates' "confidence" related to special education content in coursework. Interestingly, though some of the studies took it up as a focus of research questions, "preparedness" was not used as a keyword or in the abstracts of any of the studies. Though they did not use the term "preparedness," their focus on whether the content improved preservice teachers' knowledge and attitudes about meeting the needs of students with disabilities (Brown et al., 2008); qualifications variables and their association to the amount of teacher preparation (Boe et al., 2007); and "level of accomplishment" as it relates to extent of preparation (Bishop et al., 2010) is closely related to the concepts taken up in the preparedness studies. This is interesting and may relate to the dearth of studies that are located in the literature – studies on special education teacher preparation may be categorizing or calling their research by different names.

These four studies (Bishop et al. 2010; Boe, Shin & Cook, 2007; Brown et al., 2008; Conderman, Johnston-Rodriguez, Hartman & Walker, 2012) investigated how well prepared teachers were to teach students with disabilities based on different aspects of their programs, including content and methods coursework, field experiences, and attitudes and beliefs. The major difference between these studies and the preparedness studies was that this group of

studies connected data to teacher preparation programs as a means of examining outcomes (Boe et al., 2007), revising or identifying the most beneficial aspects of the program (Bishop et al., 2010; Boe et al., 2007; Brown et al., 2008; Conderman et al., 2012). This was central to another study conducted by Sayeski and Higgins (2014) in which the focus was determining what preservice special education teacher candidates needed to know and be able to do upon graduation. Rather than utilize survey data, they utilized q-sort methodology to prioritize feedback on high priority topics which were used to redesign courses, assignments and experiences in special education teacher preparation. The high priority topics that were identified by Sayeski and Higgins (2014) had a high level agreement with high priority topics identified by both Boe and colleagues (2007) and Conderman and colleagues (2012), and included content and curricular assessment, lesson planning, instructional methods, assessment among others. These areas were used to determine how candidates develop direct knowledge or skills related to the high priority topics.

All of the studies that utilized survey concluded that teachers with extensive preparation in pedagogy and practice teaching (field experiences) were well prepared to teach students with disabilities. According to Bishop and colleagues (2010) “preparation experiences are key in acquiring the specialized knowledge necessary for effective classroom practices” (p. 77). Relatedly, self-efficacy and its relationship to preparedness emerged in these studies, though again the language was used both directly (Brown et al., 2008) and indirectly (Boe et al., 2007; Conderman et al., 2012). The studies concluded that feeling well prepared is related to pre-service and beginning teachers’ command of the classroom, sense of accomplishment and confidence (Boe et al., 2007; Bishop et al; 2010; Brown et al., 2008; Conderman et al., 2012; Zabel & Zabel, 2001). Zabel & Zabel (2001), also focused indirectly on self-efficacy, through a

study which utilized survey conducted with in-service teachers. Their research focused on the relationship of attrition to the extent of preparation and exposure to licensure and standards. They suggest that teacher confidence and accomplishment is higher as a result of their preparation, as well as the use of nationally recognized standards for professional preparation.

All of the studies identified the role of standards, professional guidelines, or the use of federal law as being a critical to help define, shape or guide the content and experiences of special education teacher preparation programs. Three of the studies employed the Council for Exceptional Children's standards as a way to describe the support, core knowledge and skills competencies, and to determine what candidates should know and be able to do upon completion of their preparation (Conderman et al., Sayeski & Higgins, 2014; Zabel & Zabel, 2001); Bishop et al. (2010) referred to the use of validated observations systems from professional organizations to identify graduates who were highly response to student needs and demonstrated effective practice. Boe et al. (2007) used data and guidelines from both professional and accrediting organizations to determine a measure of the extent of teacher preparation; Brown et al. (2008) referred to an accrediting agencies' requirements for teacher education programs to prepare future educators to educate students with disabilities as a way to explore teachers' level of preparedness.

### **Section Three: Research on the preparation and training of educators of autistic students.**

In this final section of the literature review, I explore literature that is specific to the preparation of special education teachers to teach autistic students. While some scholars have theorized the preparation and education of teachers of students with autism, few empirical studies exist that explore efforts to do so. However, there is another body of research that is somewhat relevant. There are a handful of studies that focus on training teachers to work with

autistic students using specific interventions or methodologies, which were, in many cases, EBPs. These studies are not concerned with teacher preparation per se, and instead are efficacy studies of whether the intervention improves outcomes for students, or the extent to which the special educators demonstrate fidelity of implementation of the practice. Given that a central focus of the studies is on training educators, I included a small number of these empirical studies which utilized at least one research question related to the teachers' training.

To locate the literature, I searched the ERIC database for peer-reviewed, empirical studies, published in academic journals, and limited to research conducted in the US, beginning with 1980. Searches were conducted using the following search terms: *autism and teacher preparation*; *autism and teacher education*; and *autism and special education teacher*. Search filters included 'peer-reviewed' and publication date (1980-present). The initial search yielded 25, 95, and 129 results, respectively.

Duplicates retrieved from the different search terms were removed. An initial screening focused on titles and abstracts to exclude those that were clearly focused on topics outside of the scope of this review, such as parents, policy, comparison studies of autism interventions/practices, or studies focused on fidelity of implementation implementing specific practices. Studies that specifically related research findings to preparation/ training and the knowledge and skills required of special educators to teach autistic students via a research question or directly stated purpose were included. Empirical research that met the following criteria was included in this review: a) published beginning in 1980 b) focused on teacher preparation in university settings, related to educating or training teachers about autism or to use specific practices in teaching autistic students c) specific to special education teachers being prepared to work or working in school contexts (vs. home based or community teaching); d)

specific to services promulgated under Part B of the Individuals Disabilities Education Act (IDEA), excluding Early Intervention [EI] providers, as outlined in IDEA Part C, given that their preparation is inherently different than that of teachers; and e) focused on the preparation/education of special educators who exclusively work with students with ASD vs. other developmental disabilities, following the rationale noted earlier, that autistic students have vastly different educational needs. This rationale was also utilized by the National Autism Center ([NAC], 2009) suggesting that, in order to “draw firm conclusions...about effectiveness” of specific practices, (p. 11), research must be specific to autistic students. Following application of exclusion criteria, twenty studies remained. While this represents a relatively small number of studies, other literature reviews in the field of autism have similarly small results (Alexander, Ayres, & Smith, 2015). I coded the remaining literature into three categories: (a) five studies on university programs (b) ten studies about professional development, including knowledge, training and/or perceptions/beliefs about autism, and c) five studies that largely focused on teachers’ procedural fidelity of implementation of specific trainings or interventions.

### **Overview of preparation and training of educators of autistic students.**

As noted, Autism Spectrum Disorder occurs at a rate of 1 in 68 US children (CDC, 2014), and the number of students with autism in U.S. schools has increased at a rate of over 300% since the year 2000 (USDOE, 2013). Autism is a complex disability, and those with the diagnosis present with a wide range of communication profiles and educational needs. Researchers and education scholars have called for more specialized preparation for teachers of autistic students, but despite the availability of information and resources on autism, we still have no clear methods of preparing teachers to educate autistic students. Well-prepared teachers are essential to ensure a quality education and successful outcomes for autistic students.

The preparation and training of educators of autistic students has been referred to as “one of the weakest elements of effective programming” in autism education (NRC, 2001, p.225), and “the most significant challenge facing the autism field” (Simpson, 2003, p.194), as well as problematic, inconsistent, variable, and insufficient by an array of researchers (Scheuermann et al, 2003; Barnhill, Polloway, Sumutka, 2011; Brock, Huber, Carter, Juarez, & Warren, 2014). The conclusion of both conceptual and empirical research in this area suggest that, due to the specialized needs of autistic students, specialized knowledge is required on the part of the teacher (Barnhill, Polloway, & Sumutka, 2011; Hendricks, 2011; Morrier, Hess & Heflin, 2011; Marder & deBettencourt, 2012; Barnhill, Sumutka, Polloway & Lee, 2014).

In 2001, the National Research Council published *Educating Children with Autism*, a report which produced a set of interdisciplinary recommendations intended to “integrate the scientific, theoretical, and policy literature and create a framework for evaluating the scientific evidence concerning the effects and features of educational interventions for young children with autism” (NRC, 2001, p.13). This seminal report, cited more than 270 times since its publication, created the impetus for policy reforms which included the preparation of autism teachers. Following this report, there has been increased focus on autism policy in the US (Muller, 2005). Multiple states have adopted variations of autism endorsements, though considerable variation has been demonstrated across states and programs programs (Muller, 2005; Hart & Malian, 2013; Barnhill, Polloway & Sumutka, 2011). In recent years, the field has focused on the evidence based practices as the primary guidance for educating autistic students (Odom et al., 2010; Wong et al., 2014). Evidence-based practices were primarily identified to assist stakeholders’ decision-making about developing educational plans that outline how students can make effective progress (NPDC, 2009; NAC, 2009).

There are variations in conclusions about the extent to which teachers need preparation/education in the evidence-based practices in order to be effective in using them, and as of late, questions about whether those practices are ethical. This is further complicated by the concept of neurodiversity, which has prompted a steady paradigm shift in social, cultural and educational beliefs about autism (Hughes, 2016; Brown, 2013; Fenton & Krahn, 2007; Harmon, 2004) that has helped to position disability rights as a civil rights issue. A central tenet of the concept of neurodiversity is that, despite differences in neurology, behavior and social interaction, autistic students do not need to be "cured" or "normalized" (Fenton & Krahn, 2007) to be more like their typically developing peers. This has presented a disruption to many long-held beliefs about educational 'interventions' and evidence-based practices, which were largely designed to "normalize" the behavior and actions of autistic students. Since there is significant disagreement about the way education for autistic students should be structured, it is not universally clear what special educators need to know and be able to do to be well-prepared to teach autistic students.

Since states vary in their approaches to special education teacher certification, offering licensure either categorically or non-categorically, a growing number of states have recently begun offering autism endorsements (Muller, 2005; Hendricks, 2011), which is a turn back toward categorical preparation. State variations of such endorsements have distinct differences, in many cases guided by surveys of in-service teachers. For example, the Minnesota Autism Spectrum Disorder Needs Survey 2011-2012 examined training needs through a survey of educators and parents. Similarly, the University of Maine Center for Community Inclusion and Disability Studies surveyed educators and parents of students with ASD. Their survey of educators measured types of strategies used with students with ASD, training experiences, and

perceptions of knowledge and skill, among other things (2009). A survey of ASD educators in Michigan examined the nature of instructional services to students with ASD, whether those services reported matched the effective practices established in the literature, and the training associated with those practices (Ferrari & Bolt, 2011).

### **Across the studies.**

There are several themes which emerge from the research on autism teacher preparation as to why autism teachers should have specialized knowledge, which include the unique needs of students with autism, the impact of the number of autistic students in US schools, the need to differentiate safe and evidence-based practices in autism, and finally, lack of educator preparedness to teach autistic students.

However, there was also considerable inconsistency across the studies. For example, it was clear that, despite educator knowledge about evidence-based practices, standards, or specific philosophical educational practices, educators repeatedly reported that they do not use them. It is also clear that there are very different understandings about autism and the ability of autistic students to achieve, what motivates their behavior, and what long-term outcomes should be across the research literature. Another example of inconsistency was the dearth of information across research studies' participant demographic information. In some studies, it was unclear whether the participants were special education or general education teachers, and in some cases whether they held licensure or certification in special education; whether they had previous experience with autism, and the extent of that experience. Additionally, varying opinions emerge about whether teachers should be prepared in a variety of methodologies or single approaches, and how educators should receive this training. For example, despite an endorsement for university teacher preparation, Simpson (2003) posited that it may not be realistic for every



educator of students with autism to “complete an entire autism-specific pre-service program” (p. 195).

Among successful models of teacher training, findings include the usefulness of teacher-researcher partnerships, and specialized, systematic training with supervision, mentoring and follow-up to be critical to produce well-prepared teachers.

### **University Programs.**

The literature in this category included five studies that focus on the structure, design, or content of university programs focused on or delivered in university settings, and all utilized survey data. Two of the studies explored in-service teachers’ perceptions of knowledge following participation in a university preparation program; two studies surveyed university faculty about the content of university programs, and the fifth study utilized survey data from both school districts (about their in-service special education teachers) as well as university faculty about the content of their autism preparation.

Barnhill, Polloway, and Sumutka (2011), Barnhill, Sumutka, Polloway and Lee (2014) and Loiacono and Allen (2008) conducted surveys of teacher educators at college and universities to identify the prevalent practices being used in higher education. To determine the prevalence of universities and colleges that offer autism teacher education, Barnhill and colleagues (2011) designed a measure to determine the university offerings, and through which to examine the depth and breadth of the content and structure of such programs, and concluded that teachers of autistic students should have specialized knowledge. This study is an important contribution to the autism literature, as it explored the divergent landscape of autism teacher education for the first time. The authors highlighted the recent establishment of a number of university offerings on autism; noted that university based autism teacher education offered both

pre- and in-service preparation, and emphasized the importance of fieldwork. A significant finding of this study was the identification of common elements of programming, including foundational topics, such as characteristics, definitions, causes, and methods of assessment, but noted a “significant range in emphasis on more specific types of interventions” (p.83). In a follow up study, Barnhill, Sumutka, Polloway and Lee (2014) expanded the instrument to include questions designed to gauge the depth of university based autism teacher education programs’ use of evidence based practices as defined by NAC and NPDC, similar to Loiacono and Allen (2008), who selected a random sample of New York State institutes of higher education (IHEs) to determine what percentage surveyed offered coursework on autism, as well as the extent to which special education teachers are prepared to implement applied behavior analysis techniques. Barnhill et al (2014) additionally sought to determine the theoretical frameworks employed by autism teacher education programs. Findings included a significant correlation between the length a program had been in existence and the depth of content, consistent with Barnhill et al (2011). An additional interesting aspect of this study was the focus on the background and expertise of the teacher educators in the university based programs; 89% of university programs indicated those teaching the programs had specialized training themselves. Loiacono and Allen’s (2008) survey of NY state colleges and universities revealed that approximately 25% offered training or coursework in applied behavior analysis, which they indicated made teachers able to “effectively facilitate the instructional process for children with autism” (p.122). While this study, like Barnhill et al (2011) emphasized the growing number of courses and programs in IHEs designed to prepare special educators to teach autistic students, there were several limitations to the study. First, Loicano and Allen’s definition of well-prepared was restricted to one philosophical method, and thus they may have inadvertently overlooked

other college or university programs designed to prepare educators to teach autistic students. Additionally, the use of a random sample may be an imprecise approach to determining the nature of autism teacher education and the extent of preparation offered. The authors noted a need for more in-depth examination of the state's colleges and universities.

Two of the studies specifically evaluated the extent of training that educators had received in preparation programs. Loiacono and Allen additionally sought to determine whether special education teachers had been trained in evidence-based practices related to applied behavior analysis through a second survey, and found that only 88% of the teachers had not had training in ABA, prompting the authors to conclude the teachers were unprepared to teach students with autism. Hall (2014) and Rakap, Jones and Emery (2015) surveyed graduates/completers of university programs designed to improve educator knowledge of autism. In both programs, completers reported high satisfaction with the model, as well as enhanced knowledge and skills as a result of the program. Hall surveyed the (2014) continued use of content taught in the preparation program, and found that six years following graduation, participants continued to eight types of EBPs. This finding was unique to the literature review, as is detailed in the next section, where high percentages of teachers in multiple studies reported not using EBPs.

**Professional Development: Knowledge, Training, and/or Perceptions/Beliefs.**

The nine studies in this group focus on knowledge, training, and or perceptions/beliefs of in-service teachers about educational practices or professional development efforts. These studies help to illustrate multiple efforts to understand the depth of in-service teacher knowledge about autism, types of professional development training that are effective, and whether teachers report improved ability, confidence and/or knowledge following professional development.

Eight of the nine studies in this group utilized survey data; one study collected data via observation of teachers in their classrooms following a professional development training. One important theme across these studies was how results further contribute to improved professional development, training and teacher education. A second theme which emerged was the practicality of professional development and training, whether specific to cost, sustainability of ideas/practices, access to training, and lastly, how to determine how to fill teacher “gaps” in knowledge.

One interesting theme of this group of studies suggests that teachers may not connect their preparation experiences to their practice teaching students with autism (Brock et al., 2014; Hart & Mailan, 2014; Ruble et al 2014). Criteria designed to define what constitutes an evidence-based practice has a direct relationship to what the researchers refer to as “treatment outcomes” (NPDC, 2014, NAC 2009). But yet, only a very small percentage of teachers report using EBPs in their classrooms (Hess, Morrier, Heflin & Ivey, 2008; Morrier, Hess & Heflin, 2011).

Morrier, Hess and Heflin (2011) studied autism teachers by examining teachers’ knowledge of/training in evidence-based practices that they reported using in their classrooms. Their survey data suggested that fewer than 20% of respondents reported “learning how to implement the strategies used classrooms through their university-based teacher preparation program” (p. 128). Disparity about the ability of professional development models to measure the candidates’ knowledge and skills following training is noted in the literature (Lerman et al 2004) with concerns about the accountability and sustainability of professional development models (Hart & Malian, 2013; Lerman et al 2004; Brock et al; 2014).

Many studies explored how training related to practice. Morrier, Hess and Heflin (2011) examined the relationship between type of autism teacher education and use of evidence based practices by autism teachers. To determine answers to these questions, researchers surveyed teachers about their use of evidence-based practices for autistic students. The authors then evaluated whether teacher characteristics (education level, etc.) predicted the use of evidence based practice (findings of the research were unremarkable). Researchers found no significant differences between the education level of teachers who reported using best practice and those who did not, but the study is significant given its conclusion that a majority of teachers reported using non-evidenced based practices.

Coaching was an important theme to professional development studies. Mueller and Brewer (2013) explored an autism professional development model emphasizing communication and naturalistic teaching interventions for autism teachers in a US state where 80% of the districts are rural. Six autism teachers and two speech-language pathologists participated across three districts. The study utilized a coaching model involving a consultant/coach to provide support throughout the year to participants; a university faculty member/coach to provide monthly observations and ongoing feedback; and a district based mentor teacher, referred to as a “teacher on special assignment” to provide weekly direct coaching. Maddox and Marvin’s (2012) study utilized a mentoring model over the course of an 18-month professional development program addressing teacher knowledge; immediately following the model, participants demonstrated an increase in “perceived knowledge and skill related to ASD” (p. 45) and could implement interventions with increased confidence and fidelity. Additionally, participants demonstrated expanded use of classroom practice and supports for students with

ASD following training. However, participants in Brock et al (2014) study indicated a preference for workshops over coaching for professional development.

A final and important theme which emerged was teachers' improved confidence and self efficacy following professional development or training (Callahan, et al, 2008; Lerman et al., 2004; Maddox & Marvin, 2013; Ruble et al 2014).

### **Teachers' Procedural Implementation.**

Though this final group of studies might have been included in the previous section, a distinct difference emerged between this group of five studies than those in the previous group. These five studies focused primarily on teachers' procedural fidelity of implementation of evidence-based practices. In other words, the studies were primarily concerned with how well/how closely the teachers follow precise guidelines in implementing evidence based practices once they have learned them. Though their focus on training teachers makes these studies relevant to this literature review, the authors are primarily focused on whether the training methods result in pristine implementation of the EBPs. This is an extremely important progression, given that for years researchers emphasized EBPs as the only practices that should be used to teach autistic children, but paid little attention to how or if the practices were being used by teachers. Questions still remain whether the explicit goal of this type of professional development is to produce high quality teachers of autistic students or those who can precisely implement specific interventions. While the goal of improving practice is to improve outcomes for students, but generally, teacher professional development involves learning designed to enhance teacher knowledge in order to apply to practice (Darling-Hammond & Richardson, 2009). Thus, these studies remain distinctly different than the efforts of the field of teacher education to produce exemplary autism teachers with specialized knowledge.

The evidence-based practices were developed on the premise that the most relevant outcome is that the intervention produce a specific treatment effect (Odom, 2008; NPDC, 2014; NAC, 2009). Various organizations have worked to develop widely accessible professional development materials for teachers, including detailed information on “how to plan, implement, and monitor specific evidence-based practices” (NPDC, 2014) to ensure fidelity of implementation of the practice. Knowledge of specific evidence-based practices has been linked to student improvement (Morrier, Hess, & Heflin, 2011), though frequently described as technical strategies, designed to be implemented in classrooms “in ways similar to that intended by purveyors” (Odom, 2008, p.2). And while some researchers suggest that the use of evidence-based practice has a direct relationship to treatment outcomes (NPDC, 2014, NAC 2009), only a very small percentage of teachers report using EBPs in their classrooms (Hall, 2014; Morrier, Hess & Heflin, 2011; Shyman, 2012).

It is important to note that four of the studies were authored by the same group of researchers. While authors of intervention studies focused autism teacher training do not explicitly state their singular commitment to specific models, multiple publications may provide evidence of orientations or commitments to underlying autism ideologies. Thus, these studies focused on a teaching specific intervention methods to teachers, by default fail to acknowledge the need for varying approaches/practices in the field. Though they share a central theme of training teachers, “training” in this group of studies is limited to how well the teachers learned the procedures, and how well they replicated it with students.

While there is no shortage of studies on single-interventions and evidence-based practices in the literature on autism, there are a dearth of studies which additionally focus on teacher training for particular interventions or methodologies. Behavioral methodology, specifically, the

use of Applied Behavior Analysis, has long carried the “distinction” of being considered “the” evidence-based practice for students with autism (Scheuermann et al 2003; National Autism Center, 2009), largely because it is a methodology which is easily quantifiable, but also likely because it has a specific training philosophy central to its mission, making its practices an easier candidate for empirical research. This philosophy was also evident in the context of teacher training in these studies; for example, Lerman et al. (2008) described their evaluation of “the effects of the instruction on teacher behavior” (p. 245).

These researchers agree that efficacy and success of the evidence based practices for students with autism are contingent upon teacher training training and preparedness in evidence based practices. The major conclusion of this group of studies was that, despite the focus on procedural fidelity, while teachers learn to use evidence based practices, the models are not necessarily sustainable in classroom settings without significant coaching or mentoring (Lerman et. al, 2008; Stahmer, Rierth, Lee, Reisenger, Mandell, & Connell, 2014; Suhrheinrich, Stahmer, & Schreibman, 2009; Suhrheinrich, 2011; Suhrheinrich, 2015). All of the studies additionally identify coaching as an important tenet of quality professional development training, a useful theme for thinking broadly about preparing educators of autistic students.

### **Literature Review Conclusion**

This review of the research has investigated educators’ perceptions of preparedness, special education teacher preparation, and research on preparation/training to educate autistic students reveals several themes relevant to the dissertation I am proposing. First, the literature on perceptions of preparedness confirms that preparation should be contextual, meaning that it should be matched in course work and field work specific to the student population, especially for complex groups of students. This was also echoed in the conceptual literature on the



preparation and training experiences of educators who teach autistic students. My study helps to determine the reported extent of preparedness of Massachusetts' educators to teach autistic students, which may or may not confirm what both areas of this literature suggest.

Second, research on preparedness provides important data on the experiences that teachers have in their teacher education programs that can help determine essential features of what preparation for educators of autistic students should comprise. This may help teacher educators in Massachusetts as they develop autism programs for their students, particularly those who wish to meet the new state endorsement requirements. Data about how well-prepared teachers feel and their views on practices and outcomes for autistic students can provide insight into their curricular decisions, teaching methods and understanding of knowledge and practice standards, including approaches to teaching.

Third, teachers' responses to questions about standards can help me to understand how they view the role of standards in the practice, as well as the role of the professional organizations that produce the standards. For example, are the standards helpful in assisting teachers to understand their professional responsibility? Do they describe their roles and knowledge in ways that are aligned with professionalization, providing examples of complex interactions with students and teaching that requires judgment based on context, or do they describe teaching in ways that suggest they are implementers of techniques (Odom, 2003) or evidence-based practices?

Finally, what preparation routes and other training have teachers received relative to autism? Do teachers who have no specific training report feeling well-prepared to teach this population of students? How do teachers' training experiences predict preparedness, knowledge and beliefs in teachers of autistic students?

**Chapter Three: Research Design and Methodology**  
**A Mixed Methods Exploration of Special Educator Preparedness**  
**to Teach Autistic Students**

This dissertation explored the preparedness of Massachusetts special educators to teach autistic students by examining their perceptions of preparedness and the extent to which their education and training contributed to the beliefs and knowledge they had about autistic students. The purpose of this study was to learn what factors influence and contribute to teachers' preparedness, knowledge and beliefs in order to help define the ways educators of autistic students should be prepared. The study examined how special educators' different preparation experiences may have influenced their reported preparedness and why variation in preparedness, knowledge and beliefs may exist among educators of autistic students. Given that perceptions are not always fully explained by closed questions on surveys, the research design utilized a sequential explanatory mixed methods design and involved both quantitative survey data and qualitative interview data.

**Research Design**

Mixed methods research hybridizes quantitative and qualitative data within a single study to allow for expansion of “the scope or breadth of research to offset the weaknesses of either approach alone” (Driscoll et al, 2007, p. 19). In a mixed method sequential explanatory design, there are two phases: a quantitative phase followed by a qualitative phase. The quantitative data are usually weighted with more significance in this design (Creswell, 2006) and provide a general understanding of the research problem; they are collected first and analyzed. Second in the sequential design are the qualitative data, which are collected and analyzed to elaborate on the quantitative data by exploring select participants' views in greater depth (Creswell, 2003).

The complementary use of quantitative and qualitative data is particularly useful for research involving survey data (Driscoll et al, 2007; Creswell 2014). A typical procedure utilizing this method involves “collecting survey data in the first phase, analyzing the data, and then following up with qualitative interviews to help explain the survey responses” (Creswell, 2014, p. 224), making this approach a logical choice for my study design. The study utilized a researcher-created quantitative survey followed by interviews, which were analyzed qualitatively, to more deeply explore participant perceptions. Survey data ( $n=121$ ) were used to inform both question construction and participant selection for a purposive sample of follow-up interviews ( $n= 10$ ) in terms of outliers and interesting or discrepant cases. Interpretation of interviews helped explain the quantitative data in more detail (Creswell, 2014) and incorporated the perspectives of the participants, in keeping with the idea that “explaining how the variables interact in more depth through the qualitative follow-up is a key strength of this design (p. 224).”

Because there are co-existing but different approaches to the preparation of teachers who work with autistic students via different licensure routes and different knowledge standards, at the outset of this study it seemed likely that there could be differences in the perceptions of preparedness reported by the teachers, but the nature of the differences would not be entirely clear from the survey data alone. For example, I expected to be able to identify patterns in perceptions and responses across the teacher respondents in the larger quantitative data set; conducting follow up interviews with a smaller subset of the respondents allowed more extensive analysis and helped reveal information that was not immediately evident in the quantitative data. Taken together, the quantitative and qualitative data analyses in this study provided a richer, more comprehensive interpretation of the overall data than a single method would have and confirmed mixed methods research was a useful methodological match for this study.

The research questions for this study, which emerged from both the literature review and from my extensive experience in the field, focused on the preparation of Massachusetts special educators who work with autistic students. The questions are listed below followed by statements about the hypotheses where applicable:

RQ1. What preparation and professional development experiences do Massachusetts special educators have to teach autistic students?

RQ2. To what extent do Massachusetts special educators feel prepared to teach autistic students based on their initial preparation, and after their experience in the field/professional development?

a. Is autism coursework a significant predictor of teachers' sense of preparedness as new teachers?

*I expected that autism coursework is associated with higher levels of teachers' sense of preparedness.*

b. Is autism coursework a significant predictor of teacher's beliefs about autistic students?

*I expected that autism coursework is associated with higher levels of teachers' belief about autistic students.*

RQ3. What knowledge of the CEC standards and evidence-based practices do Massachusetts special educators report having?

a. What differences exist between educators with moderate versus severe licensure with regard to knowledge of CEC standards and evidence-based practices?

*I expected that initial preparation including Massachusetts licensure in Severe Disabilities is associated with higher levels of knowledge of CEC knowledge standards and EBPs.*

RQ4. Does type of license predict preparedness, knowledge and/or beliefs? To what extent?

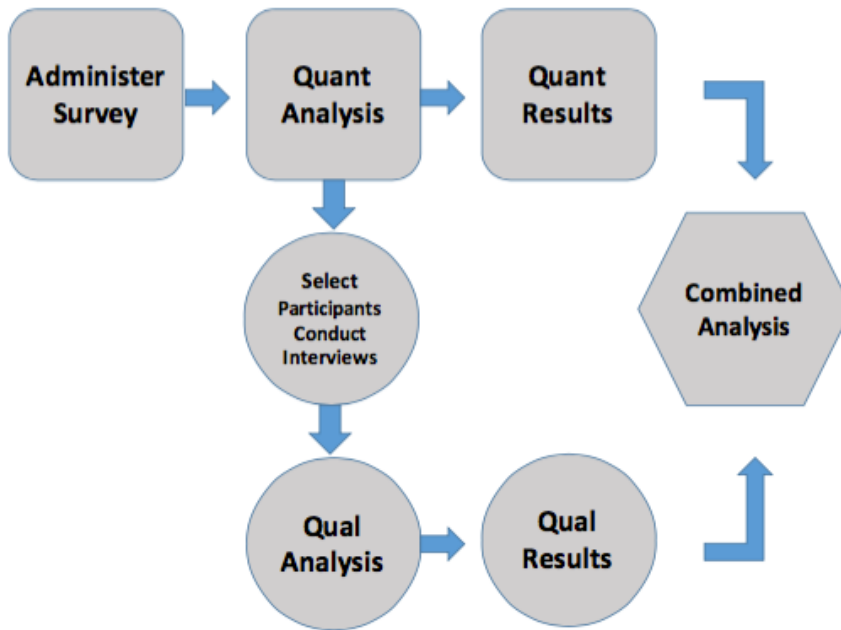
*I expected that type of license is a significant predictor of preparedness, knowledge or beliefs and that initial preparation including Massachusetts licensure in Severe Disabilities is associated with higher levels of preparedness to teach autistic students.*

To address these research questions, I used a typical 2-phase approach (Creswell, 2003). In the first phase, quantitative survey data were collected and analyzed, and then used to guide the design of the second phase of the study, which involved follow-up interviews with participants. The second phase employed the quantitative results to both inform the selection of the participants and the types of questions that were asked of interviewees (Creswell, 2014). Creswell (2003) suggests that, in an explanatory sequential design, qualitative results help to explain any unexpected results as well as participants' responses and allow for the further unpacking of the quantitative data by asking participants to expand on their responses.

### **Study Procedure and Design**

In a mixed methods design, the data collection “proceeds in two distinct phases,” with quantitative data collection first, followed by purposive qualitative sampling in the second qualitative phase (Creswell, 2014, p.224). Figure 3.1 provides an overview of the study method.

Figure 3.1. Study Design.



In Phase One, I administered a previously piloted researcher-created survey to Massachusetts special educators who were teaching autistic students at the time of the survey. The survey was specifically designed to target participants' preparation experiences, perceptions of preparedness, including their readiness to teach this population, beliefs and extent of knowledge. Data were collected through an online survey platform administered through Qualtrics, an online survey construction and distribution site. Following coding and analysis of survey data (described in detail below in *Quantitative Methods*), I selected interviewees from a subset of survey participants in order to gain further insight into their responses. Interview data were transcribed and coded using an iterative process (described in detail below in *Qualitative Methods*). Following analysis of qualitative results, I conducted combined analysis of both datasets. Table 3.1 provides an overview of the procedures and measures used for each research question.

Table 3.1: Study Design Overview

	Phase	Procedures	Products
<b>Phase 1: Quantitative</b>	Quantitative Data Collection	<ul style="list-style-type: none"> <li>• Survey:</li> </ul>	<ul style="list-style-type: none"> <li>• Survey data</li> </ul>
	Quantitative Data Analysis	<ul style="list-style-type: none"> <li>• Descriptive Analysis</li> <li>• Open Response Coding</li> <li>• Cronbach’s Alpha</li> </ul>	<ul style="list-style-type: none"> <li>• Mean, SD, frequencies, percentages</li> <li>• Scale scores</li> </ul>
		<ul style="list-style-type: none"> <li>• Chi-Square Test of Independence</li> <li>• Paired Samples t-test</li> <li>• Multiple Regression, ANOVA</li> </ul>	<ul style="list-style-type: none"> <li>• Cronbach’s alpha coefficients</li> <li>• P-value</li> <li>• Mean differences</li> <li>• Regression coefficients</li> </ul>
	Quantitative Results		<ul style="list-style-type: none"> <li>• Description of results</li> <li>• Identify follow-up participants</li> </ul>
<b>Phase 2: Qualitative</b>	Qualitative Data Collection	<ul style="list-style-type: none"> <li>• Cognitive interviews</li> </ul>	<ul style="list-style-type: none"> <li>• Interview Transcripts</li> </ul>
	Qualitative Data Analysis	<ul style="list-style-type: none"> <li>• Coding</li> <li>• Thematic Analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Within and cross case themes</li> </ul>
	Qualitative Results		<ul style="list-style-type: none"> <li>• Description of results</li> </ul>
	Overall findings and interpretation	<ul style="list-style-type: none"> <li>• Explain and extend quantitative differences with qualitative findings</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion of findings</li> <li>• Limitations</li> <li>• Implications for Research, Policy, Practice</li> </ul>

### Phase One: Quantitative Methods

The first phase of this study involved the use of a survey instrument to collect quantitative data. In this phase of the study, I explored whether Massachusetts’ special educators’ preparation and professional development experiences, specifically coursework on autism, were predictors of preparedness, beliefs about autistic students, and knowledge of the teaching standards for autism and the evidence based practices.

## **Instrumentation**

The quantitative aspect of this dissertation research included a previously piloted researcher-designed survey. Specifics regarding the pilot are included below in the reliability section. The survey addressed all research questions and included questions on preparation/training experiences, perceptions of preparedness, beliefs, knowledge and, lastly, demographic questions. The development of the survey was informed by recent policy advocacy work related to creating a Massachusetts autism endorsement for teachers, Darling–Hammond’s (1999) previously validated survey on teacher preparedness, the Council for Exceptional Children Specialty Set standards (CEC, nd), and the National Professional Development Center on Autism Spectrum Disorder’s evidence-based practices (Wong et al., 2014). The survey in its entirety is included in Appendix A. The survey instrument consists of five main parts: (1) preparation/training experiences (2) Likert scale targeting perceptions of preparedness; (3) beliefs about autism and (4) Likert scale targeting knowledge of methods for teaching students with autism and (5) demographics.

**Survey items.** Below I describe the design of the multiple choice and Likert scale items for each category (Table X). Examples of Likert scale items are included in Table X. The scales used an even-number scale of four choices which “forces the respondent to make at least a weak commitment in the direction of one or the other extreme” (DeVellis, 2012, p.77), meaning there is no “middle” or “neutral” choice to make.

*Preparation/Training experiences.* This was the first major section of the survey, and was intended to determine the kind of education and training that special educators had to teach autistic students and where they received it. This section collected information about the type of program where license was obtained, preparation experiences in licensure and other educational



programs, including autism specific coursework or programming that participants may have taken, professional development, and mentoring.

*Preparedness.* The second part of the survey focused on aspects of preparedness to teach students with autism, and views about students with autism. It was designed to capture the extent to which special education teachers felt prepared to teach autistic students following their preparation to teach. This section asked respondents to note their preparedness to teach autistic students following their preparation program, as well as at time of the survey, to account for differences between beginning teaching and following experience in the field and/or additional coursework or professional development. In addition, the preparedness scale surveyed participants with items that relate to preparedness to support autistic students related to academic curriculum, environments, and challenges. Item development was guided by survey research on teacher preparation (Darling-Hammond, 2000; Darling-Hammond, Chung & Frelow, 2002; Darling-Hammond, Eiler, and Marcus 2002). Likert-scale items in this section were based on Imbibo and Silvernail's (1998) survey of New York City teachers, specifically the Professional Knowledge and Skills Sense of Preparedness Scale (Darling-Hammond et al., 2002) gauging whether teacher education influences "what teachers feel prepared to do as they enter the classroom" (p. 286). I utilized these items as a model given my interest in whether type of training is related to feelings of preparedness. Items were used to ask special education teachers about specific aspects of teaching and gauge their preparedness to do so following their preparation program. Participants were asked to choose the extent to which they agreed or disagreed with statement that focused on overall preparedness to teach autistic students when they first started teaching and now, using a four point Likert scale, ranging from 'not at all prepared' to 'well prepared' (Darling-Hammond et al. (2002). Additionally, a four point forced-

choice stem and response item (which utilized a matrix for ease of reading) asked participants to report on how prepared they felt regarding specific aspects of teaching autistic students, such as, “I felt prepared to teach subject matter concepts, knowledge and skills in ways that enable autistic students to learn” and “felt prepared to evaluate curriculum materials for their usefulness and appropriateness for autistic students.” A full version of the survey can be found in the appendix. Table 3.2 contains sample survey items.

Table 3.2. Sample Survey Items

Category	Sample Survey Question
Preparedness	I felt prepared to identify the appropriate educational support or intervention and match it to an autistic student's curricular need <sup>1</sup>
Beliefs	Autistic students should be educated alongside their typically developing peers. <sup>1</sup>
Knowledge	Autistic students' learner development, including characteristics, co-morbid conditions, neurology, theories of autism, and historical foundations of autism <sup>2</sup>

*Beliefs about autism.* This section of the survey contained forced choice Likert scale items and asked participants to respond to statements about autistic students. Items asked about teachers' beliefs about inclusion, understanding of neurodiversity, and educational (academic, higher education) and personal (friendship, romantic relationships, and work) outcomes for

<sup>1</sup>=strongly disagree, 2=disagree, 3=agree, 4=strongly agree

<sup>2</sup>= no knowledge, limited knowledge, adequate knowledge, vast knowledge

autistic students. The concept of beliefs was derived from the teacher education literature that has connected teacher knowledge to beliefs, suggesting that attention to this construct can inform the direction of curricula and program development (Pajares, 1992). This section was also informed by a previously validated teacher beliefs' scale (Darling-Hammond, et al., 2002) the CEC standards, as well as self-advocacy organizations such as the Autistic Self -Advocacy Network and the self-advocate literature (e.g., Brown, 2013; Brown, 2015; Robison, 2010). On this scale, beliefs were measured by a Likert items scale of 1-4, representing strongly disagree to strongly agree, and being measured with 1 representing lower and 4 representing higher beliefs. The beliefs section asked participants to respond to statements such as, "Autistic students can succeed academically regardless of their perceived level of functioning" and "Autistic students should participate in general education when their academic achievement warrants it." The scale also asked participants to respond to statements about outcomes for autistic students, and the extent to which they believed they had an influence on their students. I included four negatively worded items in this category, paired with positively worded counterparts. These were included to avoid respondents' potential over-agreement with items.

*Knowledge of standards and evidence based practices.* This section of the survey asked special educators to report the extent of knowledge of methods to teach autistic students they perceived they had gained from their preparation program or other educational experiences. The standards and EBPs were drawn from professional competency areas determined by national organizations and researchers (CEC, 2009; Scheurmann et al., 2003) and databases of evidence-based practices (NPDC, 2015).

*Demographics.* The final section of the survey was multiple choice and was designed to collect information about participants. In this section, participants were asked multiple choice

questions including number of years teaching, number of years teaching students with autism, level of license, current/previous teaching assignments, gender identity, age, and race/ethnicity.

### **Survey Reliability**

I conducted a pilot study in the Fall of 2013 (n= 65) with the purpose of fine-tuning the survey instrument. The majority of pilot participants had completed university-based teacher preparation programs in special education, some with and some without additional study in autism, either beyond or within their licensure programs, which encompassed a variety of foundational approaches and models. All of the teachers surveyed during the pilot indicated that they believed that specialized training, beyond standard teacher licensure in special education, was required to effectively educate students with ASD. The pilot data suggested that many teachers may lack the necessary knowledge and skills they believe they need to teach autistic students. The teachers in the pilot survey reported that they had had varying educational experiences either during their own teacher preparation programs or beyond preservice preparation in professional development programs or in both contexts, which had boosted their knowledge of ASD.

After review of pilot data, modifications were incorporated into the final survey instrument, including the addition of a new knowledge scale, removal, reorder, and rewording of some questions, and the adjustment of Likert scales. Prior to final administration of the survey, an expert panel consisting of three teacher educators/researchers who were experts in special education and autism, one teacher educator/researcher expert experienced in mixed methods, and one autistic self-advocate reviewed the items to increase the content validity of the instrument (DeVellis, 2003).

To address my research questions, I utilized the final survey which included both closed and open-ended items representing preparation and training, preparedness, beliefs about autistic students, and knowledge of standards and practices for teaching autistic students. As previously indicated, the survey consisted of 27 items, including one open-ended question (Q5) and 9 multi-item scales. Coding procedures and data decisions regarding the open-ended survey question (Q5) are described under the related research question, below. The nine scales, consisting of multi-item closed questions utilizing a 4 point forced-choice Likert scale, measured *Preparedness* to teach autistic students (1 scale), *Beliefs* about autism (1 scale), and *Knowledge* of the CEC knowledge standards and evidence based practices (7 scales). For each scale, I obtained a reliability estimate and then computed a summary score and average score. Consistency estimates are presented in Table 3.3.

Table 3.3. *Reliability estimates for multi-item construct scales.*

Scale	Cronbach's Alpha	N of items
Preparedness	.898	11
Beliefs	.790	17
Knowledge <i>Evidence-based Practices</i>	.914	24
Knowledge (CEC) <i>Learner Development</i>	.961	16
Knowledge (CEC) <i>Instruction</i>	.940	7
Knowledge (CEC) <i>Communication and Social Development</i>	.956	7
Knowledge (CEC) <i>Behavior</i>	.909	4
Knowledge (CEC) <i>Assessment</i>	.955	5
Knowledge (CEC) <i>Transition</i>	.970	7

The *Preparation and Training* section included 6 items (5 closed, 1 open-ended item), including questions about the type of license participants held, the type of program in which

special educators received their primary teaching license, and preparation and/or training they had received to teach autistic students, including coursework, certificate programs, or professional development. *Preparedness* items measured participants’ perceptions of preparedness when they left their teacher preparation programs as opposed to at the time they took the survey, as well as an eleven-item scale that asked respondents to reflect on how well prepared they were to manage specific aspects/teaching responsibilities of teaching autistic students. *Belief* items measured participants’ views on autism, as measured by a Likert item scale, where a score of 1 is low and 4 is high, as a way to gauge whether their type of preparation was related to their beliefs. The concept of beliefs came from the teacher education literature, and is described in greater detail below. Finally, *Knowledge* items measured participants’ overall familiarity with the Council for Exceptional Children’s professional standards (CEC, nd) for teaching autistic students, as well as their knowledge of the National Professional Development Center’s evidence based practices, classified using “rigorous criteria” (NPDC, nd), which my review of the literature suggested have also been used as de facto teaching standards for many teacher preparation programs that are preparing educators to teach autistic students. The survey also asked about participants’ levels of use of each of these practices. Table 3.4 outlines the survey instrument items according to their related domains. See Appendix XX for each of the scales in their entirety.

Table 3.4 *Survey Items and Domains*

	Demographics	Preparation and Training	Preparedness	Beliefs	Knowledge
Related Research Question	All	RQ1	RQ2, RQ2a, RQ3a, RQ4,	RQ2b,RQ3a, RQ4	RQ3, RQ4

Survey Question	Q1, Q2, Q22, Q23, Q24, Q26, Q28, Q29, Q30, Q31	Q1, Q2, Q3, Q4, Q5, Q27	Q8, Q9, Q10 (scale, 11 items)	Q11 (scale, 17 items)	Q14 (scale, 24 items) Q15 (scale, 16 items) Q16 (scale, 7 items) Q17 (scale, 7 items) Q18 (scale, 4 items) Q19 (scale, 5 items) Q20 (scale, 7 items)
Example	What is the overall number of years you have been teaching?	In what type of program did you receive your primary teaching license?	When I first started teaching autistic students, I felt prepared to identify the appropriate educational support or intervention and match it to an autistic student's curricular need.	Autistic students should be educated alongside their typically developing peers.	[Knows the] Impact of neurological differences on learning and behavior

**Recruitment of Survey Participants**

Target participants for the study were Massachusetts special educators who held a license as *Teacher of Students with Moderate (Pk-8; 5-12)* or *Severe (all levels) Disabilities*. I expected to be able to recruit a minimum sample of at least 100 Massachusetts special education teachers to complete the survey. The minimum number of participants was based on two factors: 1) the number of teachers I was able to recruit for the pilot study and 2) the number of teachers who complete Massachusetts licensure programs each year.

During the pilot, which was conducted over a 2-week period, I was able to recruit 88 pre- and in-service special education teachers to take the survey; 65 participants completed it in full.

These special education teachers were recruited exclusively through the use of social media. Since my study focused on in-service special education teachers, it was helpful to consider the approximate available pool of participants to determine the minimum recruitment sample. The number of teachers who complete licensure programs in the state of Massachusetts each year involved examining several factors, including the number of teacher preparation providers in the state, the number of licensed special education teachers, and the approximate number of special education teachers that complete programs annually. There are 70 teacher preparation providers in the state of Massachusetts, 54 of which are university based programs, and 16 of which are alternative programs (U.S. Department of Education, 2015a). Twelve percent of the state's 71,000 licensed teachers are special education teachers (Massachusetts Department of Elementary & Secondary Education, 2015), and approximately 17% (~800) of the new teachers who complete state approved licensure programs each year are licensed in the area of special education (U.S. Department of Education, 2015a). It is unknown how many of these educators teach children with autism since data are not reported in this way in the state of Massachusetts.

**Recruitment methods.** Participants were recruited through email by special education administrators and/or principals of four public school districts, by several groups, including the Massachusetts Council for Exceptional Children and the Massachusetts Autism Commission, and via social media (Twitter, Facebook). The survey took participants approximately 30 minutes to complete, and I offered participants the opportunity to win (through random selection) one of six \$25 gift cards as an incentive to complete the survey.

*Survey sample.* One hundred and sixty-eight licensed Massachusetts special education teachers responded to the survey. Close examination of the data revealed a “test” survey response among the items, and after removing this case, 167 responses remained. After



examining the response rate of all items, I found that 46 respondents did not respond to 10 or more items. It is important to note that the number of ‘missed’ items is not an accurate representation of the amount of data that was missing from these participants, since some missed items included multi-item scale questions. It is possible that the amount of effort required to answer the multi-item scale questions as the respondents advanced in the Qualtrics platform caused abandonment of the remainder of the survey.

Based on the results of this examination of the missing data, I used the “listwise” deletion method, which removes cases from analysis that have missing values, but retained the three participants who only missed one item. I deleted cases with more than one missing value because these participants did not respond to items that were of critical importance to the survey such as knowledge scales, and abandonment early on meant that they did not complete demographic questions, which came at the end of the survey. These decisions produced a 73% (121/167) survey completion rate and a total of 121 participants in the item analysis.

Of the 121 respondents who remained, 118 completed all items on the survey, and the remaining three missed only one question. These missing responses were attributed to the final survey question (item #31), which asked respondents about whether they, a family member, or someone in their immediate circle had a disability. This question was the final question on the survey, and through researcher error, was not a forced response question. Three hypotheses could explain why participants did not complete this question. Participants could have been fatigued by the survey; participants may have been uncomfortable answering the question due to the nature of the content; or participants could have assumed skipping the question was appropriate if it did not apply to them.

*Demographic characteristics of the survey sample.* Respondents to the survey were primarily white (93%), female (93%), and age 40 or younger (62%). This is parallel to current demographic statistics about the teaching profession for the state of Massachusetts and nationally. At the state level, 93% of all teachers are white, approximately 80% are female, and approximately 43% are age 40 or younger. Percentages at the national level are slightly lower, but the vast majority of teachers identify as white (82%), female (76%), and under the age of 40 (43%) (National Center for Education Statistics, 2013). See Table 3.5 below for additional demographic characteristics of respondents.

Table 3.5. Demographic Characteristics of Survey Respondents

<b>Characteristic</b>	<b>Frequency</b>	<b>Percent</b>
<b>Gender</b>		
<i>Female</i>	113	93.4
<i>Male</i>	8	6.6
Total	121	100.0
<b>Age</b>		
<i>21-25</i>	13	10.7
<i>26-30</i>	19	15.7
<i>31-35</i>	23	19.0
<i>36-40</i>	20	16.5
<i>41-45</i>	17	14.0
<i>46-50</i>	11	9.1
<i>51-55</i>	6	5.0
<i>56-60</i>	5	4.1
<i>60+</i>	7	5.8
Total	121	100.0
<b>Race</b>		
<i>Asian/Asian America</i>	5	4.1
<i>Hispanic/Latinx</i>	1	.8
<i>White</i>	113	93.4
<i>Two or more</i>	2	1.7
Total	121	100.0
<b>Experience with Disability</b>		

<i>Self</i>	4	3.3
<i>Family member</i>	33	27.3
<i>Immediate Circle</i>	12	9.9
<i>N/A</i>	69	57
<b>Total</b>	<b>118</b>	<b>97.5</b>

*Professional characteristics of survey sample.* The professional characteristics of the survey respondents are summarized in Table 3.6. Twelve percent of the state’s teaching force holds a license in special education, but data regarding type of special education license, level of license, and type of program/degree is not publicly available in the state of Massachusetts, making it challenging to compare the sample to the state demographic. Similarly, at the federal level, 12% of the U.S. teacher workforce holds a license in special education; and data regarding type of license, level of license, and type of program/degree is aggregated by license.

Table 3.6. Professional Characteristics of Survey Respondents

Characteristic	Frequency	Percent
<b>Type of Special Education License</b>		
<i>Moderate PK-8</i>	60	49.6
<i>Moderate 5-12</i>	28	23.1
<i>Severe</i>	33	27.3
<b>Total</b>	<b>121</b>	<b>100.0</b>
<b>Level of Special Education License</b>		
<i>Preliminary</i>	8	6.67
<i>Initial</i>	46	38.33
<i>Professional</i>	66	55.00
<b>Type of Program</b>		
<i>Undergraduate</i>	21	17.4
<i>UG + 1 (Post Baccalaureate)</i>	1	.8
<i>Post Baccalaureate License-Only</i>	9	7.4
<i>Graduate Program</i>	85	70.2
<i>State Alternative Route</i>	3	2.5
<i>Reciprocity</i>	2	1.7
<b>Total</b>	<b>121</b>	<b>100.0</b>
<b>Number of Years Teaching</b>		
<i>0-1</i>	2	1.7
<i>2-4</i>	27	22.3
<i>5-10</i>	30	24.8
<i>10-14</i>	27	22.3

15-20	20	16.5
21+	15	12.4
Total	121	100.0
<b>Years Teaching Autistic Students</b>		
0-1	8	6.6
2-4	43	35.5
5-10	32	26.4
10-14	20	16.5
15-20	10	8.3
21+	8	6.6
Total	121	100.0
<b>Highest Degree Earned</b>		
Bachelor	11	9.1
Master	95	78.5
CAGS	14	11.6
Terminal Degree	1	.8
Total	121	100.0

## Data Analysis

The survey data were stored first electronically in my Boston College Qualtrics account, accessible only with my dedicated username and password. Following data collection, data were stored electronically in a Boston College REDCap account which could only be accessed with a dedicated username and password, and were analyzed on my password protected laptop using a researcher owned copy of SPSS. The first step in analysis involved systematically addressing the raw data through data management. Below I present the quantitative analytic plan by research question.

**Research Question 1.** *What preparation and professional development experiences do Massachusetts special educators have to teach autistic students?* Data related to this research question were collected via survey items 1, 2, 3, 4, 5, and 27. To examine respondents' preparation and training experiences, I used descriptive statistics, by generating means, standard deviations, frequency distributions, and percentages. This kind of analysis provided me with a general picture of the sample, including the types and numbers of licenses Massachusetts special

educators hold, the kind of program from which they earned their license, and other training on autism that teachers have had. Additionally, it was important to separate special educators by moderate vs. severe disabilities licenses, as state requirements, particularly knowledge requirements, differ for the two licenses. For example, at the time of the survey, the requirements for a license as a teacher of students with moderate disabilities contained more requirements for subject matter knowledge in general education concepts and curricula. However, they tend to have less specificity with regard to highly individualized and curricula and specialized instruction, which historically was documented in the state knowledge standards for licensure as a teacher of students with severe disabilities. This is important because teacher preparation programs are required to base their program content on state regulations in order to provide “preparation that addresses requirements for the license, in accordance with the Subject Matter Knowledge Guidelines” (MA DESE, 2017).

Lastly, it was important to know teachers’ experiences following their preparation programs, as one overall hypothesis of my study was that teachers learn the knowledge and skills to educate autistic students primarily “on the job” and that their sense of preparedness may be derived from those experiences.

**Research Question 2.** *To what extent do Massachusetts special educators feel prepared to teach autistic students based on their initial preparation, and after experience in the field/professional development?* This question was measured using survey items, primarily items 8 and 9, as well as a *Preparedness* scale consisting of eleven items. Descriptive statistics, including mean, standard deviation, frequencies, and percentages were calculated.

Survey items 8 and 9 each asked participants about their feelings of preparedness to teach autistic students at different points in their career, either immediately following completion of

their teacher licensure program or at the time of the survey. Each of these multiple choice survey items asked respondents to rate preparedness through four choices, including *not at all prepared*, *poorly prepared*, *adequately prepared*, and *well prepared*. The response items for Q8 and Q9 were derived from a 1998 study of novice teachers in New York City (Imbimbo & Silvernail, 1999) and later utilized by Darling-Hammond and colleagues in a study about teacher preparedness and variations in teacher preparation (Darling-Hammond, Chung & Frelow, 2002).

Survey items 8 and 9 were followed by an eleven item *Preparedness* scale which asked respondents to reflect on how well prepared they were to manage specific aspects and responsibilities of teaching autistic students when they first started teaching, such as teaching academic subject matter, working with families, and supporting autistic students in general education. This scale was intended to gauge how well the preparation program prepared participants for teaching autistic students. The scale employed a forced choice response approach, meaning that there was no neutral category, and, similar to survey Q8 and Q9, this scale was modeled on preparedness scale utilized in Imbimbo & Silvernail (1999) and Darling-Hammond and colleagues (2002), and utilized response items ranging from *Strongly Disagree* to *Strongly Agree* (strongly disagree = 1, disagree = 2, agree = 3, strongly agree = 4).

To isolate teachers' reported preparedness I subjected the *Preparedness* scale to Cronbach's alpha to ensure a measure of internal consistency of the items by determining the proportion of total variance due to variation on the variable among participants (DeVellis, 2012). A Cronbach's alpha value above .8 was considered sufficiently reliable. Once a final scale for each construct was established, I derived a single average score for each scale. This allowed me to run basic means comparisons between scale scores and type of preparation and foreshadowed the controlled analyses articulated in RQ4.

I also conducted secondary analyses using descriptive statistics to examine what might have contributed to participants reporting change in preparedness from beginning teaching to time of survey using chi-square test of independence and descriptive analysis. Results are presented in Chapter 4.

**Research Question 2(a).** *Is autism coursework a significant predictor of teachers' sense of preparedness as new teachers?*

This research sub-question was examined mainly through the quantitative phase of the study through regression analysis, using information derived from the previously analyzed descriptive statistics of survey item #4 (*what coursework related to autism did you take during the program where you received your primary license?*) and the average scores of the *Preparedness* scale. Next, a paired samples t-test was conducted to compare teacher's reported preparedness to teach autistic students following their preparation/licensure program and at time of survey. These data determined the significance of autism coursework related to specific aspects of teaching autistic students.

To analyze these data, I used regression analysis. I hypothesized that having autism coursework during initial teacher preparation is associated with higher levels of teachers' sense of preparedness. While I was interested in the difference in preparedness between special educators with and without autism coursework, I controlled for experience with disability, a variable that has been identified by other researchers as contributing to preparedness (Ezer, Gilat, & Sagee, 2010; Ferri, 2001; Ferri, Connor, Solis, Valle, & Volpitta, 2005). Collectively, over 40% of my demographic sample indicated that either they personally had a disability, had a family member with a disability, or had someone in their immediate circle with a disability. Therefore, controlling for disability in the regression equation was important since experience

with disability had been previously linked to contributing to preparedness. I recoded a categorical variable for use in the regression equation, by recoding the survey question related to disability into a value of 0 or 1, with 0 – being no experience with disability and 1 –being experience with disability. Results are presented in Chapter 4.

**Research Question 2(b).** *To what extent is autism coursework a significant predictor of teacher’s beliefs about autistic students?* This research sub-question was also primarily examined through the quantitative phase of the study through regression analysis, using information derived from the previously analyzed (RQ1) descriptive statistics of survey Q4 (*what coursework related to autism did you take during the program where you received your primary license?*) and the average scores of a beliefs scale (Q11). These data indicated the significance of autism coursework related to beliefs (defined as expectations of ability) for autistic students.

I hypothesized that having had autism coursework during initial teacher preparation would be associated with teachers’ beliefs about autistic students. The regression analysis included a predictor variable (autism coursework, represented as no courses, a single course, or multiple courses) a control variable (experience with disability) and the outcome variable (beliefs, defined as expectations about ability).

The regression analysis included a predictor variable (autism coursework, represented as no courses, a single course, or multiple courses) a control variable (experience with disability) and the outcome variable (expectations of ability). To analyze these data, I used the same regression equation as above:  $Y = \beta_0 + \beta_1 (\text{experience with disability}) + \beta_2 (\text{single course}) + \beta_3 (\text{multiple courses}) + \varepsilon$  and created a dummy variable for use in the regression equation, and used data collected from Q4 (recoded autism coursework). The regression analysis included a



predictor variable (autism coursework, represented as a series of dummy variables: no courses, a single course, or multiple courses) a control variable (experience with disability) and the outcome variable (preparedness), resulting in the regression equation  $Y = \beta_0 + \beta_1 (\text{experience with disability}) + \beta_2 (\text{single course}) + \beta_3 (\text{multiple courses}) + \varepsilon$ . This required recoding the narrative survey question related to autism coursework into a value of 0, 1, or 2, with 0 – being no coursework, 1 –single course, and 2 - multiple courses.

**Research Question 3 and 3(a).** *What knowledge of the CEC standards and evidence-based practices do Massachusetts special educators report having? What differences exist between educators with moderate versus severe licensure with regard to knowledge of CEC standards and evidence-based practices?* These research questions were intended to gather data about survey participants' knowledge of the standards for teachers and the evidence based practices and to determine whether knowledge was affected by different routes to licensure and were measured by seven *Knowledge* scales. I was interested in understanding the extent to which special education teachers were able to recognize the evidence based practices and the knowledge standards for teachers.

These research questions were first analyzed through quantitative means, and data were derived directly from the survey. Participants were asked to rate their knowledge of the evidence based practices (Q14: 24 items) and the CEC knowledge standards for teachers (Q15: 16 items; Q16: 7 items; Q17: 7 items; Q18: 4 items; Q19: 7 items and Q20: 5 items) on a four point Likert scale, which included the responses *no knowledge, limited knowledge, adequate knowledge and vast knowledge*.

Descriptive statistics of the survey results were calculated regarding the knowledge standards and the evidence based practices. An independent samples t-test was then conducted

for each scale to compare the knowledge scores between those who had severe versus moderate licensure. The high number of scales and thus independent t-tests meant that I had multiple chances to find a difference between the two groups (moderate, severe) and by doing so, inflating the chances of a significant result, so I corrected for family-wise error (FWE) using Bonferroni's procedure (citation).

**Research Question 4.** *Does type of license predict preparedness, knowledge and/or beliefs? To what extent?* This research question was exclusively examined through the quantitative phase of the study through regression analysis. This question accounted for differences in how reported levels of preparation, knowledge and beliefs differed by licensure route. I hypothesized that type of license in initial teacher preparation would be associated with higher levels of teachers' sense of preparedness, beliefs, and knowledge of standards and practices.

I conducted a regression analysis which included a predictor variable (type of license, represented as severe or moderate) representing a control variable (experience with disability) and the outcome variable (preparedness, beliefs or knowledge). A multiple linear regression was calculated to predict preparedness, beliefs and knowledge based on type of license. To analyze this data, I used a regression equation  $Y = \beta_0 + \beta_1 (\text{moderate license}) + \beta_2 (\text{severe license}) + \epsilon$ . To begin, as indicated above, I recoded a categorical variable (experience with disability) for use in the regression equation as a control. Next, I recoded a variable related to the type of license that participants reported having. The first dummy variable represented moderate licensure (i.e. value of 0, all others value of 1). The second dummy variable represented severe licensure (i.e., value of 1, all others had a value of 0). The majority of respondents (n = 88, 72.7%) had a moderate license at the elementary or middle school/high school level, which I collapsed and

coded as (0). Twenty-seven percent (n = 33) had severe licensure, which I recoded for the regression equation as (1). Results are presented in Chapter 4.

### **Phase Two: Qualitative Methods**

In an explanatory sequential mixed methods design, Phase One quantitative results (in this case from the survey) inform the sampling procedure for qualitative follow-up and influence the nature of the qualitative questions (Creswell, 2014). This means that the quantitative results are used to plan the qualitative follow up and point to the kinds of qualitative questions to ask interview participants in phase two (Creswell, 2003; 2014).

**Selection and Recruitment of Interview Participants.** My research design included a plan to recruit a subset of survey participants (n=10) for interviews to help me explain aspects of their completed surveys which influenced their responses. Interview participants were initially identified through purposive sampling from the larger survey data set based on participants who had indicated on the survey that they would be willing to be contacted for a follow up interview. Following this, participants were considered by license type (moderate and severe), experience level (those with additional autism training and those without) and perspective (interesting responses to survey questions, outliers, those that could help understand any phenomenon emerging from the quantitative data).

Sixty-four participants indicated a willingness to be contacted via email for a follow-up interview and provided their contact information. Potential interview participants were emailed and invited to participate. From the initial pool of sixty-four, twenty-seven participants were selected on the basis of insight they could offer related to the research questions. Of these twenty-seven participants, ten consented to be interviewed (37% response rate) within the time period of the study. The purpose of the interviews was to allow participants to explore and

explain their responses and ideas through discussion with the researcher. Therefore, while the final group of participants reflects a small subset of the population of interest, the data were intended to better explain and expand on quantitative data rather than for broad generalizability. Further selection criteria are described below. The demographic characteristics of the interview participants are summarized in Table 3.7, since they represent a smaller subset of the survey participants, and it may be useful to consider their demographics and professional characteristics on a smaller scale.

Table 3.7. Demographic Characteristics of Interviewees

<b>Characteristic</b>	<b>Frequency</b>	<b>Percent</b>
<b>Gender</b>		
<i>Female</i>	9	90
<i>Male</i>	1	10
Total	10	100
<b>Age</b>		
<i>21-25</i>	1	10
<i>26-30</i>	2	20
<i>31-35</i>	3	20
<i>36-40</i>	1	10
<i>41-45</i>	1	10
<i>46-50</i>	2	20
<i>51-55</i>	0	0
<i>56-60</i>	0	0
<i>60+</i>	0	0
Total	10	100
<b>Race</b>		
<i>White</i>	10	100
Total	10	100
<b>Experience with Disability</b>		
<i>Self</i>	1	10
<i>Family member</i>	1	10
<i>Immediate Circle</i>	2	20
<i>N/A</i>	6	60
Total	10	100

Although interview participants were selected on the basis of their survey responses, the licensure characteristics of the interviewees very closely mirrored the licensure characteristics of

the survey respondents as a group: 70% of interview participants held a moderate license (compared to 73% survey respondents), while 30% of interview participants held a license in severe disabilities (27% survey respondents). The professional characteristics of interviewees are summarized in Table 3.8.

Table 3.8. Professional Characteristics of Interviewees

Characteristic	Frequency	Percent
<b>Type of Special Education License</b>		
<i>Moderate PK-8</i>	7	70
<i>Severe</i>	3	30
Total	10	100
<b>Type of Program</b>		
<i>Undergraduate</i>	2	20
<i>Graduate Program</i>	8	80
Total	10	100
<b>Number of Years Teaching</b>		
<i>2-4</i>	4	40
<i>5-10</i>	2	20
<i>10-14</i>	2	20
<i>15-20</i>	1	10
<i>21+</i>	1	10
Total	10	100
<b>Years Teaching Autistic Students</b>		
<i>2-4</i>	4	40
<i>5-10</i>	2	20
<i>10-14</i>	2	20
<i>15-20</i>	1	10
<i>21+</i>	1	10
Total	10	100
<b>Highest Degree Earned</b>		
Bachelor	1	10
Master	7	70
CAGS	1	10
Terminal Degree	1	10
Total	10	100

The interview protocol was developed after the quantitative analysis was completed, because it was intended to probe specific survey responses directly (Creswell, 2014). The goal was to invite participants to clarify unclear or outlier responses, which would help to give

meaning to the quantitative responses, particularly in the area of preparedness for teaching autistic students. Interviews were semi-structured, and the full protocol is provided in Appendix B.

**Interview Procedures.** Individual interviews were conducted with ten survey respondents who consented to be contacted for a follow up interview. These interviews averaged between 42-46 minutes in length and followed a semi-structured interview format. Interviews were transcribed into text files and data analysis commenced.

All of the interview participants were survey respondents, as the intent of the sequential explanatory approach is to “follow up the quantitative results and explore the results in more depth...the idea of explaining the mechanism – how the variables interact – in more depth through the qualitative follow-up is a key strength of this design” (Creswell, 2014, p.224). Therefore, interview participants were recruited through a final survey question which asked respondents about their willingness to be contacted for a follow up interview. The original plan included recruitment of approximately 10 survey respondents for interviews. The first level of selection was based on the pool of survey respondents who consented. From this pool, I identified respondents who were “extreme,” “interesting” or “outlier” cases. These were interviewees that stood out in some way (i.e., a veteran teacher who reported feeling unprepared to teach autistic students at time of survey), that offered responses that did not align with other data (a teacher who had BCBA specialization but reported feeling only adequately prepared), or offered uneven or inconsistent answers (a teacher who reported feeling overall adequately prepared but unprepared to make curricular decisions). The next step was to form codes that emerged from the preparedness, preparation, beliefs and knowledge survey data.

**Interview Protocol.** The interview protocol, which can be found in its entirety in Appendix B, was developed following analysis of the quantitative data and used to gain deeper insight into Massachusetts' special education teachers' perceptions of preparedness, and probe specific participants' survey responses. Using a sequential design allowed for utilization of survey responses in the design of the interview instrument and to follow up on items of significance or that required clarification (Driscoll et al., 2007). Given that the interview sample and protocol depended on the results of the survey data, specific sampling procedures were delineated following quantitative analysis (Creswell & Plano Clark, 2007).

I selected participants who reported varying levels of preparedness, from "not at all prepared" to "well-prepared," with varying degrees of knowledge of both CEC standards and EBPs, and a range of belief about autistic students to conduct interviews to help expand their responses. The purpose of the interviews was to gain further insight into participants' perceptions of preparedness, their beliefs about autism, and to better understand how participants connected their preparation to their roles as teachers of autistic students. I analyzed these data with the intention of identifying what contributed to educators' sense of preparedness, what might have contributed to their beliefs about students with autism, and the knowledge that they reported having. All interviews were digitally recorded and transcribed verbatim. Each participant was assigned a pseudonym for analysis.

Follow-up interviews with teachers were conducted following analysis of the survey data. Interview participants were purposively selected first based on respondents who indicate they would be willing to be contacted for a follow up interview. Following this level of selection, outliers, extreme cases, or surprising results were used to determine a second level of selection since in a sequential explanatory design the emphasis is placed primarily on the quantitative data,

and such cases can explore how they may have diverged from other cases (Creswell, 2014). Creswell suggests that selection for interviews may also include significant or nonsignificant results which may help to identify groups or clusters, such as teachers who report varying degrees of preparedness according to types of preparation and based on their responses to the beliefs and knowledge scales. These data allowed me to further explore particular special educators' responses that may reflect patterns, such as how they connected their roles as autism teachers to their preparation and how they understood autistic students. Interviews can "provide a deep understanding of survey responses, and statistical analysis can provide detailed assessment of patterns of responses," (Driscoll et al 2007, p.26) that will offer rich information that may not otherwise be mined from survey responses alone. The specific interview questions were designed based on survey responses, but were grouped together according to the themes of the survey: preparation and preparedness and knowledge and beliefs.

The interviews began with a review of the purpose of the study, and the first question was related to the overarching theme of the research, preparedness. I began by reminding participants of their answers on the survey regarding preparedness: "When you completed the survey, you reported that, after your licensure program you felt [*not at all poorly, adequately, well*] prepared to teach autistic students, but at the time of the survey, you reported feeling [*not at all poorly, adequately, well*]. Can you elaborate on the change?" Across all ten interviews, this opening question led interviewees to discuss aspects of their licensure programs. The second question asked interviewees to reflect on a response to a survey item that asked about the extent of autism training prior to work in the field. There were often additional follow up questions in this area, depending on the interviewee's answers. For example, follow up questions were: "What would have better prepared you in your licensure program?" and/or "What kind of experiences do you



wish you had before leaving the program?” Additional interview questions focused on interviewees’ responses to the preparedness scale, asking them to elaborate on how they answered survey items, as well as probing any connections to particular aspects of their preparation or continuing education which they have described.

The second part of the semi-structured interviews asked interviewees about their answers to survey questions related to the knowledge and beliefs scale. I asked further questions about their extent of reported knowledge about the standards and evidence based practices. For example, I asked teachers about how they saw the knowledge standards and evidence based practices as related to their work and asked follow up questions about how they learned them, and how they relate to teachers’ preparedness to teach autistic students. Interviewees responded to initial questions that were specific to their Likert scale survey answers. I used aspects of the survey response and information from the interviews to extend the questioning a bit deeper, such as, “On the survey, you noted that you know about evidence based practices, but you have indicated you don’t use them in your classroom. Can you elaborate about why?” This allowed me to understand more than just the straightforward answer to their survey responses, such as disagreement with specific practices.

Similarly, interviewees were asked specific questions about their reported beliefs about autistic students, particularly when survey answers seemed contradictory. For example, on the beliefs scale, which got at expectations regarding outcomes for autistic students, survey respondents were asked to agree or disagree with particular statements such as ‘*autistic students should not participate in general education, unless their behavior warrants it,*’ and, ‘*autistic students will likely not attend college.*’ Building on their responses, I asked interviewees to confirm and elaborate on their answers and then asked follow up questions such as, “You agreed

with the statement, ‘autistic students will likely not go to college,’ but just now you expressed a strong belief in inclusion. Can you elaborate on why you think that is not a viable option for autistic students?’” These questions allowed me to unpack interesting or contradictory answers to the scales. Below, I provide the research questions and rationale for follow-up qualitative interviews.

**Research Question 1.** *What preparation and professional development experiences do Massachusetts special educators have to teach autistic students?* While several questions on the survey addressed participants’ preparation, the survey data alone can be flat. Therefore, a qualitative question was included in the interviews to verify interviewees’ responses to their reported preparation and professional development experiences, and also to account for any additional training that had occurred between the time of survey and the interview. While the question of preparation and professional development for teaching students with autism was analyzed primarily using survey responses, the interviews also proved to be very useful in expanding the information about preparation and professional development experiences the interview participants had. The interviews allowed participants to elaborate on their experiences and their preparation and indicate which experiences they felt contributed to their knowledge about autism. Results are reported in Chapter 4. The next research question addressed participants’ preparedness based on their preparation experiences.

**Research Question 2.** *To what extent do Massachusetts special educators feel prepared to teach autistic students based on their initial preparation, and after experience in the field/professional development?* While the survey data provided important information about respondents’ perceptions of their preparedness to teach students with autism, both at the time they completed their preparation/licensure programs and at the time they completed the survey,

this information was somewhat limited in helping to understand what participants felt had *contributed* to their feelings of preparedness. Along these lines, Creswell (2014) suggests that quantitative data alone may be insufficient to fully understand important issues. Given this, I was interested in using the interviews to understand two specific things: 1) what accounted for reported differences in perceptions about feelings of prepared to work with students with autism and 2) what were interviewees' perceptions of the additional experiences during preparation that might have improved their sense of preparedness when beginning teaching? Given the variation in responses provided by survey respondents, one criteria for participant selection was based on responses to preparedness questions to better understand the factors which contributed to reported levels of preparedness. For example, interviewees were asked to elaborate on the change in their reported preparedness following their licensure program and at the time of survey, what experiences during preparation might have helped them to feel better prepared to teach autistic students, and what experiences subsequent to the licensure program had contributed to their sense of preparedness.

**Research Question 2(a) and 2(b).** *Is autism coursework a significant predictor of teachers' sense of preparedness as new teachers? To what extent is autism coursework a significant predictor of teacher's beliefs about autistic students?* While research question 2a was explored primarily through analysis of survey data, the interview data deepened the quantitative findings. Although interview participants were not directly asked about their beliefs (RQ2b), I analyzed the language they used in the interview related to their beliefs about outcomes (expectations of ability) for autistic students, which provided a fuller picture of the quantitative data. Specifically, I analyzed language used to describe autistic students and language employed to discuss interviewees' beliefs about outcomes for autistic students, such as the use of cognitive

“functioning” labels to describe students. Interviewees were asked about on their answers to specific beliefs scales, elaborate on seemingly contradictory answers, and further explain beliefs. For example, questions focused on specific aspects of autism coursework or a program that helped to improve feelings of preparedness, and how this coursework may have contributed to reported beliefs, which helped to uncover tensions, such as a tension between personal beliefs about teaching autistic students and the use of particular evidence based practices. These results are explained in Chapter 4.

**Research Question 3 and 3(a).** *What knowledge of the CEC standards and evidence-based practices do Massachusetts special educators report having? What differences exist between educators with moderate versus severe licensure with regard to knowledge of CEC standards and evidence-based practices?* Again, the qualitative interview analysis focused on explaining the perceptions of the respondents as indicated on the surveys, and in particular what might contribute to variation in participant’s survey responses. Here I was especially interested in how teachers connected their perceptions of preparedness, their beliefs about autistic students, and their level of knowledge to their preparation program. Interviews also provided an opportunity for respondents to articulate the specific experiences which contribute to their feelings of preparedness, how their beliefs are formed, and their knowledge of particular educational methodologies.

**Data Analysis.** Ten interviews were conducted with survey respondents. Interviews were transcribed into text files and data analysis was informed by Miles and Huberman’s (1994) interactive approach, which employs three “streams” of qualitative analysis: data *condensation*, in which data are selected, focused and simplified; data *display*; in which data are organized and compressed into immediately accessible forms including matrices, graphs, and charts; and

finally, data *verification*, in which conclusions are drawn. This was a particularly complementary method for my dissertation research given that in mixed methods, the qualitative data are used to verify or explain the quantitative.

The first part of analysis of the qualitative data involved *condensation* or *reduction*, which entailed examining the corpus of interview transcripts, individually at first. Each interview was reviewed individually and sections most relevant to my research questions were identified. Each text file was marked up, identifying “statements” containing relevant data pertaining to the research questions. Each statement was then assigned a code, and followed by open coding, where the statements are organized by their related code.

This led to data display, which entailed organizing the information into coherent themes to organize, compress and assemble the information. Miles and Huberman (1994) suggest that “valid analysis is immensely aided by data displays that are focused enough to permit viewing of a full data set in one location and are systematically arranged to answer the research questions” (p. 432). Using their method, in this step, the full data set was condensed and displayed multiple times in order to make comparisons across the data set more accessible. In this stage, multiple, repeated, and iterative displays are recommended to move the analysis forward, which can include charts, Venn diagrams, or graphs. An example of a portion of one data display is represented below in Table 3.9, which shows how I organized the data to begin to identify themes.

Table 3.9. Selections from Iterative Data Display.

<b>Participant</b>	<b>Degree</b>	<b>License</b>	<b>ASD in prep prog</b>	<b>ASD course/ program</b>	<b>Public setting</b>	<b>Private setting</b>	<b>Methods</b>
1	Ph.D.	Moderate in UG degree	none	BCBA	x	Pre-license	ABA, mand, inclusion

2	M.Ed.	Severe in graduate degree	Modules in prep. program	Spec.	x	Pre-license	Social comm, develop mental, “best practice,” inclusion
3	M.Ed.	Moderate in grad degree	None in	one	x	Pre-license	social skills, inclusion

The final aspect of qualitative data analysis involved data *verification* which directly relates to the two previous stages of *condensation* and *display*. At this stage, given that the purpose of the qualitative analysis was to verify, elaborate, or note disconfirmation with the quantitative data, I did not employ Miles and Huberman’s more prescriptive method involving thirteen tactics for generating meaning. Instead, I relied on an iterative process employing inductive analysis directly related to the research questions. As Patton (1980) suggests, “inductive analysis means that the patterns, themes, and categories of analysis come from the data; they emerge out of the data rather than being imposed on them prior to data collection and analysis” (p. 306).

The qualitative interview analysis was focused on explaining the perceptions of the respondents as they were indicated on the surveys, particularly why variation may have occurred among participants. That is, the qualitative aspect of this study attempted to explain patterns and identify relationships shown in the surveys.

While qualitative methods may offer useful data to answer the research question, they do not always specify the exact steps between the data and the conclusion (Glaser & Laudel, 2013). Coding has been widely used to help structure data that is text based. According to Miles and Huberman, “codes are tags or labels for assigning units of meaning to the descriptive or

inferential information compiled during a study. Codes usually are attached to 'chunks' of varying size—words, phrases, sentences, or whole paragraphs, connected or unconnected to a specific setting. They can take the form of a straightforward category label" (1994, p.56).

Next, the data were condensed. The initial data analysis focused on the interview transcripts, and I grouped the themes according to my research questions. Through the process of identifying interviewees based on their survey responses, particular variables for attention were identified in advance of the interviews. Through an iterative process, I identified possible subcodes in the data based on themes that emerged. I have included a list of codes below in Table 3.10.

Table 3.10. Primary and Secondary Codes.

<b>Theme</b>	<b>Code</b>	<b>Subcode</b>
Preparation and Preparedness	Lack of preparedness Learning from others Need for guideposts	Need for specialized prep On the job training Uneven field expertise Need for ongoing training
Knowledge and Beliefs	Tensions between practices and beliefs Constructed vs. assumed	Discrepancies between preparation and practice Knowledge limited by source Appropriateness of practice to classroom

The identification of codes helped with interpretation of the qualitative data. The third phase of a mixed methods, sequential, explanatory study is the the combined analysis, which is outlined in the next section.

### **Phase Three: Integrating the Data**

The intention of this research was to understand teachers' reported preparedness to teach autistic students, including knowledge of standards and practices and beliefs about autistic students and to determine aspects of their experiences that may have contributed to their level of

preparedness, knowledge, and beliefs. In keeping with the sequential explanatory design, I used a complementarity approach (Greene, Caracelli & Graham, 1989), which “seeks elaboration, enhancement, illustration, clarification of the results from one method with the results from another” (p. 259). In this study, the quantitative data had priority over the qualitative data, which were used to explain and to confirm/disconfirm survey data. Given this, the final stage was to determine how the qualitative analysis helped explain or elaborate the quantitative results (Creswell, 2014).

Since interview questions were specifically developed to help explain the survey data, following coding of the interview data, I used the data to provide additional detail and interpretation about specific aspects of special educators’ preparation, such as preparedness, knowledge and beliefs that emerged from the quantitative analysis. This allowed for more detailed understanding of how special education teachers felt their preparation programs prepared (or did not prepare) them to teach autistic students and what other experiences they have had, such as “learning on the job,” contributed to how well prepared they felt. For example, all ten interviewees indicated that experience in the classroom and working directly with autistic students greatly improved their sense of preparedness. I used the qualitative code of “learning on the job” to connect to the teacher preparedness literature, which suggested that field experiences were a factor in elevated feelings of preparedness for novice teachers and provide a more detailed picture of the kinds of experiences that could be integrated into a teacher preparation program practicum to improve preparedness to teach autistic students.

Qualitative codes were also used to further unpack specific beliefs, defined as expectations of outcomes for autistic students. For example, on the survey, special educators answered questions about whether autistic students could have authentic friendships, be married,



and go to college. To determine whether their answers were related to overall beliefs about autistic students, I asked interviewees to elaborate on or explain their answers. The same process was employed for better understanding of teachers' reported answers about standards and evidence-based practices. For example, when teachers indicated through survey responses that they had knowledge of a standard or evidence based practice, answers to interview questions could elaborate on whether the reported knowledge matched the intention of the standard or practice. The accuracy or inaccuracy of their responses helped with the first the level of interpretation, as well as identify areas where understandings were superficial in contrast to what they reported. Lastly, the qualitative data were used to explain and interpret how these standards and practices are used in teacher education programs and how they carry over to the classroom.

### **Using Mixed Methods to Explore Special Educator Preparedness**

This research study utilized a mixed methods design to gauge the preparedness of special educators to teach autistic students, which may identify preparation/education experiences that were helpful to educators as they entered teaching. This methodological approach, using both quantitative and qualitative analyses, enabled elaboration, and expansion of ideas, and examination of patterns and the motivations behind respondents' answers.

In the next chapter, I report the results of the qualitative and quantitative findings concurrently by research question, resulting from the methods described above. Additionally, following interpretation, I made connections and additional references to the literature review, presented in the discussion of findings in Chapter 5.

## **Chapter Four**

### **Results**

The purpose of this mixed-methods sequential explanatory study was to understand the extent of special education teachers' preparedness to teach autistic students and identify factors contributing to reported preparedness. This was achieved by collecting quantitative data from a survey of 121 licensed Massachusetts teachers and then following up with interviews with ten purposefully selected survey respondents; interview results were explored through qualitative analysis. As noted in Chapter 3, mixed methods is "a procedure for collecting, analyzing, and "mixing" or integrating both quantitative and qualitative data at some stage of the research process within a single study for the purpose of gaining a better understanding of the research problem" (Ivankova, Creswell & Stick, p. 3, 2006).

The first phase of the study, the quantitative survey, focused on the preparation and preparedness of Massachusetts' educators to teach autistic students, and whether autism coursework and type of license predicted specific variables, including preparedness, knowledge and beliefs about outcomes. In the second phase, ten qualitative interviews studies from various participant groups (teachers with moderate and severe licenses, those with autism specializations or BCBA coursework, those with a single autism course or no autism courses) contributed to more in depth exploration of the survey data. In this phase, the focus was to address the factors which may have contributed to teachers' reported varying levels of preparedness and unpack any conflicting or unexpected data that emerged in the quantitative analysis. These two phases where the second builds on the first is a key strength of mixed methods research (Creswell, 2014).

## **Results: Preparation and Preparedness**

This section presents the quantitative and qualitative results of this study according to the first two research questions, which were designed to gather information about the extent of special education teachers' training and professional development experiences and how prepared they felt following those experiences. Given the limited research available about how to best prepare special education teachers to educate autistic students, collecting data about teachers' experiences and the extent to which they influenced teachers' reported preparedness may be useful to teacher educators as they design programs. Discussion and interpretation of the findings follows in Chapter Five, which integrates the results of the two study phases into an interpretation wherein the qualitative results will help to explain the quantitative results. Below, quantitative and qualitative findings are presented according to research questions related to preparation and preparedness.

### **Preparation, Training and Professional Development**

My first research question was designed to capture information about the preparation experiences of special education teachers to teach autistic students; this was measured by multiple choice questions on the survey, including seven items (1,2, 3, 4, 5, 7 and 27) that asked about the type and level of their primary license, type of program where they received their license, coursework on autism taken during the preparation program, and other training or professional development they may have had related to autism. This information helped me to get a general sense of the preparation and background of the sample. The results are described below.

**Research Question One.** *What preparation and professional development experiences do Massachusetts special educators have to teach autistic students?* This question was intended

to gather background information about the participants' training, during their teacher licensure program and any subsequent training they had following it. Using the seven items listed above, I was interested in understanding the extent to which special education teachers were receiving formal preparation or training concurrent to or within their special education licensure programs, and what other kinds of training they reported receiving following their preparation.

**Quantitative results.** Information about the preparation and professional development of special education teachers to teach students with autism came primarily from the survey responses to the seven preparation items, which asked respondents questions relating to aspects of preparation, including license area, type of license, level of license, and coursework/content on autism in licensure program. Since preparation and training are relatively straightforward categories to describe, I anticipated that this information could be both verified and expanded upon during interviews. Descriptive statistics are presented and discussed here and below in Table 4.1.

Seventy-three percent of all survey participants held a license in moderate disabilities. Massachusetts offers two different moderate licenses, differentiated by grade level; the first at the PK-8 level and the second at the 5-12 level. Twenty-seven percent of respondents held a license as a teacher of students with severe disabilities. Respondents were also asked about any additional licenses they held. Thirty-three percent did not hold an additional license.

Approximately 44% held a second license in general education, and 23% held a second license in special education.

Table 4.1. Licensure Preparation of Survey Respondents

Preparation	Frequency	Percent
<b>Type of Special Education License</b>		
<i>Moderate PK-8</i>	60	49.6
<i>Moderate 5-12</i>	28	23.1

<i>Severe</i>	33	27.3
Total	121	100.0
<b>Level of Special Education License</b>		
<i>Preliminary</i>	8	6.67
<i>Initial</i>	46	38.33
<i>Professional</i>	66	55.00
<b>Type of Program</b>		
<i>Undergraduate</i>	21	17.4
<i>UG + 1 (Post Baccalaureate)</i>	1	.8
<i>Post Baccalaureate License-Only</i>	9	7.4
<i>Graduate Program</i>	85	70.2
<i>State Alternative Route</i>	3	2.5
<i>Reciprocity</i>	2	1.7
Total	121	100.0

The vast majority of respondents (70%) indicated they had not taken any courses related to autism during their initial teacher preparation, with 57% of respondents indicating that they had content or modules within required coursework in their program dedicated to autism.

Fourteen percent of respondents indicated they had taken only one course on autism, and 12 percent had taken 2-3 courses. Only 3 percent of all respondents had taken a series of courses designed as a specialization or concentration in autism during the program where they received their teaching license.

Respondents were also asked to indicate what, if any, autism training they had received *following* their initial licensure program, including certifications such as Board Certified Behavior Analyst or Floortime therapist, university certificates, additional coursework, professional development, seminars or workshops, or conferences. This was an open ended response item on the survey, and required coding the responses, outlined below in Table 4.2. Thirty-seven percent of respondents had no additional training in any of the aforementioned formats. An examination of the data revealed that majority had either professional development or a certification. Only three respondents indicated they had taken an additional course (one of

which was in progress at the time of the survey). Given that a course is the equivalent of about 45 contact hours, I reasoned that these respondents could be grouped with those who had professional development, given that a variety of professional development activities could amount to the same number of hours (or exceed it). Therefore, coding for the open ended response item was grouped into three categories: none; professional development/single course and 3+ courses/certification, as outlined in Table 4.2.

Table 4.2. Q5 Open Ended Response Item Coding

Code	Group	Frequency	Percent
0	No professional development/courses	45	37.2
1	Some professional development/1 course	63	52.1
2	3+ courses/certification	13	10.7
Total		121	100.0

**Qualitative results.** While the question of preparation and professional developed for teaching students with autism was analyzed primarily using survey responses, the interviews also proved to be very useful in expanding the information about preparation and professional development experiences the interviewees had. The interviews allowed participants to elaborate on their experiences and their preparation and indicate which experiences they felt contributed to their knowledge about autism. Table 4.3 below provides an overview of participants’ type of license and autism preparation.

Table 4.3. Type of License and Autism Coursework by Participant.

#	Moderate	Severe	Type of Autism Coursework
1	X		BCBA
2		X	Specialization
3	X		Course
4	X		None
5	X		Course

6		X	None
7	X		None
8	X		Specialization
9	X		BCBA
10	X		None

All ten participants reflected on how little preparation they received in their licensure programs, though a few interviewees who had had practicum experiences in classrooms that included autistic students during their licensure program noted this as an important part of their preparation. All ten participants described their preparation programs as offering very broad information, or as Interviewee #10 put it, “just a very general overview,” with four participants specifically stating that their coursework had not prepared them at all (#5, #7, #9, #10).

Reflecting on her moderate disabilities licensure program, Interviewee #8 said: “even though it was my major...my [licensure program] did such a poor job preparing me to teach *any* students with disabilities.”

As a result of the lack of preparation in their licensure programs, a very important theme emerged as interviewees discussed their preparation experiences to teach autistic students. All the Interviewees described in detail that their experience teaching served as training “on the job,” suggesting that they felt some of what contributed to their learning happened in their roles as teachers. This was consistent across all interviews, and the language used by teachers to describe this experience was similar. For example, one Interviewee said, “just being in [my classroom] and part of the classroom I feel like I learned a lot more than I did in my undergrad [preparation]” (#9); another commented that she “picked that up mostly from working in the field,” (#1). When asked to elaborate on the change in reporting feeling poorly prepared when he first started teaching to feeling adequately prepared at the time of the survey, a first year teacher indicated the change had to do with “having more experience in the public school system” (#2).

Interviewee #5 said, “most of what I learn has been on the job” (#5) and “it’s been on the job. It hasn’t been I know this going in” (#7). Related to learning from experience “on the job,” participants also described utilizing trial and error teaching. Four interviewees actually used the term “trial and error” (#3; #5, #8, #10). For example, Interviewee #1 said, “I would do some things right and I would do some things wrong, and the kids would either respond or not respond.” These statements suggest that the teachers generally felt unprepared to teach autistic students, and they were learning from their own experiences as they went along by experimenting with different approaches to explore different outcomes. Given that one criticism of special education teacher preparation has been that teacher education has shifted to more general models (vs. categorical models) to meet market demand, and is therefore producing less prepared teachers (Labaree, 2008; Geiger, et al, 2014; Brownell et al, 2010), these responses align closely to the concept of professionalization discussed in Chapter 2, in that the teachers’ general preparation left them unprepared to teach this population.

Even though all ten of the interviewees pointed to experience in the field after their preparation and licensure programs as important to their preparation to teach autistic students, their accounts varied widely in terms of the settings they described. Some were in public schools, while others were in private schools; some worked in inclusion programs, and other were in programs with “substantially separate” settings. Regardless of the kind of school or setting they worked in, they all reported that they learned “on the job” primarily through trial and error and supported by additional preparation through professional development experiences. Learning “on the job” may lead to unevenness in practice and gaps in knowledge, especially since there is no way to evaluate the skill level or accuracy of information from the learning source; this is discussed in greater detail in Chapter 5.



Interviewees described this additional preparation in the field as workshops, professional development classes, explorations of curricula, reading research, and working with veteran teachers, mentors or consultants. Similarly, another Interviewee who had been teaching less than four years, saying, “So, now that I have gotten the chance to work with the students and to see what other people are doing with the students and their profiles, that is where I get most of what I’m doing now, rather than thinking back to what I learned in my preparation program” (Interviewee #5). These accounts suggest that teachers’ sense of preparedness and confidence improve following professional development experiences, possibly because they’ve been offered resources in moments where they lack confidence in their own teaching; however, there’s no reliable way to gauge the accuracy and expertise of the sources of learning.

One Interviewee (#7), who was a veteran teacher, recounted the frustration she felt from poor “on the job” experiences: “You learn a lot from when you see something and say, oh no, I’ll never... this is not the way to do it.” She additionally described the difference between working with and learning from two different colleagues, both autism specialists, one who is a BCBA and one who is a former classroom teacher:

One has never been in a classroom but has the BCBA...she’s very, very academic. The other one does not have a BCBA. She’s been a classroom teacher for 12, 14, years, something like that. I got a lot more out of the practical classroom teacher support from the specialist who had been a classroom teacher...[she] gives advice and programming strategies and just every day good practices that are much more effective because she’s had that experience of what actually works and what doesn’t work. My specialist that has the BCBA...her ideas are not always practical, and I have a hard time bridging the gap between what she wants me to do and how to actually make that happen in the classroom.

This quote suggests that Interviewee #7 may be more partial to practices where she has shared background knowledge with the source of learning - in this case, the autism specialist who is a former classroom teacher. The lack of shared background knowledge with the autism specialist with BCBA may contribute to how confident she feels in implementing those strategies; it also suggests that she views those strategies as different from typical classroom practice and ineffective.

When describing their preparation experiences, interviewees described their students as being inherently different from other populations of students with disabilities, as well as individually different from one autistic student to the next, an observation also reflected in the research literature. As Interviewee #3, who had been teaching for 15 years, said, “there’s not one autistic student that’s been the same as another.” Interviewee #2, who had been teaching for only one year, concurred, saying, “it is definitely a population of students who have a lot of complex needs that are definitively different from other students, either autistic or with other disabilities.” Because all ten of the teachers reported initially feeling unprepared to teach autistic students, they expressed the need for ongoing professional development; for example, Interviewee #1, who had been teaching for 30 years, said, “there are so many different [autistic] kids out there, that even now with 30 years, I’m still meeting kids that are novel and have a profile that I really need to work to understand who they are in order to teach them.” Interviewees related these experiences as a means to justify the need for specialized preparation, the same rationale used by researchers noted in my literature review (Barnhill, Polloway, & Sumutka, 2011; Hendricks, 2011; Morrier, Hess & Heflin, 2011; Marder & deBettencourt, 2012; Barnhill, Sumutka, Polloway & Lee, 2014).

In the next section, the results of participants' responses to survey items relating to preparedness are reported. While preparation experiences detail the level of training that teachers have had, preparedness examines how well prepared teachers felt following those experiences.

### **Preparedness**

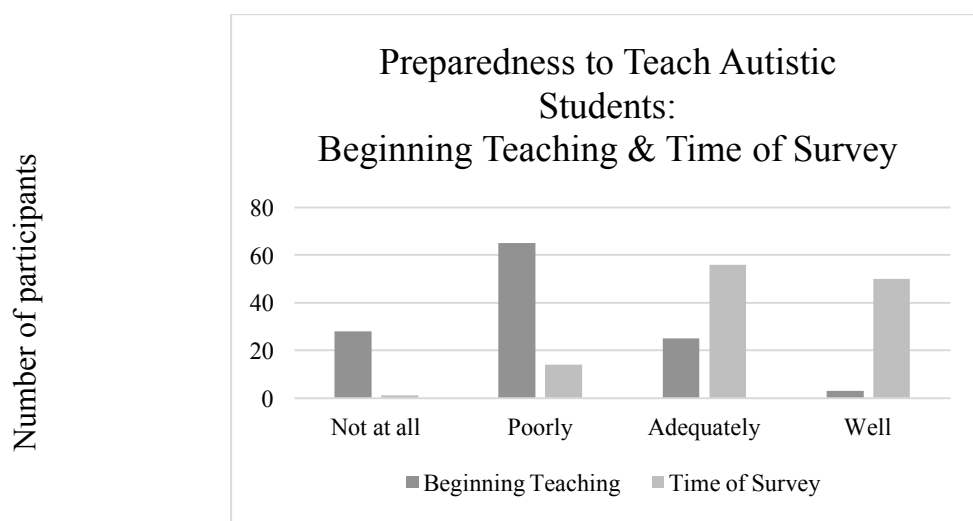
Studying teachers' preparedness can contribute to understanding how specific aspects of teacher preparation have influenced teachers' practice, decision making, content knowledge, and development, particularly for early career teachers (Ronfeldt, Schwartz, & Jacob, 2014; Tillman, Richards, & Frank, 2011; United States Department of Education National Center for Education Statistics [USDOE NCES], 1999). Research question two and its two subquestions take up teacher preparedness to determine what factors may have contributed to their reported levels of preparedness to teach autistic students.

**Research Question Two.** *To what extent did Massachusetts special educators feel prepared to teach autistic students based on their initial preparation, and after experience in the field/professional development?* This question was measured by two survey items, 8 and 9, and one Likert scale, item 10. Two multiple choice items (Q8 and Q9), asked participants about their feelings of preparedness to teach autistic students at different points in their career, when beginning teaching and at the time of the survey. Each of these survey items asked respondents to rate preparedness through four choices, including *not at all prepared*, *poorly prepared*, *adequately prepared*, and *well prepared*. These two survey items were derived from a 1998 study of novice teachers in New York City (Imbimbo & Silvernail, 1999) and later utilized by Darling-Hammond and colleagues (Darling-Hammond, Chung & Frelow, 2002) in a study about teacher preparedness and variations in teacher preparation. The Likert scale, contained 11

questions and employed a forced choice response Likert scale ranging from strongly disagree to strongly agree.

**Quantitative results.** According to survey item Q8, overall 77% of all respondents indicated they felt unprepared to teach autistic students when beginning teaching. This number includes 23% who indicated they were not at all prepared; these results are represented in Figure 4.1. With regard to those who reported feeling prepared, 21% indicated they felt adequately prepared, and only 2% indicated they felt well prepared to teach autistic students. Utilizing the same four choices ranging from *not at all prepared* to *well prepared*, participants responded to survey Q9, which asked them to rate their preparedness to teach autistic students at the time of the survey. Responses to these two survey items were quite different. Respondents answered quite differently than they had to Q8, with 88% of respondents reporting that, at the time they were surveyed, they felt at least *adequately prepared* to teach autistic students, including 41.3% of respondents who indicated they felt *well-prepared*. Figure 4.1 presents a bar graph depicting change in reported levels of preparedness when beginning teaching and at time of survey.

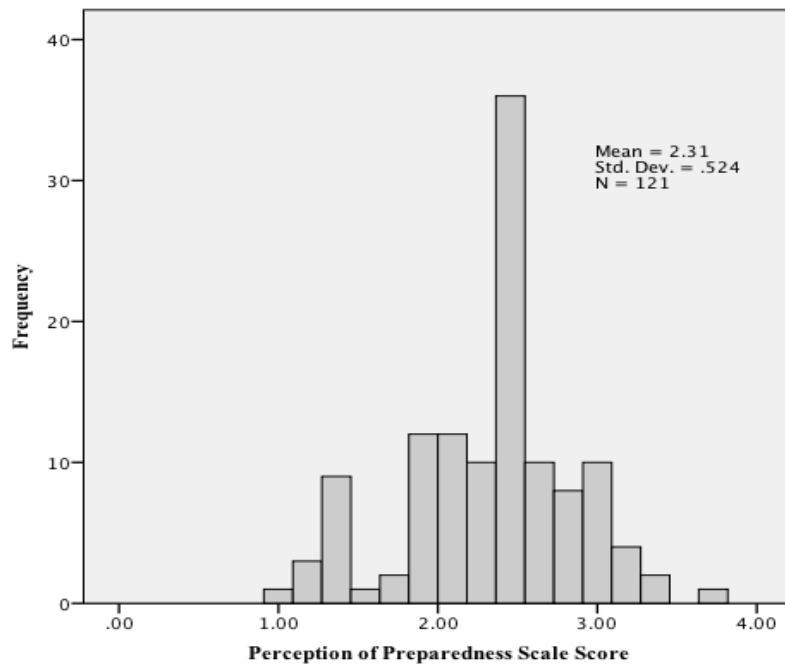
Fig. 4.1. Teachers' reported preparedness.



Survey items Q8 and Q9 were followed by an eleven item Preparation Scale which asked respondents to reflect on how well prepared they were to manage specific aspects and responsibilities of teaching autistic students when they first started teaching. This scale was intended to gauge how well the preparation program prepared participants for teaching autistic students.

Participants selected one of these four response items related to teaching tasks and responsibilities and following the stem, ‘*when I first started teaching autistic students, I...*’. Overall, respondents’ answers reflected a lack of feeling of preparedness in specific aspects of teaching. The average participant score for the entire preparedness scale was 2.31 ( $SD = .524$ ). Figure 4.2 shows the distribution of average scores for the Preparedness scale.

Fig.4.2 Preparedness Scale: *Distribution of Average Scores*



The data suggests that perceptions of inadequate preparedness to manage specific teaching responsibilities immediately following completion of the teacher licensure program are

similarly evident in the average scores for the scale sub-questions, with most average scores representing disagreement in the low 2 range. One exception was an average score of 3.27 for item 10.10 of this scale, for which nearly 88% of respondents indicated they agreed/strongly agreed that if they would be a more effective teacher if they “*had received more autism training before working with autistic students.*” This item has higher scores given that most respondents indicated they strongly disagreed/disagreed with statements that indicated they ‘felt prepared’ to do or ‘understood’ about autistic students. In a way, this item functions in this capacity like a negatively worded item given the overall responses of participants. Table 4.4 outlines percentages of participant responses as well as an average score for each scale sub-question.

Table 4.4. *Percent and Average Respondent Scores by Item: Preparedness Scale*

Item		1. Strongly disagree	2. Disagree	3. Agree	4. Strongly agree	Average Score (SD)
<b>10. When I first started teaching autistic students, I:</b>						
10.1	felt prepared to teach subject matter concepts, knowledge and skills in ways that enable autistic students to learn.	20.7%	46.3%	32.2%	.8%	2.13 (.741)
10.2	understood how autistic students are different from one another and how they learn.	10.7%	27.3%	55.4%	6.6%	2.58 (.772)
10.3	felt prepared to support <u>all</u> autistic students [non-verbal to highly verbal] to achieve high academic standards.	35.5%	52.1%	11.6%	.8%	1.78 (.677)
10.4	felt prepared to evaluate curriculum materials for their usefulness and appropriateness for autistic students.	23.1%	54.5%	20.7%	1.7%	2.01(.713)
10.5	felt prepared to identify the appropriate	17.4%	50.4%	31.4%	.8%	2.16 (.707)

	educational support or intervention and match it to an autistic student's curricular need.					
10.6	felt prepared to consult, plan and solve problems with colleagues in support of students with autism.	11.6%	35.5%	47.1%	5.8%	2.47 (.775)
10.7	felt confident working with parents/families of autistic students.	14.0%	38%	41.3%	6.6%	2.40 (.812)
10.8	understood that neurodevelopmental and biological factors influence the learning of autistic students.	24.8%	46.3%	26.4%	2.5%	2.07 (.782)
10.9	felt prepared to support autistic students in general education settings.	18.2%	38.0%	41.3%	2.5%	2.28 (.788)
10.10	felt if I had received more autism training before working with autistic students, I would be a more effective teacher.	.8%	11.6%	47.1%	40.5%	3.27 (.695)
10.11	felt prepared to teach students with autism.	13.2%	52.1%	31.4%	3.3%	2.25 (.722)
Overall average						2.31 (.524)

Given the differences as reported in Table 4.4 (Q8 and Q9), I was interested in whether increased years of teaching experience might be a contributing factor to teachers' sense of preparedness at the time of taking the survey. Of those who reported that they felt adequately prepared at the time they completed the survey, two-thirds had been teaching 5 or more years. This means seventy-five percent of the 121 respondents who had five or more years of experience (based on survey question 23) indicated that they felt prepared to teach autistic students at the time of the survey.

I was also interested in examining what might have contributed to the responses of those who indicated feeling unprepared to work with students with autism after their

preparation/licensure program but felt prepared at the time they took the survey. To accomplish this, I used survey items related to sense of preparedness (survey item #9) and to additional training (survey item Q5) to investigate the relationship between sense of preparedness and teacher education experiences, such as professional development, including training or conferences. I identified 93 respondents who had indicated they felt unprepared to work with autistic students when they were beginning teaching. To determine whether additional training (survey item #5) contributed to respondents' increased perceptions of preparedness, I created a new variable to determine the number of participants who reported feeling adequately- or well-prepared at the time of survey who had taken coursework or participated in professional development since they began teaching. Approximately 46% of respondents (n= 93) who had participated in professional development reported feeling prepared at the time of survey. Of the ten percent of respondents who indicated they had participated in coursework or a certification after initial teacher preparation, ten percent reported feeling well-prepared or adequately prepared at the time of survey. These data may suggest that participation in specialized autism training positively affects teachers' sense of preparedness. To more definitively confirm these descriptive statistics, I calculated a chi-squared test of independence comparing specialized autism training and teachers' sense of preparedness. The relationship between these variables was significant, ( $\chi^2(6) = 13.63, p < .05$ ) suggesting that overall there is an association between these two variables. Teachers who participated in autism training were more likely to report feeling prepared than teachers who did not.

The descriptive analysis revealed other interesting data, such as a small group of survey respondents who had engaged in professional development but continued to report feeling unprepared (6.5%). These respondents were identified as potential interview candidates. This



analysis suggested that approximately 27% of respondents had not engaged in either professional development or coursework/certification, but these participants still reported feeling prepared (18.3%) or well prepared (8.6%). It is possible that their increased feelings of preparedness were related to gaining classroom experience with students with autism. These respondents were also flagged as potential interview candidates.

***Qualitative results.*** While the survey data provided important information about respondents' perceptions of their preparedness to teach students with autism, both at the time they completed their preparation/licensure programs and at the time they completed the survey, this information was limited in explaining the factors that contributed to participants' perceived levels of preparedness. Along these lines, Creswell (2014) suggests that quantitative data alone may be insufficient to fully understand important issues. Given this, I was interested in using the interviews to understand two specific things: 1) what accounted for reported differences in perceptions about feelings of preparedness to work with students with autism, and 2) what were interviewees' perceptions of the additional experiences during preparation that might have improved their sense of preparedness when beginning teaching?

As shown above, survey respondents felt unprepared to teach autistic students at the end of their preparation/licensure programs. As indicated above, the participants reported that this was because their preparation programs were "broad" and "general" rather than including specificity about specific disabilities, including autism. Not surprising, then, all ten Interviewees indicated they felt that more information and more specificity about autism in their preparation programs would have been warranted. When asked what specific kinds of experiences during the licensure program might have better prepared the Interviewee to teach autistic students, Interviewee # 8 said, "Just even courses that talked about autism at all...I didn't have any

experience with students with autism in my undergrad work, until I did my student teaching...my special ed[ucation] courses really focused more on learning disabilities and more of the mild disabilities and didn't touch upon any strategies for working with students with autism." Interviewee #7 echoed, "If licensure of moderate special needs is going to allow you to work with a population as specific as what I have now [i.e., autistic students], we really shouldn't be seeing it for the first time when we walk in the door and the students are there." Several Interviewees pointed to the rate of autism to justify the need for increased specificity in licensure coursework. Interviewee #2 said: "Given the prevalence rate and the likelihood that you are going to have autistic students...particularly in inclusion [settings], a lot of general educators will look to you for guidance." This was echoed by another Interviewee (#1): "I think that given the number of students with autism and the range of kids on the spectrum, it wouldn't be a bad idea to have a class in special education where you really focused on autism." Interviewee #4 also commented on the placement of autistic students in inclusive settings as a rationale for coursework, saying, "I think that coursework dedicated to teaching autistic students should be a requirement for all teacher programs, because most schools are inclusive...or contain inclusive classrooms, so I think that is something all teachers should know." These accounts suggest that once teachers have school based experiences that expose their least prepared areas, they can explicitly identify experiences and coursework could improve sense of preparedness; these quotes also suggest that teachers' preparation was broad and lacked the specificity to support their sense of preparedness to teach autistic students.

Interviewee #7, a veteran special education teacher, had not taken any courses specific to autism and had taken no additional coursework or professional development in the area of autism. She indicated on the survey that she had been teaching for over fifteen years but had only

been teaching students with autism for the previous two years. She provided interesting commentary after describing how her district had placed her, for the first time, in an autism classroom after 15 years of teaching. She said:

“After about 15 years [teaching], I was placed into an autism program with no training, no background, no anything, just this is your place for next year. So when I was placed initially, I had zero experience...basic classes and information in my grad work, but nothing like practical classroom hours, no going to see a classroom doing actual observations or anything, it’s just, here you go, here’s your six kids...[without having] experience, background, or interest in it.”

The experience of Interviewee #9, also a veteran teacher, was similar to #7 when entering the classroom following completion of her preparation program and licensure in moderate disabilities. She recounted, “So in my undergrad, I didn’t feel prepared at all. I majored in moderate special education...my undergrad did such a poor job preparing me to teach any students with disabilities.” However, she accounted for the change in her preparedness from beginning teaching to time of survey to later pursuing a master’s degree and second license in severe disabilities: “I pursued severe disabilities and that’s what really helped prepare me to teach the students that I wanted to teach...the whole program was great because I could apply it to what I was doing and I would create things that I would try in a classroom. [It] was just so hands on and just really applicable to students with autism.” These quotes confirm the lack of preparedness teachers felt when beginning teaching following their licensure programs. Also important is that both of these teachers were veteran teachers who reported feeling unprepared even after some years teaching.

Overall, the interviews confirmed what the the survey data suggested. The survey data revealed that the majority of respondents felt unprepared to teach autistic students. Nine of the ten Interviewees reported feeling unprepared or poorly when beginning teaching and eight of ten reported that their preparedness to teach autistic students had shifted to adequately or well-prepared at the time of survey. One Interviewee (#7, detailed above) reported a change from not at all prepared to poorly prepared. During the interviews, I asked about their reported changes. All Interviewees indicated that other experiences they had following their licensure programs - gaining experience working in the field and experiences working with mentors - had greatly contributed to their level of preparedness. Along these lines, Interviewee #4 said: “The change, without a doubt, just came from the experience of teaching students with autism in my classroom,” and “experience has been most helpful to me,” echoed by Interviewee #6, who said, “just being out in the field for a number of years has really given me a lot more experience, given me a lot more knowledge of how to work with students with autism.”

As a result of feeling unprepared following their licensure programs, all Interviewees indicated that more field experiences with autistic students during their preparation programs, in particular during the practicum, would have improved their level of preparedness when entering the field, a theme reflected in the literature review. This may have been related to their perception detailed above that gaining experience in the field had shifted their level of preparedness. For example, Interviewee #5 said, “if I had more opportunities to visit different types of settings with different types of students, it would have been more helpful than only a couple of snapshots.” Interviewee #9, who had been teaching for ten years, described what experiences teachers should have during their licensure programs that would help new teachers to feel more prepared to teach autistic students, said, “I would definitely say hands on

experiences with either veteran teachers...where I feel most comfortable, they were hands-on experiences, actually in the field.” Interviewee #10 discussed the enactment of theoretical knowledge to practice, saying, “more experience in the field and application of what you read...more experience like, being in self contained rooms, or even like transitional programs and making things more applicable to the students that you’ll be working with might have helped me.” This teacher, who had been teaching for more than 10 years and reported teaching autistic students every year, had been identified as a potential Interviewee because she had reported feeling adequately prepared when beginning teaching and at time of survey, experiencing no change in level of preparedness. Interviewee #10, who held a teaching license as a teacher of students with moderate disabilities, reported she had not taken any courses specific to autism during or after her licensure program and had no professional development in the area of autism. However, I noted that despite reporting feeling adequately prepared when beginning teaching, her responses to the Likert item preparedness scale on the survey indicated something very different – on this scale, she responded that she felt unprepared across the board in all areas when beginning teaching. I wanted to explore this to better understand the discrepancy. After probing directly with her during the interview about her survey responses, she reported that her survey response was an error, and she felt *not at all prepared* to teach autistic students when beginning teaching (clearly confirmed by her answers on the scale) as compared to *adequately prepared* now.

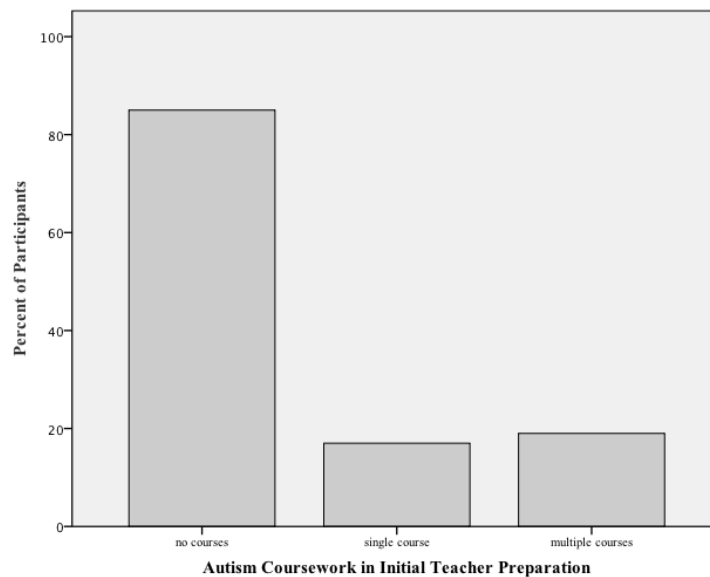
Overall, the interviews confirmed that teachers connected feeling unprepared to teach autistic students to the lack of specificity they described in their licensure programs, and that the experiences which helped them to feel increasingly prepared were “on the job” training and

experiences working with other veteran or mentor teachers with experience in autism. However, there is no way to gauge the accuracy/expertise of the learning source for “on the job” learning.

**Research Question 2a.** *Is autism coursework a significant predictor of teachers' sense of preparedness as new teachers?* This research sub-question was primarily examined through the quantitative phase of the study through regression analysis, using information derived from the previously analyzed descriptive statistics of survey item #4 (*What coursework related to autism did you take during the program where you received your primary license?*) and the average scores of the preparedness scale. I hypothesized that autism coursework was associated with higher levels of teacher preparedness.

**Quantitative Results.** These data determined the significance of autism coursework related to specific aspects of teaching autistic students. Participant results for survey Q4 are presented in Figure 4.3.

Fig. 4.3. Survey Q4: Autism Coursework in Initial Teacher Preparation



A paired samples t-test was conducted to compare teacher’s reported preparedness to teach autistic students following their preparation/licensure program and at time of survey. There was a significant difference in the scores for preparedness when respondents reflected back to their feelings of preparedness when beginning teaching (M = 2.02 SD = .736) and their preparedness at time of survey (M = 3.28, SD = .698) conditions;  $t(120) = -15.692, p < 0.00$ .

I hypothesized that autism coursework during initial teacher preparation would be associated with higher levels of teachers’ sense of preparedness. The regression analysis included a predictor variable (autism coursework, represented as a series of dummy variables: no courses, a single course, or multiple courses) a control variable (experience with disability) and the outcome variable (preparedness). While I was interested in the difference in preparedness between special educators with autism coursework and without, I controlled for experience with disability since collectively over 40% of the demographic sample indicated that either they personally had a disability, had a family member with a disability, or had someone in their immediate circle with a disability. This was important because preparedness could be positively correlated with experience with disability regardless of autism coursework (Ezer, Gilat, & Sagee, 2010; Ferri, 2001; Ferri, Connor, Solis, Valle, & Volpitta, 2005). I recoded a categorical variable for use in the regression equation, by recoding the survey question related to disability into a value of 0 or 1, with 0 – being no experience with disability and 1 –being experience with disability. The results of survey item 31 and the corresponding recoded variables are presented in Table 4.5.

Table 4.5. *Experience with Disability Recoded for Regression Equation.*

Response	Frequency	Percent	Recode
1 I have a disability	4	3.3	1
2 A family member has a disability	33	27.3	1
3 Someone in my immediate circle has a disability	12	9.9	1
4 None of these apply	69	57	0

Total	118		
Missing	3	2.5	

To analyze these data, I used a regression equation  $Y = \beta_0 + \beta_1 (\text{experience with disability}) + \beta_2 (\text{single course}) + \beta_3 (\text{multiple courses}) + \varepsilon$ . To begin, I recoded the narrative survey question related to autism coursework into a value of 0, 1, or 2, with 0 – being no coursework, 1 –single course, and 2 - multiple courses. The majority of respondents (n = 85, 70.2%) had taken no courses on autism or courses that offered content on autism, which I coded as *no courses* (0) given that modules over an academic course would not compare to the depth of a single course. Fourteen percent (n = 17) took a *single course* which I recoded as (1) and 15.7 (n=19) took multiple courses, including a series of courses designated as a specialization, which I recoded as multiple courses (2). The results of survey Q4 and corresponding recoded dummy variables are presented in Table 4.6.

Table 4.6. *Autism Coursework Recoded for Regression Equation*

Response	Frequency	Percent	Recode
2 No courses	16	13.2	0
3 No coursework but modules or content	69	57.0	0
4 Single course	17	14.0	1
5 More than one course	15	12.4	2
6 A series of courses designated as specialization or concentration in autism (4+)	4	3.3	2
Total			
Missing	0	0	

There was a small negative correlation, presented in Table 4.7 below, between preparedness and the control variable (-.074). The correlation between preparedness and single coursework is .141, a small positive correlation. According to Cohen’s (1988) conventions, the correlation between preparedness and multiple coursework is small at .201.

Table 4.7. *Correlation Coefficients: Preparedness*



	1.	2.	3.	4.
1. Preparedness Scale Average (Q10)				
2. Experience with Disability	-.074			
3. Single ASD course	.141*	.068		
4. Multiple ASD courses	.201*	.005	-.174	1.000

The first model, which includes only the control variable – experience with disability, has a correlation coefficient of 0.074 with the outcome variable, and explains .6% of the variability for sense of preparedness. However, the multiple correlation coefficient (R) increases with the addition of the predictor variable. After adding the predictor variable into the model, model 2 has a correlation coefficient of .283 with the outcome variable and explains 8% variability in the outcome variable. The adjusted R square change is 0.56 and R square change (0.080 – 0.006) is 0.074. The F change is 4.615 and the associated p value is 0.012 which is smaller than the alpha level equal to 0.05. This indicates that the change from model 1 to model 2 is statistically significant after adding the predictor variable. The value of the multiple coefficient of determination ( $R^2$ ) is 0.08, which suggests that these variables account for 8% of variance in the outcome. The value increases with the addition of the predictor variable, indicating that the control variable can explain .6% of the variability of sense of preparedness. Model one is not statistically significant, but the change from model one to model two is statistically significant, as presented in Table 4.8 below.

Table 4.8. *Autism Coursework as a Predictor of Preparedness.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.074 <sup>a</sup>	.006	-.003	.52856	.006	.646	1	116	.423
2	.283 <sup>b</sup>	.080	.056	.51282	.074	4.615	2	114	.012
a. Predictors: (Constant), Exp w disability									
b. Predictors: (Constant), Exp w disability, single course, multiple courses									

Analysis of variance is used to determine whether the overall model is significant. Table 4.9, below, presents the analysis of variance for the regression equation. In Model 1, I regressed average scores from the *Preparedness* scale on experience with disability as a control variable. Since  $F(1, 116) = .646$ , we can conclude that this regression model is not significant. This suggests that the variance explained by experience with disability is not significant. For Model 2, I regressed average scores from the *Preparedness* scale on autism coursework, one autism course and multiple autism courses, controlling for experience with disability. Since  $F(3, 114) = 3.305$  with an associated  $\alpha = .05$ , we can conclude that the regression model is statistically significant.

Table 4.9. *Analysis of Variance, Preparedness*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.180	1	.180	.646	.423 <sup>b</sup>
	Residual	32.408	116	.279		
	Total	32.588	117			
2	Regression	2.608	3	.869	3.305	.023 <sup>c</sup>
	Residual	29.981	114	.263		
	Total	32.588	117			
a. Dependent Variable: Preparedness Scale Average						
c. Predictors: (Constant), Experience with disability, single course, multiple courses						

The regression coefficients for Models 1 and 2 are presented below in Table 4.10. In Model 1, the regression coefficient for experience with disability is negative, again, indicating that experience with disability is not significant. The intercept is 2.260, and the regression coefficient for the control variable is  $-.094$  ( $SE = 0.096$ ) and the  $t$  statistic is  $-.98$  ( $p = .329$ ), which indicates the non-significant control variable to predict the outcome. The regression coefficient for the first predictor dummy variable (single course) is  $.287$  ( $SE = 0.140$ ) and the  $t$

statistic is 2.047 ( $p = .043$ ) which is greater than the  $\alpha$  level = .05. The regression coefficient for this is statistically significant and therefore, the dummy variable for single coursework is a significant predictor of teachers' sense of preparedness. The regression coefficient for the second predictor dummy variable (multiple course) is .335 ( $SE = 0.130$ ), and the  $t$  statistic is 2.567 ( $p = .012$ ). Both are significant predictors of the outcome (teacher's reported level of preparedness).

Model 2 suggests that a single course in autism ( $t_{obs} = 2.047$ ) and multiple autism courses ( $t_{obs} = 2.567$ ) are statistically significant predictors of beginning teachers' preparedness to teach autistic students after controlling for experience with disability. The data suggests that having a single course on autism is better than no courses. With multiple courses, average sense of preparedness score increases, confirming my initial hypothesis that autism coursework in initial teacher preparation is a significant predictor of preparedness to teach autistic students in beginning teachers.

Table 4.10. *Regression Coefficients.*

Model	Variable	B	SE	Beta	$t$	p	$R^2$	$\Delta R^2$
1	Constant	2.347	.064		36.876	.000	.006	.006
	Exp w disability	-.079	.099	-.074	-.804	.423		
2	Constant	2.260	.068		33.223	.000	.080	.074
	Exp w disability	-.094	.096	-.088	-.981	.329		
	single course	.287	.140	.187	2.047	.043		
	multiple courses	.335	.130	.234	2.567	.012		

**Qualitative Analysis.** While RQ2a was explored primarily through analysis of survey data, the interview data provide an interesting extension of the quantitative findings. There were four interviewees who had completed a series of courses that constituted an autism specialization, two of whom had BCBA certification. Two more interviewees had taken a single course on autism.

Of the interviewees who had taken a series of courses designated as an autism specialization, three (Interviewees #1, #2, #8) indicated feeling well-prepared at the time they took the survey and one (Interviewee #9) reported feeling adequately prepared. All four of these teachers connected their sense of preparedness to the preparation they had had that was specific to autism, saying that it offered content specificity and opportunities to be taught/mentored by others with extensive training and experience. Interviewee #8 indicated that after she took autism specialization courses, she “felt truly prepared to work with students with autism,” while Interviewee #2, who was in his second year of teaching, echoed this, saying he felt “more knowledgeable about their needs and how best to serve them [than]...if I didn’t have [the coursework], I might be at a bit of a loss in my career and my position.”

Interviewee #9 also provided a somewhat different perspective. Despite having BCBA specialization, she described feeling only adequately prepared to work with students with autism. She had completed her BCBA program online, but she indicated she done this primarily to obtain a salary increase, or, as she described it, “a lane change.” She described her program this way: “Although it didn’t have any hands-on experiences built into it, it had a lot built into the classes in terms of research and teaching methodologies...” She pointed out several times that the certification on-line program lacked the field experience, saying,

“Even though it didn’t have that hands-on part of it... I felt like the courses in that autism studies program, they were just a little more specific compared to the licensure program that were just more global. It was more specific, but there still wasn’t that...practicum, hands on, under the direction of somebody with that experience.”

This might suggest that field experiences complement coursework to close gaps in knowledge, and may affect teachers' overall sense of preparedness, a finding that is suggested in the previous literature.

Two Interviewees, who described feeling *not at all prepared* and *poorly prepared*, had each taken a single course on autism. Interviewee #3 had taken a course on autism after being in the field for many years and referred to this course as part of her ongoing professional development in the field. Interviewee #5 had taken an introductory course on autism while pursuing her undergraduate degree; she indicated that she “got the most information about how to be an effective teacher of students with autism” from that course as opposed to other licensure courses. Interviewee #5's experience is similar to the general survey results, which suggest that one course was a significant predictor of sense of preparedness when beginning teaching.

Overall, all Interviewees (six in total) who had taken autism coursework described the experience as an important contribution to their sense of preparedness in teaching autistic students. The account of the teacher who had taken her coursework online who felt only adequately prepared reinforced the previous responses about preparation that emphasized the need for fieldwork.

**Research Question 2b.** *Is autism coursework a significant predictor of teacher's beliefs about autistic students?* This research sub-question was primarily examined through the quantitative phase of the study through regression analysis, using information derived from the previously analyzed (RQ1) descriptive statistics regarding survey item Q4 (*What coursework related to autism did you take during the program where you received your primary license?*) and the average scores from the beliefs scale (Q11). These data helped determine the

significance of autism coursework related to beliefs about outcomes (expectations of ability) for autistic students. Participant results for survey Q4 were presented above in Figure XX above.

I hypothesized that autism coursework during initial teacher preparation would be associated with higher beliefs for autistic students. The regression analysis included a predictor variable (autism coursework, represented as no courses, a single course, or multiple courses) a control variable (experience with disability) and the outcome variable (expectations of ability).

To analyze this data, I used the same regression equation as above:  $Y = \beta_0 + \beta_1 (\text{experience with disability}) + \beta_2 (\text{single course}) + \beta_3 (\text{multiple courses}) + \varepsilon$  and created a dummy variable for use in the regression equation, and used data collected from Q4 (recoded autism coursework). The results of survey Q4 and corresponding recoded dummy variables are presented in Table XX.

There was a small positive correlation between beliefs and the control variable (.036). There correlation between beliefs and single coursework at .017 beliefs and multiple coursework at .027, indicating is a small positive correlation. Overall the variables do not appear to be strongly correlated.

Table 4.11 *Correlation Coefficients.*

	1.	2.	3.	4.
1. Beliefs Scale Average (Q11)				
2. Experience with Disability	.036			
3. Single ASD course	.017	.068		
4. Multiple ASD courses	.027	.005	-.174	

Results of the regression model appear in Table 4.12. The results indicate that experience with disability is not a significant predictor of beliefs (expectations of ability) ( $p = .697$ ). The first model, which includes only the control variable – experience with disability, has a correlation coefficient of .036 with the outcome variable, and explains .1% of the variability

beliefs. The multiple correlation coefficient (R) increases only slightly with the addition of the predictor variable. After adding the predictor variable into the model, model 2 has a correlation coefficient of .049 with the outcome variable and explains .2% variability in the outcome variable. The adjusted R square change is -0.03 and R square change is 0.006. The F change is .646 and the associated p value is 0.423 at the level of alpha equal to 0.05. The value of the multiple coefficient of determination ( $R^2$ ) is not high, indicating that the control variable can explain only .1% of the variability of beliefs. The second model, autism coursework as a predictor of beliefs (controlling for experience with disability) is not significant for  $\alpha = .05$ .

Table 4.12. *Autism Coursework as a Predictor of Beliefs.*

Model	Variable	B	SE	Beta	t	p	R <sup>2</sup>	$\Delta R^2$
1	Constant	53.319	.620		86.045	.000	.001	-.007
	Exp w disability	.375	.962	.036	.390	.697		
2	Constant	53.218	.688		77.317	.000	.002	-.024
	Exp w disability	.360	.972	.035	.370	.712		
	single course	.289	1.420	.019	.204	.839		
	multiple courses	.420	1.320	.030	.318	.751		

Analysis of variance is used to determine whether an overall model is significant. Table 4.13, below, presents the analysis of variance for the regression equation. In Model 1, I regressed average scores from the *Beliefs* scale on experience with disability as a control variable. Since  $F(1, 116) = .152$ , we can conclude that this regression model is not significant. This suggests that the variance explained by experience with disability is not significant. For Model 2, I regressed average scores from the *Beliefs* scale on autism coursework, one autism course and multiple autism courses, controlling for experience with disability. Since  $F(3, 114) = .091$  with an associated  $\alpha = .05$ , we can conclude that the regression equation is not significant.

Table 4.13. *Analysis of Variance, Preparedness*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.030	1	4.030	.152	.697
	Residual	3073.394	116	26.495		
	Total	3077.424	117			
2	Regression	7.361	3	2.454	.091	.965 <sup>c</sup>
	Residual	3070.062	114	.26.930		
	Total	3077.424	117			
a. Dependent Variable: Beliefs scale average score						
b. Predictors: (Constant), Exp w disability						
c. Predictors: (Constant), Exp w disability, single course, multiple courses						

In Model 1, the regression coefficient for experience with disability is negative, again, indicating that experience with disability is not significant. The regression coefficient is .289 with SE of .1420 and a t statistic of 2.043 with a p = .839. There is no difference in regards to beliefs between single coursework and no coursework, and between multiple coursework and no coursework.

### Qualitative analysis

For the qualitative analysis related to beliefs, I utilized interview data from teachers who had either taken a series of courses on autism ( $n=4$ ), a single course on autism ( $n=2$ ) and those that had none ( $n=4$ ). As noted above, autism coursework was not a statistically significant predictor of teachers' beliefs about autistic students, but interview data showed that there were some interesting differences in the beliefs of the teachers with and without autism coursework. Although I did not ask Interviewees directly about their beliefs about autistic students, I found that their language, word choices, labels, and descriptions of autistic students in the course of the interviews suggested particular conceptions and beliefs.

Across all the interviews, the descriptive language that interviewees used to describe autistic students, such as “complex,” “broad presentation,” “unique” and “novel,” was highly



consistent with descriptions of this population in the research literature and as represented in my literature review, which reinforces the idea that autistic students are a unique group of learners. However, there was variation in the language used by Interviewees with different levels of autism coursework (or with no coursework) to describe their perceptions of autistic students' perceived cognitive abilities (or as is often colloquially referred to in the field, students' "functioning" levels, which means what they are perceived to be able to do or not do) and their perceptions of autistic students' behavior. The majority of interviewees who had not had autism coursework tended to refer to autistic students using labels such as "severe," "low cognitive" "very severe autism," and "low, mid and high functioning." Interestingly, interviewees with an BCBA specialization used language similar to the language of teachers who had not had coursework. They referred to students by their perceived functioning levels with language such as "lower," "moderate," and "higher" functioning (Interviewee #1) "intensive" (Interviewee #9) and to behavior: "pretty intense" (Interviewee #9). These characterizations were often associated with students' ability or inability to use expressive language. For example, Interviewee #9, when talking about her autistic students that were included in general education, said, "The included students...their behaviors, language...social language and just their language in general is not as impacted. They may still have some needs but not as intensive as the non-verbal, which are typically not included." Other interviewees who had earned autism specializations referred to autistic students/people as "self-advocates," described students' "complex needs," "sensory needs" and as "unique" and referred to behavior as a vehicle for communication. The interviews in this study are of course very limited, but they seem to suggest that an interesting issue for further investigation could be whether teachers' beliefs about the level of need and the cognitive ability of autistic students are based largely on how the students communicate. This could be

important because, as Interviewee #9 commented, lack of reliable communication may affect students' ability to access general education opportunities.

Similarly, there were differences in the way interviewees talked about outcomes for autistic students. Participants with one course in autism and those with BCBA specializations described what they perceived to be the eventual outcomes for autistic students in relation to the way they had described students' "functioning levels." In other words, though all of the interviewees in this study indicated that they thought some autistic students could have opportunities for career and college, many also indicated that some groups of autistic students would struggle to attain romantic relationships and have children, focus on personally relevant skills (referred to by interviewees as functional skills) rather than academic skills, and attend transition programs, which are preparation for adult services or employment, rather than college programs. For example, Interviewee #1, who had a BCBA autism specialization, suggested that "lower" autistic students would not attend college, "moderate" autistic students would attend transition programs, and "more high functioning" autistic students would attend college. The two Interviewees (#2, #8) with general autism specializations discussed high expectations, "general overall happiness" and "quality of life" when referring to outcomes for autistic students. Interviewee #2 said,

It was drilled into my head in the autism program that quality of life is of the utmost importance and everything should be in service of it...so when I make curricular decisions I take steps to make sure, is this in line with improving quality of life?

While these two groups' overall descriptions of autistic students were different from one another, all four participants who had taken a series of courses on autism (general autism specialization or BCBA specialization) there was one area where they articulated similar views about how they

understood and responded to autistic students – the area of behavior. Interviewee #2 (general autism specialization) reflected on his level of preparedness prior to the autism coursework:

“I think the biggest consequence was just not understanding the needs of the student...misinterpreting behavior in a way that can be damaging to the student, and can break down relationships and...negatively impact the relationship with the teacher, access to curriculum...it runs the risk of making an unsuccessful and unproductive learning environment.”

Interviewee #1 (BCBA specialization) also discussed not letting behavior dictate when kids were given access to the general education setting: “When we let behavior dictate when we include kids and when we don’t include kids, we end up with a lot of kids that just never get included...so I think now we need to give kids a shot in the general classroom regardless of behavior.” This is interesting because the groups differed in their views with respect to other curricular decisions based on other aspects of autistic students’ characteristics, such as communication (detailed above).

Additionally, all four interviewees with autism specializations (general and BCBA) indicated that their beliefs had shifted following autism training. For example, all four espoused strong beliefs in the placement of autistic students in general education and in inclusion as opposed to substantially separate classrooms, even if their school districts did not employ this model. Interviewee #9 said,

In my district we have classrooms for students with autism spectrum, and the majority of them are substantially separate. They don’t have a lot of opportunities to be with their peers...I think long term, if the teachers don’t know that inclusion and integration and peer role models and all that stuff is important, then I feel like the students can kind of

get stuck in some separate world and they're just going to stay in that track all the way through their schooling and that's not good.

In contrast, the majority of those without autism coursework indicated that inclusion in general education was an option only when autistic students “were ready” (that is, they thought of inclusion as a privilege not an entitlement); discussed placement primarily in “self-contained classrooms.” Interviewee #7 said, “Inclusion is at the classroom teacher’s discretion. If we have a...room that’s a good fit and our students are ready, we can try some inclusion. The principal...has the final say on if it happens or not.” Interviewee # 4, who had no coursework in autism, but was teaching in a general education role, reflected a different view when discussing why all teachers should have autism coursework: “Most schools are inclusive, and most schools contain inclusion classrooms, so I think that is something all of the teachers should know.” Participants with one autism course (n=2) made statements that reflected student placements in more substantially separate settings, similar to the views of those without coursework. For example, Interviewee #3 said: “To get them [students] to be more independent and to transfer these skills into different settings, it’s somewhat impossible...many times I teach in a 1:1 setting, a skill set and the students go into another setting, and we see time and time again it didn’t transfer.” Interviewee #5 echoed, “I do a combination of pull out and push in, and definitely trying to...implement any kind of behavior plan or even accommodations can be really difficult depending on the teacher.” These statements suggest that since their experiences working with students in general education and inclusive settings has not always been positive, they may be more inclined to place them in substantially separate classes.

As noted above, the interview data in this study are limited, but they may suggest two things. First, teachers’ beliefs about students with autism seem to be influenced by having

increased training. According to the perceptions of the interviewees, additional training seems to result overall in positive attitudes regarding participation in inclusion as well as deeper exploration into the meaning of behavior of autistic students. Secondly, given the variation in responses by those that have autism specializations, it may be that teachers' views of ultimate outcomes for autistic students are also influenced by the underlying philosophy of the autism coursework that they have participated in. This is similar to how participants described mentoring as preparation and the open question of how the mentors had been prepared.

**Research Question 3 and 3a.** *What knowledge of the CEC standards and evidence-based practices do Massachusetts special educators report having? 3a. What differences exist between educators with moderate versus severe licensure with regard to knowledge of CEC standards and evidenced based practices?*

This research question was measured by seven knowledge scales on the survey. The first Likert scale item (#14) was related to the evidence based practice and had 24 items. Six additional Likert scale items, 15-20, were related to the CEC standards and contained 72 total items. I was interested in understanding the extent of special education teachers' knowledge about the evidence based practices and the CEC knowledge standards for teachers. I hypothesized that type of license is a significant predictor of knowledge of standards and evidence-based practices and that initial preparation including Massachusetts licensure in Severe Disabilities would be associated with higher levels of knowledge of CEC knowledge standards and EBPs.

**Quantitative Results.** This research question was first analyzed using quantitative survey data. Participants were asked to rate their knowledge of evidence based practices and the CEC knowledge standards for teachers on a four-point scale, which included the responses *no*

*knowledge, limited knowledge, adequate knowledge and vast knowledge.* Since teachers may have felt they “should” know some of the practices listed and since there is a tendency for survey takers to answer in ways that are socially desirable, it was very important also to rely on the interview data in this area. The interview context gave me a chance to ask questions regarding the specific practices participants reported using in order to gauge the depth of their knowledge. Descriptive statistics of survey results are presented here and below in Tables 4.14. Overall, on both evidence based practice scales (Likert scale item 14) and the Council for Exceptional Children’s Knowledge Standards (Likert scale items 15-20), special education teachers with severe licensure reported higher levels of knowledge than special education teachers with moderate licensure. An independent samples t-test was conducted for each scale to compare the knowledge scores of special educators with severe versus special educators with moderate licensure. Overall, across all scales, the mean ratings for special education teachers with severe licensure were higher than ratings of special education teachers with moderate licensure. Given the number of independent t-tests, I corrected for family-wise error (FEW) using Bonferroni for the comparisons, which indicated that the mean score

On the evidence based practices scale, Likert scale item 14, there was a significant difference in the scores for severe (M = 74.2, SD = 12.4) and moderate (M = 56.7, SD = 15.0) conditions;  $t(119) = 5.94, p < 0.01$ . Teacher with severe licenses were more knowledgeable.

Table 4.14. Participants’ Reported Knowledge of Evidence Based Practices

<u>Item</u>	Reported Knowledge (%)	A	S	M
		verage	evere	oderate
		Score	A	A
		(SD)	verage	verage

						n	n	
						= 33	= 88	
		None	Limited	Adequate	Vast			
<i>14. Please rate your knowledge of the practices below:</i>								
14.1	Antecedent Based Interventions	9.9	22.3	48.8	19.0	2.42 (.793)	3.24	2.59
14.2	Computer-Aided Instruction	7.4	34.7	49.6	8.3	2.24 (.770)	2.85	2.49
14.3	Differential Reinforcement	14.9	14.9	41.3	28.4	2.40 (.802)	3.52	2.59
14.4	Discrete Trial Training	20.7	23.1	32.2	24.0	2.04 (.860)	3.21	2.36
14.5	Extinction	24.0	21.5	35.5	19.0	2.01 (.861)	3.27	2.20
14.6	Functional Behavior Assessment	3.3	18.2	50.4	28.1	2.45 (.645)	3.27	2.94
14.7	Functional Communication Training	28.9	24.0	28.9	18.2	1.96 (.860)	3.30	2.01
14.8	Joint Attention Training	43.8	31.4	19.8	5.0	1.56 (.836)	2.52	1.61
14.9	Naturalistic Intervention	51.2	19.8	20.7	8.3	1.69 (.884)	2.55	1.60
14.10	Peer Mediated Intervention	33.1	33.9	27.3	5.8	1.67 (.735)	2.42	1.92
14.11	Picture Exchange Communication System (PECS)	14.9	23.1	38.0	24.0	1.93 (.834)	3.27	2.50
14.12	Pivotal Response Training	60.3	21.5	11.6	6.6	1.41 (.715)	1.94	1.53
14.13	Prompting	3.3	9.9	38.8	47.9	2.88 (.458)	3.82	3.13
14.14	Reinforcement	2.5	7.4	41.3	48.8	2.89 (.440)	3.73	3.23
14.15	Response Interruption/Redirection	14.0	14.9	38.0	33.1	2.41 (.813)	3.48	2.68

14.16	Self-Management	14.9	24.0	46.3	14.9	2.20 (.813)	2.97	2.48
14.17	Social Narratives	8.3	23.1	46.3	22.3	2.34 (.737)	3.18	2.69
14.18	Social Skills Training Groups	13.2	21.5	44.6	20.7	2.21 (.795)	3.06	2.60
14.19	Speech Generating Devices	21.5	30.6	32.2	15.7	1.93 (.858)	3.03	2.19
14.20	Structured Work Systems	44.6	24.0	23.1	8.3	1.60 (.801)	2.48	1.75
14.21	Task Analysis	21.5	19.8	30.6	28.1	2.13 (.836)	3.55	2.32
14.22	Time Delay	30.6	21.5	32.1	15.7	1.89 (.845)	3.06	2.06
14.23	Video Modeling	29.8	25.6	32.2	12.4	1.69 (.735)	2.85	2.06
14.24	Visual Supports	3.3	8.3	42.1	46.3	2.84 (.517)	3.64	3.19

On the CEC knowledge scales in the area of learner development, Q15, there was a significant difference in the scores for severe ( $M = 48.6$ ,  $SD = 9.56$ ) and moderate ( $M = 40.7$ ,  $SD = 9.35$ ) licenses;  $t(119) = 4.09$ ,  $p < 0.01$ .

Table 4.15. Reported Knowledge of CEC Knowledge Standards: Learner Development.

	Item	Reported Knowledge (%)				Average Score (SD)	Severe Average n = 33	Moderate Average n = 88
		None	Limited	Adequate	Vast			
Q15. The following questions refer to the foundational knowledge you have about autism in learner development:								
15.1	Medical aspects and implications for learning for autistic students	13.2	52.9	28.1	5.8	2.26 (.761)	2.64	2.13
2	Core and associated characteristics of autistic students	5.0	1.5	56.2	22.3	2.96 (.768)	3.39	2.80
3	Co-existing conditions and ranges that exist at a higher rate than	8.3	32.2	44.6	14.9	2.66 (.832)	3.00	2.53



	in the general population							
4	Sensory challenges of autistic students	.8	15.7	55.4	28.1	3.11 (.681)	3.27	3.05
5	Speech, language, and communication of autistic students	1.7	14.0	52.1	32.2	3.15 (.715)	3.45	3.03
6	Adaptive behavior needs of autistic students	2.5	27.3	46.3	24.0	2.92 (.781)	3.39	2.74
7	Impact of neurological differences on learning and behavior	5.8	35.5	43.0	15.7	2.69 (.807)	3.03	2.56
8	Impact of self-regulation on learning and behavior	4.1	19.8	52.9	23.1	2.95 (.773)	3.21	2.85
9	Evidence-based career/vocational transition programs for autistic students	18.2	47.9	26.4	7.4	2.23 (.834)	2.79	2.02
10	Specialized curriculum designed to meet the needs of autistic students	5.8	34.7	43.0	16.5	2.70 (.813)	3.09	2.56
11	Definitions and issues related to the identification of autistic students	5.0	28.1	55.4	11.6	2.74 (.728)	3.09	2.60
12	Continuum of placement and services available for autistic students	10.7	33.9	43.0	12.4	2.57 (.845)	3.00	2.41
13	Historical foundations and classic studies of autism	10.7	47.9	33.1	8.3	2.39 (.789)	2.76	2.25

14	Trends and practices in the field of autism	9.9	35.5	42.1	12.4	2.57 (.835)	2.97	2.42
15	Theories of behavior problems of autistic students	9.9	37.2	39.7	13.2	2.56 (.846)	2.94	2.42
16	Perspectives held by autistic individuals	12.4	40.5	41.3	5.8	2.40 (.781)	2.55	2.35

On the CEC knowledge scales in the area of instruction, Q16, there was a significant difference in the scores for severe ( $M = 21.7$ ,  $SD = 4.14$ ) and moderate ( $M = 16.5$ ,  $SD = 4.9$ ) licenses;  $t(119) = 5.40$ ,  $p < 0.01$

Table 4.16. Reported Knowledge of CEC Knowledge Standards: Instruction.

	Item	Reported Knowledge (%)				Average Score (SD)	Severe Average n = 33	Moderate Average n = 88
		None	Limited	Adequate	Vast			
<i>Q16. The next questions refer to the foundational knowledge you have <b>in the area of instruction for autistic students</b>:</i>								
1	Planning instruction for independent functional life skills and adaptive behavior	14.9	36.4	33.1	15.7	2.50 (.932)	3.21	2.23
2	Planning and implementing instruction and related services for autistic students that is both age-appropriate and ability-appropriate	8.3	28.1	46.3	18.2	2.73 (.847)	3.33	2.50
3	Planning systematic	9.9	25.6	46.3	18.2	2.73 (.876)	3.27	2.52

	instruction based on learner characteristics, interests, and ongoing assessment							
4	Matching levels of support to changing needs of the student	5.0	23.1	51.2	20.7	2.88 (.791)	3.33	2.70
5	Using instructional strategies that fall on a continuum of child-directed to adult-directed in natural and structured context	33.9	38.3	23.1	4.1	2.55 (.866)	3.00	2.39
6	Transferring, lifting and positioning techniques	33.9	38.8	23.1	4.1	1.98 (.861)	2.48	1.78
7	Structuring physical environment to provide optimal learning for autistic students	13.2	28.2	45.5	13.2	2.59 (.882)	3.06	2.41

On the CEC knowledge scales in the area of communication and social development, Q17, there was a significant difference in the scores for severe ( $M = 21.2$ ,  $SD = 4.5$ ) and moderate ( $M = 17.1$ ,  $SD = 4.8$ ) conditions;  $t(119) = 4.20$ ,  $p < 0.00$ .

Table 4.17. *Reported Knowledge of CEC Knowledge Standards: Communication and Social Development.*

	Item	Reported Knowledge (%)				Average Score (Sd)	Severe Average n = 33	Moderate Average n = 88
		None	Limited	Adequate	Vast			
<b><i>Q17. The next questions refer to the foundational knowledge you have in the area of <u>communication and social development for autistic students:</u></i></b>								
1	Using specialized instruction to enhance social participation across environments	41.	36.4	48.8	10.7	2.66 (.725)	3.06	2.51
2	Providing pragmatic language instruction that facilitates social skills	5.8	34.7	47.1	12.4	2.66 (.770)	3.03	2.52
3	Providing autistic students strategies to avoid and repair miscommunications	10.7	36.4	43.0	9.9	2.52 (.818)	2.94	2.36
4	Implementing instructional programs that promote effective communication skills using verbal and augmentative/alternative communication systems for autistic students	13.2	36.4	37.2	13.2	2.50 (.886)	3.12	2.27
5	Providing specialized instruction for spoken	10.7	33.9	43.8	11.6	2.56 (.836)	3.00	2.40

	language, reading and writing for autistic students							
6	Providing instruction in self-regulation	8.3	38.0	40.5	13.2	2.59 (.823)	2.88	2.48
7	Utilizing student strengths to reinforce and maintain social skills	7.4	25.6	51.2	15.7	2.75 (.809)	3.21	2.58

On the CEC knowledge scales in the area of behavior, Q18, there was a significant difference in the scores for severe (M = 12.6, SD = 2.7) and moderate (M = 10.3, SD = 2.8) conditions;  $t(119) = 4.05, p < 0.01$ .

Table 4.18. Reported Knowledge of CEC Knowledge Standards: Behavior.

	Item	Reported Knowledge (%)				Average Score (Sd)	Severe Average n = 33	Moderate Average n = 88
		None	Limited	Adequate	Vast			
<i>Q18. The next questions refer to the foundational knowledge you have <b>in the area of behavior for autistic students.</b></i>								
1	Consistently use of proactive strategies and positive behavioral supports	4.1	21.5	49.6	24.8	2.95 (.794)	3.36	2.80
2	Providing instruction in self-regulation	9.1	33.9	43.0	14.0	2.62 (.839)	3.00	2.48
3	Develop strategies for monitoring and analyzing challenging behavior and its	7.4	30.6	45.5	16.5	2.71 (.831)	3.21	2.52

	communicative intent							
4	Conduct functional behavior assessments that lead to development of behavior support plans	9.9	27.3	47.1	15.7	2.69 (.857)	3.06	2.55

On the CEC knowledge scales in the area of assessment, Q19, there was a significant difference in the scores for severe ( $M = 14.3$ ,  $SD = 3.3$ ) and moderate ( $M = 11.5$ ,  $SD = 4.0$ ) conditions;  $t(119) = 3.63$ ,  $p < 0.01$ .

	Item	Reported Knowledge (%)				Average Score (Sd)	Severe Average n = 33	Moderate Average n = 88
		None	Limited	Adequate	Vast			
<i>Q19. The next questions refer to the foundational knowledge you have <b>in the following areas of assessment for autistic students.</b></i>								
1	Specialized terminology used in the assessment of autistic students	15.7	35.5	38.0	10.7	2.44 (.884)	2.88	2.27
2	Assessments of environmental conditions that promote maximum performance of autistic students	16.5	38.8	33.9	10.7	2.39 (.889)	2.85	2.22
3	Components of assessment for the core areas for autistic students	20.7	37.2	33.9	8.3	2.30 (.891)	2.73	2.14
4	Individual strengths,	11.6	22.3	52.1	14.0	2.69 (.857)	3.12	2.52

	skills and learning styles of autistic students							
5	Select, adapt and use assessment tools and methods to accommodate the abilities and needs of autistic students	14.9	32.2	43.0	9.9	2.48 (.867)	2.79	2.36

On the CEC knowledge scales in the area of transition, Q20, there was a significant difference in the scores for severe (M = 19.0, SD = 5.8) and moderate (M = 13.2, SD = 5.1) licenses;  $t(119) = 5.25, p < 0.01$ .

Table 4.20. Reported Knowledge of CEC Knowledge Standards: Transition.

	Item	Reported Knowledge (%)				Average Score (Sd)	Severe Average n = 33	Moderate Average n = 88
		None	Limited	Adequate	Vast			
<i>Q20. The next questions refer to the foundational knowledge you have in the area of transition planning for autistic students.</i>								
1	Planning instruction for independent functional life skills and adaptive behavior	25.6	32.2	31.4	10.7	2.27 (.966)	2.97	2.01
2	Evidence-based career/vocational transition programs for autistic students	33.9	42.1	18.2	5.8	1.96 (.870)	2.48	1.76
3	Involving autistic students in the transition planning process	27.3	43.0	22.3	7.4	2.10 (.889)	2.70	1.88

4	Transition needs including linkages to supports and agencies focusing on life long needs	31.4	41.3	21.5	5.8	2.02 (.875)	2.52	1.83
5	Providing instruction in community-based settings	31.4	34.7	24.0	9.9	2.12 (.971)	2.88	1.84
6	Concepts of self determination, self-advocacy, community and family support and impact in the lives of autistic students	25.6	26.4	29.8	8.3	2.21 (.921)	2.76	2.00
7	Collaborate with team members to plan transition to adulthood that encourages full community participation	27.3	37.2	26.4	9.1	2.17 (.937)	2.73	1.97

These results suggest that teachers who pursue a license as a teacher of severe disabilities reported significantly higher levels of knowledge of both evidence based practices and CEC standards. As a result of their reported knowledge, they may be better prepared to teach autistic students.

### **Qualitative analysis**

While RQ3a was explored primarily through analysis of survey data, the interview data provide an interesting extension of the quantitative findings. With regard to knowledge of evidence based practices, interviewees were not familiar with the language and terminology of the identified evidence based practices in the field of autism and instead seemed to understand



the term “evidence based practice” as it broadly relates to special education. In other words, they understood the meaning of the term to relate to the federal special education law, IDEA, which requires schools to use evidence based research “to the extent practicable” (IDEA, 2004). Participants recalled learning/hearing about EBPs in their preparation programs (Interviewees 2, 3, 5, and 8), in autism coursework (Interviewees 1, 2, 9, 8), from colleagues or mentors (Interviewees 3, 7, and 8) and from in-district professional development or training (Interviewees 2, 6, 7, 8, 9, and 10). When I named the particular evidence based practices that were identified by the NPDC during the interviews, all of the Interviewees (10/10) recognized some of the practices, but described using only a handful of them or not using the EBPs at all. In fact, all Interviewees were resistant to the idea of using evidence-based practices in the classroom. They gave a wide range of reasons for this resistance, including questions about the appropriateness of applying research findings about EBPs to public school settings, challenges in applying the EBPs, and ethical and professional concerns about the use of behaviorally based EBPs given autistic self-advocates’ criticisms of them. This is very important because EBPs have been described by their promoters (e.g., NPDC, nd; Wong et al, 2014; Odom et al., 2010; Lerman et al., 2004) as the only methods that should be used to teach autistic students, but it was clear from this group of interviewees, and confirmed by the findings of some previous studies discussed in Chapter 2 (e.g. Hess, Morrier, Heflin & Ivey, 2008; Morrier, Hess & Heflin, 2011) that teachers may not be using these practices in the classroom.

All four interviewees with autism specializations (both BCBA and general) expressed reticence about using EBPs. All four indicated that they did not use EBPs regularly, and their concerns ranged from ethics to implementation to feasibility of use in the classroom. When they did use EBPs, they described selecting specific practices that were matched to a particular

student, suggesting that their curricular decisions were very situation-specific and student-centered, and were part of a larger developmental teaching approach as opposed to being prescribed only by the use of EBPs. Below, I discuss reticence to use EBPs by type of autism training.

The two participants with general autism specializations described ethical, professional and implementation concerns about using EBPs. Interviewee #2 said he taught in a school district that was “very invested in ABA,” but he expressed ethical concerns about the use of behaviorally based practices, saying, “given that many EBPs are grounded in ABA principles, and that we know from the self-advocate community that they strongly object to ABA because it’s not respectful and not in line with their beliefs or needs, it can be very challenging for me to reconcile my beliefs with the demands [for use].” This teacher also discussed implementation concerns: “I think it’s very difficult to follow the steps that are outlined in evidence based practice, as they are intended to [be followed]. As I said earlier, classrooms are very unique and students are very unique and complex, and not everything can be conducted with such rigidity. It’s not natural, it’s not how humans operate.” Interviewee # 8 shared this concern, indicating, “You have to be able to try so many different things to see what works best and if you are just familiar with one of the evidence based practices, then it’s not going to work for everyone and you are not going to be successful in the classroom.” Teachers’ rejection of EBPs is important because “high quality training” in EBPs has been promoted as “absolutely essential” for educators (Rue, Odom, and Cox, 2011), but they may represent a mismatch to traditional teaching methods for teachers in their schools.

The two participants with BCBA focused specializations also indicated disagreement with EBPs and an unwillingness to use them in public school settings, which was surprising

given that two-thirds of the practices come from the behavioral literature (Rue, Odom, & Cox, nd) and are a hallmark of a particular behavioral approach to teaching autistic students, which was the orientation of their specializations. For example, Interviewee #1 echoed Interviewee #2's sentiment that the use of EBPs were not a natural fit, saying,

I would say life just isn't about being that systematic...I think that much of the evidence around interventions for people with autism has been done in either a clinic or a home setting or even a laboratory setting...you should try them with a grain of salt, thinking that this has worked in the clinic, but there is a much different set of circumstances in the classroom.

Interviewee #9, also a teacher with a BCBA specialization, echoed, "I don't use them...as a classroom teacher, [I] was always supervised by a behavior specialist...they oversaw and were responsible for the training...for the data...for setting up the data sheets. I implemented and carried it out" and indicated that someone else was driving and directing the instruction. She additionally described how staff- and time-intensive the EBPs were to implement, saying, "You need a lot of staffing to implement them, and some of that's not always conducive to a bigger classroom of 15 students."

These interviews are limited, but these quotes suggest that for interviewees, pursuing autism coursework with a specific philosophical focus (i.e. behaviorally based) did not necessarily influence licensed teachers' curricular choices or decisions, especially if the focus is perceived as inconsistent with their own ethics or is difficult to implement in school settings.

Finally, all of the interviewees with no autism coursework, and who had likely had the least training about EBPs, were familiar with them, but were surprisingly also resistant to using

them in the classroom. Interviewee #6 echoed Interviewee #1's concerns that the EBPs had been established in research or clinical settings that were not like school settings, saying,

Evidence based practice may have worked well...as practiced in the clinical setting in the research environment; it is effective. But as someone that works with children with autism knows, you work with 100 students and you find 100 different manifestations of autism. Some...work maybe well for some students, [with] others it's an absolute disaster.

Similarly, Interviewee #4 expressed reticence about the use of EBPs in school settings, saying:

I think these practices are directed at the students, but there is still the expectation or idea that things are already decided for the teacher when teaching autistic students...what I do know about them is that they are pretty prescriptive, which I don't necessarily agree with...this notion that there is one specific way to teach a group of students who are so vastly different in so many ways is really --- is problematic for me.

These two quotes suggest that teachers I interviewed, regardless of what kind of autism coursework they have had or even if they have had none, did not seem to believe that EBPs were appropriate for classroom settings. They instead seemed to indicate that they were too narrowly focused to be considered appropriate generally for autistic students.

The second aspect of teachers' knowledge relevant to RQ3 was related to the CEC standards. All ten of the interviewees agreed that CEC knowledge standards for teachers, which are intended to "delineate the essential knowledge and skills that beginning special education professionals must possess to be ready to begin their practice in specific areas" (CEC, nd) were necessary for the field. All ten of the interviewees were familiar with these concepts, as was indicated by my analysis of the survey data. However, it was not clear from the quantitative

data analysis whether these educators knew about the organization and intended purpose of the CEC standards, which prompted me to include this as an interview question.

All but one Interviewee (#8) was aware that CEC had developed knowledge standards for teaching autistic students. However, when I referred to specific areas and standards individually, even Interviewee #8 indicated familiarity with them. In other words, all of the interviewees in this study reported hearing about CEC standards in either their preparation programs or in autism programs. However, the interviewees had varying depth of knowledge about the standards. Interviewees with autism specialization credentials considered the CEC standards to be critical knowledge for teachers, a benchmark that would “help you to be better prepared” (Interviewee #2). For example, Interviewee #1 said, “Those standards are pretty interesting...they are pretty well rounded...if you could meet those standards, then you probably had a pretty good handle on working with kids with autism.” Interviewee #2 related the need for standards to the variations in the presentation of the student population by saying, “Having very specific standards ensures that teachers are knowledgeable of the kind of complex needs [autism students have] and can be better prepared to educate those students successfully.” Although the interview data are limited, it is important to note that to some degree, the CEC autism standards are known to teachers, which may suggest some degree of consistency in the learning source (unlike when teachers are learning on the job).

Interviewees (#3, #5) each of whom had taken a single course on autism described the usefulness of the standards by suggesting that teachers could reference them to know whether they “have learned everything [they] needed to learn in this area (Interviewee #5)” and use them to determine areas where additional information was needed to help them feel prepared and ready to enter the classroom with autistic students. Interviewee #3 extended this idea by

suggesting that autism programs could use the areas to define specialized classes to ensure the standards were implemented: “But you’ve really got to dig deep into those areas to make sure that there are classes out there for teachers to take to get the experience.” This may be related to how this teacher recounted her own knowledge when entering the field following her licensure program:

When I was first licensed and starting out in the field...I didn’t have a lot of experience or knowledge in the area of autism. I took some courses and they kind of covered it a little, but not in the areas of curriculum to use with them, modifications to use with them, behavior...I mean all the things you use in the classroom day to day, I didn’t have any knowledge in that area.

This quote suggests that having only a little information is not helpful to educators when teaching autistic students. Similarly, interviewees who had taken no coursework on autism discussed the importance of having a resource to go to for knowledge, or as Interviewee #10 put it, “Knowledge is power...awareness of [the standards] help you to take an action or find a way to improve a situation”. Participant #4 explained that her lack of knowledge contributed to lowered feelings of autonomy and flexibility in making curricular decisions. She said, “There is knowledge out there that teachers should know, that teachers should understand...and be aware of, when teaching autistic students... [this] gives them more flexibility when it comes to deciding what might be best for their specific students.” She emphasized the importance of “acquir[ing] the knowledge as opposed to prescriptive practices” in order to foster the knowledge base of the teacher. Interviewee #6 echoed a similar theme, saying, “Teachers walk into the classroom without really understanding what they are stepping into, and what they need to

competently perform their jobs.” She suggested that the standards offered a way for teachers to know what “you should know” to help them “design your education, but also to measure yourself. Am I ready for this? Am I ready to go into this job?” These quotes address an important difference between learning and implementing prescriptive practices as opposed to the idea of acquiring knowledge to develop expertise, and that standards could be a way to gauge readiness for teaching. This might mean that teachers use the knowledge they acquire to help determine particular curricular decisions or choices, perhaps viewed as a more complex approach to teaching.

**Research Question 4.** *Does type of license predict preparedness, knowledge and/or beliefs?* I addressed this research question exclusively through the quantitative phase of the study using regression analysis. Analysis of these data indicated the significance of type of licensure related to teachers’ preparedness, knowledge, and beliefs about outcomes (expectations of ability) for autistic students.

I hypothesized that teachers with a license in severe disabilities would be associated with higher levels of teachers’ sense of preparedness, beliefs, and knowledge of standards and practices. To do so, I conducted a regression analysis with a predictor variable (type of license, represented as severe or moderate) representing a control variable (experience with disability) and the outcome variable (preparedness, beliefs or knowledge). A multiple linear regression was calculated to predict preparedness, beliefs and knowledge based on type of license. To analyze these data, I used a regression equation  $Y = \beta_0 + \beta_1 (\text{experience with disability}) + \beta_2 (\text{type of license}) + \epsilon$ . To begin, as indicated above, I recoded a categorical variable (experience with disability) for use in the regression equation as a control. Next, I recoded a variable related to the type of license that participants reported having. The first dummy variable represents

experience with disability (i.e. no experience = value of 0, experience = 1). The second dummy variable represents type of licensure (i.e., moderate = 0, severe = value of 1). The majority of respondents (n = 88, 72.7%) had a moderate license at the elementary or middle school/high school level, which I collapsed and coded as (0). Twenty-seven percent (n = 33) had severe licensure, which I recoded for the regression equation as (1). The results of survey Q1 and corresponding dummy variables are presented in Table 4.21.

Table 4.21. *Type of License Recoded for Regression Equation*

Response	Frequency	Percent	Recode
2 Moderate PK-8	60	49.6	0
3 Moderate 5-12	28	23.1	0
4 Severe Licensure	33	27.3	1
Total			
Missing	0	0	

There was a small negative correlation between knowledge of evidence based practices and the control variable (-.053). The correlation between knowledge of evidence based practices and type of license is -.142.

Table 4.22.

	1.	2.	3.
1. EBP Scale Average (Q14)			
2. Experience with Disability	-.053		
3. License	.473	-.142	

A non-significant regression model was found for *preparedness* ( $F(2, 115) = 1.015, p < .365$ , with an R square of .017, and for *beliefs* ( $F(2, 115) = .458, p < .634$ , with an R square of .008). Neither moderate or severe licensure were significant predictors of preparedness or beliefs.



A significant regression model was found for the *knowledge* scales. The first regression model was *evidence based practices* ( $F(2, 115) = 16.571, p < .000$ , with an R square of .224).

The results of the regression model for Evidence Based Practices are presented below.

The first model, which includes only the control variable – experience with disability - has a correlation coefficient of  $-0.053$  with the outcome variable, and explains .03% of the variability for knowledge of EBPs. However, the multiple correlation coefficient (R) increases with the addition of the predictor variable. After adding the predictor variable into the model, model two has a correlation coefficient of  $.473$  with the outcome variable and explains 22% variability in the outcome variable. The adjusted R square change is 0.21 and R square change ( $0.21 - 0.006$ ) is 0.221. The F change is 32.736 and the associated p value is 0.00 at the level of alpha equal to 0.05. The value of the multiple coefficient of determination ( $R^2$ ) increases with the addition of the predictor variable, indicating that the control variable can explain 22% of the variability. The second model, including type of license (controlling for experience with disability) is also significant for  $\alpha = .05$  as presented in Table 4.23, below.

Table 4.23. *Evidence Based Practices as a Predictor of Knowledge.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.053 <sup>a</sup>	.003	-.006	16.32124	.003	.326	1	116	.569
2	.473 <sup>b</sup>	.224	.210	14.46238	.221	32.736	1	115	.000
a. Predictors: (Constant), Experience with disability									
b. Predictors: (Constant), Experience with disability, Type of License									

Analysis of variance is used to determine whether an overall model is significant. Table 4.24, below, presents the analysis of variance for the regression equation. In Model 1, I regressed average scores from the *Evidence Based Practices* knowledge scale on experience with disability

as a control variable. Since  $F(1, 116) = .326$ , we can conclude that this regression model is not significant. This suggests that the variance explained by experience with disability is not significant. For Model 2, I regressed average scores from the *Evidence Based Practices* knowledge scale on both moderate and severe licenses, controlling for experience with disability. Since  $F(2, 115) = 16.575$  with an associated  $\alpha = .05$ , we can conclude that the regression model is significant.

Table 4.24. *Analysis of Variance, Knowledge of Evidence Based Practices*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	86.721	1	86.721	.326	.569 <sup>b</sup>
	Residual	30900.432	116	266.383		
	Total	30987.153	117			
2	Regression	6933.701	2	3466.851	16.575	.000 <sup>c</sup>
	Residual	24053.451	115	209.160		
	Total	30987.153	117			
a. Dependent Variable: Evidence Based Practices Knowledge Scale Average						
b. Predictors: (Constant), Experience with disability						
c. Predictors: (Constant), Experience with disability, moderate license, severe license.						

The regression coefficients for Models 1 and 2 are presented below in Table 4.25. In Model 1, the regression coefficient for experience with disability is negative, again, indicating that experience with disability is not significant. The intercept is 56.923, the regression coefficient for the control variable is .476 (SE = 2.729) and the t statistic is .175 ( $p = .862$ ), which indicates the non-significant control variable to predict the outcome. The regression coefficient for the predictor dummy variable (type of license) is .17.145 (SE = 2.997) and the t statistic is 5.721 ( $p = .000$ ) which is greater than the  $\alpha = .05$ . The regression coefficient for this is statistically significant and therefore, the dummy variable, type of license, is a significant predictor of teachers' knowledge.

Table 4.25. *Regression Coefficients*.

Model	Variable	B	SE	Beta	t	p	R <sup>2</sup>	ΔR <sup>2</sup>
1	Constant	62.638	1.965		31.879	.000	.003	.003
	Exp w disability	-1.740	3.049	-.053	-.571	.569		
2	Constant	56.923	2.007		28.358	.000	.0224	.221
	Exp w disability	.476	2.729	.014	.175	.862		
	Type of license	17.145	2.997	.475	5.721	.000		

The results of the regression model for CEC Knowledge Standards are presented below. There was a small negative correlation, presented in Table 4.26 below, between preparedness and the control variable (-.023). According to Cohen’s (1988) conventions, the correlation between knowledge and license is moderate at .413.

Table 4.26. *Correlation Coefficients.*

	1.	2.	3.
1. CEC Knowledge Scale Average			
2. Experience with Disability	-.023		
3. License	.413	-.142	

Results of the regression model appear in Table 4.27. The first model, which includes only the control variable – experience with disability, has a correlation coefficient of .023 with the outcome variable, and explains 1% of the variability for knowledge of CEC standards. However, again, the multiple correlation coefficient (R) increases with the addition of the predictor variable. After adding the predictor variable into the model, model two has a correlation coefficient of .415 with the outcome variable and explains 17% variability in the outcome variable. The adjusted R square change is 0.172 and R square change (0.172 – 0.001) is 0.171. The F change is 23.839 and the associated p value is 0.00 at the level of alpha equal to 0.05. The value of the multiple coefficient of determination (R<sup>2</sup>) increases with the addition of

the predictor variable, indicating that the control variable can explain .1% of the variability. The second model, including type of license (controlling for experience with disability) is significant for  $\alpha = .05$ .

Table 4.27. *Regression model results.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.023 <sup>a</sup>	.001	-.008	30.38780	.001	.064	1	116	.801
2	.415 <sup>b</sup>	.172	.158	27.77617	.171	23.839	1	115	.000
a. Predictors: (Constant), Experience with disability									
b. Predictors: (Constant), Experience with disability, Type of License									

Analysis of variance was used to determine whether the overall model is significant.

Table 4.27, below, presents the analysis of variance for the regression equation. In Model 1, I regressed average scores from the *CEC* knowledge scale on experience with experience with disability as a control variable. Since  $F(1, 116) = .064$ , we can conclude that this regression model is not significant. This suggests that the variance explained by experience with disability is not significant. For Model 2, I regressed average scores from the *CEC* knowledge scales on both moderate and severe licenses, controlling for experience with disability. Since  $F(2, 115) = 11.958$ ,  $p < .001$  with an associated  $\alpha = .05$ , we can conclude that the regression model is significant.

Table 4.28. *Analysis of Variance, Knowledge of Evidence Based Practices*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.644	1	58.644	.064	.801 <sup>b</sup>
	Residual	107116.551	116	923.419		
	Total	107175.195	117			
2	Regression	18450.878	2	9225.439	11.958	.000 <sup>c</sup>
	Residual	88724.371	115	771.516		
	Total	107175.195	117			
a. Dependent Variable: CEC Knowledge Scales Average						

b. Predictors: (Constant), Experience with disability
c. Predictors: (Constant), Experience with disability, moderate license, severe license.

The regression coefficients for Models 1 and 2 are presented below in Table 4.28. In Model 1, the regression coefficient for experience with disability is negative, indicating an inverse relationship with experience with disability. The intercept is 108.778, and the regression coefficient for the control variable is 2.201 (SE = 5.242) and the t statistic is .420 (p = .675), which indicates the non-significant control variable to predict the outcome. The regression coefficient for the first predictor dummy variable (license) is 28.1 (SE = 5.755) and the t statistic is 4.883 (p = .000) which is greater than the  $\alpha$  level = .05. The regression coefficient for this is statistically significant and therefore, the dummy variable for license is a significant predictor of teachers' sense of preparedness.

Table 4.29. *Regression Coefficients.*

Model	Variable	B	SE	Beta	t	p	R <sup>2</sup>	ΔR <sup>2</sup>
1	Constant	118.145	3.658		32.295	.000	.001	.001
	Exp w disability	-1.431	5.677	-.023	-.252	.801	.172	.172
2	Constant	108.778	3.855		28.217	.000	.	.
	Exp w disability	2.201	5.242	.036	.420	.675		
	License	28.100	5.755	.418	4.883	.000		

**Making Sense of Special Educators' Preparation, Preparedness, Knowledge, and Beliefs**

This chapter provided a summary of the results, organized by research question, and some forecasting of the meaning of the findings, which will be discussed in full in Chapter 5. First, the general level of preparation/training (RQ1) and preparedness (RQ2, 2a and 2b) of Massachusetts special educators to teach autistic students was considered as reported by the survey and interview participants. The second research questions also explored whether autism coursework was a predictor of teachers' preparedness and of their beliefs, suggesting that

coursework was a significant predictor of preparedness. The third research question (RQ3) explored the educators' reported knowledge about professional standards and evidenced based practices, and RQ3a explored whether there was a significant difference between teachers with moderate and severe licenses. Findings indicated that teachers with licensure as a teacher of severe disabilities reported higher levels of knowledge. Lastly, I explored whether type of license was a statistically significant predictor of preparedness, knowledge and beliefs; findings indicated that type of license was not a significant predictor of preparedness or beliefs, but that type of license was a statistically significant predictor of knowledge. The next and final chapter concludes the dissertation with a discussion of the findings, including implications for policy, practice, and research.

## **Chapter 5:**

### **Discussion and Implications: Special Education Teacher Preparation and Autism**

This chapter has three sections. The first discusses the study's findings in terms of teacher preparation and sense of preparedness and in relation to teacher knowledge and licensure, which includes exploration of how the qualitative findings expanded upon the quantitative. The second section of this chapter considers the limitations of the study. The final section explores the implications of the study for research, practice, and policy.

#### **Discussion of Findings**

This study was motivated by two main areas of interest in special education initial teacher preparation. As a teacher educator and policy advocate, I wanted to know whether special education teachers felt prepared and what contributed to their sense of preparedness to teach autistic students. I was interested in whether teachers' education, including type of license, specialized autism coursework and/or professional development experiences contributed to preparedness. Secondly, I wanted to know what knowledge teachers had about standards and practices for working with autistic students and what their beliefs were about autistic students, and what that might reveal about professionalization in this area of special education teacher preparation.

To study these issues, I used a sequential explanatory mixed methods design involving a survey of licensed special education teachers in Massachusetts. Based on analysis of the survey data, I conducted follow-up interviews with teachers to deepen and better understand survey responses.

## Preparedness

My results demonstrate that the vast majority of surveyed special education teachers (70% of whom did not have any coursework related to autism) felt unprepared to teach autistic students at the point of conclusion of their teacher preparation programs, and that obtaining special education licensure did not necessarily mean that teachers reported having knowledge about teaching autistic students. Both the survey data and interviews strongly indicated that special education licensure alone was not sufficient to prepare special educators to teach autistic students; interviewees indicated this was the case because preparation was too general and did not include enough specific content about this group. The survey results indicated that, overwhelmingly, teachers felt unprepared to teach autistic students following the completion of their licensure programs, and analysis of interview data deepened this finding. While 57% of survey respondents noted that general content about autism had been included in their coursework, they also indicated that this was not sufficient to prepare them to respond to the complex needs of students with autism. Interview data extended this finding, indicating that special education programs helped teachers acquire broad teaching knowledge, but not specialized autism knowledge. Along these lines, two interviewees even reported that their preparation was “so broad” and “so general” that they did not feel prepared to teach *any* students with disabilities. One interviewee suggested that if teachers were expected to be responsible for educating students with needs as complex as those of autistic students, then their first experiences with autistic students should not be when beginning teaching.

Currently, the type of preparation required to teach autistic students in Massachusetts is standard special education licensure, which the state offers via two non-categorical (or generic) licenses in special education—one in “moderate” and one in “severe” disabilities. This is



different from “categorical” licensure models, which offer licensure in specific disability areas. Geiger (2014) suggested that non-categorical licensure was adopted in response to special education teacher shortages, resulting in “supply and demand” special education licensure models. Given the relative lack of research studies on licensure patterns since 2004 (Geiger, 2014), it has been difficult to determine whether particular models result in well-prepared teachers. The results of my study suggest that non-categorical models may not result in special education teachers who feel well-prepared to teach highly specialized disability populations. Although special education licensure did not predict preparedness in the regression model, autism coursework did. The results of my study suggested that autism coursework was a significant predictor of preparedness, and that teacher preparedness to teach autistic students improved with specialized autism coursework. While it may seem self-evident that teachers who have had specialized autism training may be better prepared to teach, this deserves further attention because initial teacher licensure may not include any coursework content about autism, and little to no research has been done about the preparedness of special educators to teach autistic students or the relationship of specialized autism coursework and preparedness. The results indicated that specialized autism coursework may help to address teachers’ reported lack of preparedness to teach autistic students. While the variance explained is significant, I acknowledge that the effect of coursework is small. I return to this in the discussion of implications below.

At the time of the survey, all respondents reported that they had a stronger sense of preparedness to work with autistic students compared with the time when they began teaching. In a certain way this is not surprising, but it is important to note that this even includes teachers that never had any specialized autism coursework to teach autistic students (70%). This improved

sense of preparedness may have resulted from direct classroom experience, professional development and/or mentoring. Interviewees reported direct classroom experiences as “on the job” preparation including “trial and error teaching” and working with veteran teachers or other education professionals had improved their sense of preparedness. However, these experiences did not result in the same level of preparedness reported by teachers who had had specialized preparation to teach autistic students. During interviews, teachers who had specialized preparation to teach autistic students (i.e. multiple autism courses) reported feeling well-prepared to teach autistic students in contrast to teachers who had had no coursework or a single autism course. While these teachers reported feeling adequately prepared at the time of survey, it is difficult to determine whether their experiences prepared them adequately or to the level that specialized autism coursework could have since this is based solely on teacher report.

Given that many survey respondents reported that their sense of preparedness increased from the point of conclusion of their preparation program to the point when they were surveyed, I was especially interested in interviewees’ accounts of how these experiences contributed to improved preparedness. Two interesting themes emerged from interviews: interviewees without specialized autism coursework described classroom experience and working with veteran teachers and specialists as having improved preparedness; however, they did not talk about professional development such as conferences, workshops or courses. Interviewees reported that having classroom experience and experiences working with veteran teachers and specialists (occupational therapists, speech pathologists, BCBA specialists, or autism specialists) in the field contributed to their sense of preparedness. It is important to note, however, that we do not have information about how the veteran teachers or specialists themselves were prepared, including what preparation/training they had to teach autistic students, nor do we know anything about the

nature of interactions between participants and specialists. Given the level of “trial and error” and “learning on the job” that interviewees described as part of their experience learning to teach autistic students in the absence of formal preparation, it is reasonable to imagine that at least some veteran teachers and specialists’ training might also have come from “learning on the job” and “trial and error” experiences themselves. This possibility sets up a perpetuation of use of practices and approaches that may not be aligned with professional standards, which co-opts the effort toward professionalization achieved by the development of standards, which in contrast are typically vetted by teacher education professionals and experts.

While interviewees did not talk about workshops, conferences, or other professional development, they did indicate that that increased coursework and practicum and other formal field experiences in initial teacher preparation would have helped them to feel better prepared. All interviewees indicated that specialized autism coursework should be required to adequately prepare teachers to work with autistic students.

### **Knowledge and Beliefs**

My results showed that teachers who pursued licensure in “severe” disabilities reported higher levels of knowledge about both evidence based practices and the CEC knowledge standards than did those teachers who pursued licensure in “moderate disabilities.” In fact, across all the survey scales that measured teachers’ knowledge of evidence based practices and knowledge standards related to working with autistic students, the mean scores for special education teachers with licensure in severe disabilities was significantly higher than the mean scores for special education teachers with moderate licensure. This suggests that severe licensure may provide better foundational preparation for teachers who work with autistic students.

While means scores were higher for teachers with severe licensure in every category of

knowledge, there were some well-known evidence-based practices that all teachers knew, such as ‘prompting,’ ‘reinforcement,’ and ‘self-management’ vs. more autism-specific practices such as “extinction,” “functional communication training,” and “scripting.” It is possible that teachers who pursued licensure in severe disabilities may have more exposure to special education specific curricula in teacher preparation programs but may not be learning about EBPs in the context of autism. All interviewees tended to be more familiar with the language of evidence based practice as it broadly related to special education under IDEA, but not all of them actually could name or describe autism-specific evidence based practices in the interviews. This is important to note because even interviewees with specialized autism coursework reported minimal knowledge and use of autism-specific evidence based practices.

None of the interviewees, including the two teachers with BCBA specializations, which are grounded in evidence-based practices, indicated that they regularly used autism-specific evidence based practices in the classroom. In fact, all interviewees expressed reticence about their use, indicating that the practices were too precise and were not feasible given the demands of public school classrooms. They also indicated they felt the use of a variety of methods encompassing a range of philosophies was more appropriate for teaching autistic students than use of EBPs. This was a surprising finding given that the two interviewees were explicitly trained in programs that specifically focused on behavioral approaches. This general resistance to autism-specific evidence based practices may have been influenced by the fact that all participants were all licensed teachers prior to their exposure to autism-specific evidence based practices preparation. This suggests that even though autism specific evidence based practices were designed to offer guidance for educators who teach autistic children, the teachers find these practices not easily incorporated into teaching repertoires and believe they translate poorly to

classrooms.

Teachers' familiarity with CEC professional knowledge standards was also measured by the survey. Participants with licensure as teachers of students with severe disabilities had higher mean scores across six scales representing knowledge about the standard areas than participants with moderate licenses. These knowledge scales, based on 70 items, included knowledge of areas such as *transition*, *assessment*, and *learner development*. It is important to note that all of the interviewees talked about the value of the knowledge standards as a way to help improve their work. These interviewees, who rejected evidence based practices as too specific, rigid and difficult to implement in the "real life" of classrooms, found the knowledge standards to be helpful in identifying areas where they could deepen their knowledge about autistic students. They made important distinctions between the knowledge it takes to think about how they should approach instruction for autistic students vs. the more technical evidence based practices that they merely implement. Interviewees talked about the use of these kinds of standards as an approach to improving the quality of their work, making a distinction between implementing a practice and acquiring knowledge to develop teacher expertise. These standards may have helped them think about the quality of their work because they were not prescriptive as how they described evidence-based practice. This is important because it suggests something about the kind of information teachers need to construct their own knowledge. This may mean we need to rethink what kind of knowledge and information is helpful to teachers who work with autistic students.

In this study, neither type of special education license, moderate or severe, was a significant predictor of teachers' beliefs. I grounded the concept of 'teacher beliefs' using the teacher education literature explored by Wideen, Mayer-Smith, and Moon (1988). However, similar to the mean differences described above, licensure in severe disabilities was a significant

predictor of teachers' knowledge of evidence based practices and the professional standards. Given that interviewees also reported that licensure in severe disabilities contributed to their preparedness, these results may be useful in determining the type of licensure a teacher should pursue if interested in teaching autistic students.

There were differences in the quantitative data and the qualitative data about beliefs. Even though differences did not show up on in the quantitative data, they were obvious in the interviews, suggesting that there may differences that did not arise in the survey. While autism coursework was not a significant predictor of teachers' beliefs as represented on the survey, particular conceptions and beliefs about autistic students emerged through interviewees' language. Interviewees with no coursework and interviewees with BCBA specializations referred to students by 'functioning' labels, often associating inability with lack of expressive language/communication difficulty. This was associated with beliefs that most students with autism would not be able to attend college, have romantic relationships and have children. In contrast, interviewees with specialized autism coursework tended to use neutral or positive language when describing students with autism, such as 'self-advocate' and talked about the importance of quality of life and overall happiness for these students. Given these differences in the quantitative and qualitative data, this may suggest that beliefs is a challenging construct to measure quantitatively, and beliefs may be implicitly influenced by underlying philosophies of training experiences. One point has to do with social desirability teachers may be unwilling to agree with direct statements that would be viewed unfavorably by others. Another point is that beliefs, which are not black and white constructs, were analyzed using summary scores and regression analysis, and as the data is manipulated it moves further away from the teachers' selections.

## **Limitations of this Study and Directions for Future Research**

Despite the contributions this study makes to our understanding of teachers' preparedness to teach autistic students, there are at least four limitations to the study. The primary limitation of this study is that it relies on the self-reports of teachers through both surveys and interviews, and it does not include data based on independent assessments or direct observations of what teachers know and can do. In addition, the survey asked teachers to recall their sense of preparedness to work with students with ASD at the point when they were just beginning to teach. However, about half of the respondents indicated they had been teaching for ten or more years so the accuracy of their recollections is not clear. In addition, for all respondents, regardless of number of years since they completed initial teacher preparation, recalling highly specific information about the content of courses and licensure program experiences may also be challenging. Future research could focus on early career teachers with four or fewer years of experience to address this issue, as other survey-based teacher preparedness studies have done (e.g., Darling-Hammond, et al., 2002; Darling-Hammond et al., 2010).

Second, respondents may have described their preparation, training, knowledge and beliefs in ways that are different from the ways they enact these in practice. This means that although some teachers reported feeling prepared, without actual observations of their teaching practice, it is hard to determine whether teachers' assessments of their own levels of preparedness are accurate. Future research could include observations of teacher to address this and examine how training and knowledge are represented in teachers' practice.

Third, while this study provides useful information regarding teachers' preparation and licensure, licensure is state specific, and thus these results are specific to Massachusetts. The results are shaped by factors such as state conditions for state preparation program approval

which, by state regulation, influences the curriculum, and content of teacher preparation programs.

Lastly, while this mixed methods study utilized a small number of qualitative interviews by design, the interviews provided many additional important ideas and themes about teachers' perceptions of preparedness and knowledge regarding their preparation that are worth exploring. However, the interviews cannot be used to draw conclusions. Future studies might utilize a more in-depth qualitative model to unpack new themes which emerged or consider the qualitative themes from this study as a means of developing future questions.

### **Special Educators' Preparedness to Teach Autistic Students:**

#### **Implications for Research, Policy and Practice**

Teacher preparedness research explores aspects of how teachers learn to teach, what preparation experiences are meaningful to beginning teachers, and what aspects of preparation might be revised so as to be more helpful to beginning teachers. Feeling well-prepared has been identified as one indicator of teacher quality (NCES, 1999; NCATE 2009; Darling-Hammond, 2000; Lewis, 1999; USDOE, 1999). Evaluating the extent to which teachers feel prepared may reveal the extent to which their licensure/certification programs have or have not readied them to address the complexities of classrooms (USDOE, 1999) and can help teacher education stakeholders think carefully about future teacher education research, practice, and policy.

#### **Implications for Teacher Education Research**

As I noted in Chapter 2, research on special education teacher preparation is not as established as general education teacher preparation research. Overall, more research on special education teacher education is warranted to understand the extent to which special education teacher preparation is producing quality special education teachers. This means that raising



questions about the effectiveness of categorical and non-categorical licensure models could be an important contribution to the teacher education research. Similar to my study, research about special education licensure and teacher preparedness could be conducted by surveying program completers to gauge preparedness, but could go further to investigate special education teachers' practice to determine whether program tenets translated to practice. While my study included survey and ten follow up interviews, future research could extend to include observations. Observations may be able to indicate the extent to which special education teachers espouse their beliefs in practice.

Teachers in my study with severe licensure reported having knowledge in many areas of the professional knowledge standards and the evidence based practices, but whether they use them in their classrooms could be further explored by way of observations which connect practice to standards. Research that more deeply explores special educators' practice is especially important for special educators who teach autistic students since there are no clear conceptions of what these teachers need to know and be able to do. In part, because of the "trial-and-error" teaching described by interviewees, they reported that they felt specialized preparation in teaching autistic students was necessary, even *after* they had engaged in a range of additional training experiences, and even though they reported feeling more prepared.

Related to this, it is important to further unpack the extent to which "on-the-job" training adequately prepares special educators to teach autistic students. My study indicated that many of the survey participants indicated that they felt unprepared when beginning teaching, and better prepared at time of survey, with no further training in-between. Additionally, regardless of the kind of school or setting they worked in, interviewees all reported that they learned "on-the-job" primarily through trial and error. This is important because interviewees were working in a range

of settings, including general education co-taught models, resource room models, substantially separate public school classrooms, and substantially separate private special education schools. This may mean that their “on-the job” training is job-specific, and we have no way to gauge whether the practices they are learning are appropriate and in keeping with the field’s knowledge standards. Research could be conducted about the extent of teachers’ experiences, including what they actually learn about teaching autistic students and how that knowledge was constructed, how this translates to practice, ultimately whether this is in keeping with professional standards. This is important given that teacher learning does not conclude in the preparation program, but instead continues well into teachers’ careers. Many of the teachers in my study reported a change in preparedness by the time of study but they had not had additional coursework or professional development. This could mean that teachers’ work helps to build their knowledge as they collaborate with other education professionals and gain further experience and construct knowledge, but we need to know the extent of the knowledge, what has influenced its construction, and how that drives special education teachers’ practice and beliefs about teaching autistic students.

The results of my study reflected some unevenness in teachers’ beliefs about autistic students related to approaches to teaching and autistic students’ educational needs, inclusion, friendships, employment, college, among other things. Unpacking the influences of beliefs is an important direction for future research, especially to determine whether preparation programs influence beliefs. For example, while the majority (93%) of survey respondents agreed that autistic students could succeed academically regardless of their perceived ‘functioning,’ a very high percentage (85%) also agreed that autistic students would *not* go to college. Interviewees’ language also revealed potential beliefs about autistic students related to the use of “functioning”

labels to describe students, which in some cases were attached to particular outcomes (i.e. “moderate” autistic students would attend transition programs whereas “high functioning” would attend college). My interview data suggested that interviewees’ beliefs may shape their curricular decisions and supports for autistic students.

One troubling finding of the survey results was the reported lower levels of knowledge of areas of the competency areas of the knowledge standards reported by teachers with moderate disabilities licenses. Coupled with interviewees’ descriptions of feeling unprepared to teach any students with disabilities (not just autistic students), this raises many questions about the appropriateness of various licenses for working with autistic students. This was an unexpected finding because it suggests that despite preparation in a university-based program explicitly focused on teaching students with disabilities, some teachers still felt unprepared to do so. The results of my study contribute to previous research that has found that teacher education licensure policies have historically emphasized “relevance over rigor” (Labaree, 2008, p. 293) to meet increasing market demand for teachers (Ball & Forzani, 2010; Geiger, 2014). Some respondents indicated that their licensure programs were very broad and general in scope, which could be related to the state’s use of non-categorical, or generic special education licensure models, which do not focus on specific disability areas but rather, in Massachusetts, age/grade ranges differentiated by what they refer to as “moderate” or “severe” disabilities. Research on teacher preparedness in states with and without specialized autism endorsements could compare the preparedness of teachers who emerge from each preparation pathway and licensure area to determine whether specialized preparation helps to address the problem of unprepared special educators who teach autistic students teachers and the lack of state’s ability to find qualified teachers in the area of autism (USDOE, 2011). This kind of research could help to determine the

role that standards play in teachers' preparation and preparedness as they enter the classroom and also whether the standards offer evidence of a move toward professionalization.

### **Implications for Policy**

Special education teacher preparation has been influenced by policies which seek to address the special education teacher shortage (Sindelar, et al., 2014). As the demand for special education teachers increased, the rise of non-categorical licensure created an “*efficiency model*” of special education teacher preparation. This served to produce teachers in an organized, expeditious way with less emphasis on improving the quality of program and more on sheer production, a decision that would plague the profession for years to come (Ball & Forzani, 2000). For example, to meet teacher demand, some states and districts eased hiring standards (Education Commission of the States, 2016; Sutchter, Darling-Hammond, & Carver-Thomas, 2016). This has had a particularly negative effect on special education teacher preparation, where licensing trends have shifted to non-categorical options across the U.S. (Geiger et al., 2014) to answer the nation's chronic shortage of qualified special educators (Billingsley, Crockett, & Kamann, 2014; Boe, 2014; Geiger et al., 2014). Such policies favor a ‘quick and dirty’ route to teacher preparation, or what I have referred to as *efficiency models*, over quality preparation.

It is important to note that in Massachusetts, where generic vs. categorical licensing regulations are in place, the efficiency model has not solved the supply and demand problem of special education. In fact, Massachusetts has reported a chronic shortage of special education teachers in the state since 1990 (USDOE Office of Postsecondary Education, 2017). In Massachusetts, the demand for all licensed teachers is expected to increase nearly six percent in over the next ten years but the supply of special education teachers is expected to decline

approximately 20% (Levin, J., Berg-Jacobson, A., Atchinson, D., Lee, K., & Vontsolos, E., 2015).

There are currently no state guidelines in Massachusetts regarding the type of license teachers should pursue if they want to be prepared to work with autistic students. Relatedly, there is some confusion about the training that licensure in “moderate” or “severe” disabilities actually entails. In short, there is an absence of guidelines about what these two licenses actually prepare educators to do and what population of students they actually prepare teachers to work with. The results of my study provide a contribution to our understanding of the knowledge teachers are and are not acquiring within various programs. For example, my study indicated that teachers with licensure in moderate disabilities did not report the same level of knowledge to teach autistic students as teachers in severe disabilities, and thus a severe license may provide better knowledge to teach autistic students. To improve the extent to which non-categorical models prepare special educators to teach autistic students, it may be appropriate for the state to stipulate the specific license that may better prepare educators to teach autistic students. For example, the special education teachers in this study with licensure in severe disabilities reported having greater foundational knowledge in some of the essential knowledge areas that are defined by the CEC professional standards. It is possible that, although it is non-categorical, severe licensure may provide at least foundational preparation for teachers who work with autistic students.

One consequence of non-categorical licensure models has been that teachers reported entering their classrooms of autistic students without the skills and knowledge to be effective teachers. Just as this dissertation research concluded, the Massachusetts Department of Elementary and Secondary Education was in the process of further “streamlin[ing] the regulations and licensure system, clos[ing] loopholes, clarify[ing] certain provisions, and

reduc[ing] regulatory burden” (Massachusetts Board of Education, 2017). One planned intention of this work is to move detailed subject matter knowledge requirements out of the regulatory arena and what they refer to as simply “guidelines.” Since they are not yet released as of this writing, it is challenging to know what impact this change will have. One possibility is it may make already generic special education non-categorical licensure models less specific with regard to the particular knowledge teachers need.

Massachusetts “autism teacher endorsement” is an example of specialized preparation aimed at improving quality in the teacher workforce by offering specialized, competency based coursework that was meant to elevate the knowledge of special education teachers in Massachusetts’ schools. Until the endorsement was made law by the Massachusetts legislature in 2014, teacher preparation programs in Massachusetts had no agreed upon standards by which to develop preparation programs for special educators interested in teaching autistic students. As the results of my study suggest, a consequence of this seems to be a poorly prepared workforce. This is important because a poorly prepared workforce threatens the quality of education for autistic students and perhaps even poses a risk to long-term positive educational success and outcomes for these students. Poorly prepared teachers may not support students’ growth and educational progress. According to Geiger (2014) there is a high percentage of states that still offer mixed categorical and non-categorical licensure options. That is, they offer both disability specific and generic special education licensure models. This is the case in part because “nearly all of them retained categorical options in the areas of visual impairment and hearing impairment” (Geiger, 2014, p. 36), these areas are also highly specialized disability populations that require specialized knowledge on the part of teachers, much like autism. As participants in my study reported, non-categorical licensure models did not prepares them adequate to teach

autistic students. Given this, one consideration to improve teacher preparedness would be for states to adopt autism endorsement policies or reconsider categorical licensure in the area of autism, to support this highly complex population.

### **Implications for Teacher Education Practice**

Given the increasing number of autistic students receiving special education services in U.S. classrooms, it is reasonable to suggest that most special education teachers will teach autistic students at some point in their professional careers. Since the results of my study indicate that the majority of surveyed special education teachers felt unprepared to teach autistic students when beginning teaching, we may need to improve teacher education program experiences to ensure that all special education teachers have at least some foundational knowledge to teach this highly specialized population.

My results indicated that a single course on autism was a predictor of teachers' preparedness. While these results are based on a relatively small survey sample, interviewees in my study also suggested that specialized coursework would have improved their preparedness. Thus, one proposal for improving the foundational preparedness of pre-service teachers would be to include a course on autism within the context of the teacher education program, even if it is offered only as an elective. Ideally this course would be aligned to the national professional standards to ensure that future teachers are exposed to the correct information.

In states with non-categorical models, it may not be reasonable for teacher educators to consider a whole course in teacher preparation programs since this is only one disability area that a program which offers non-categorical licensure aims to prepare teachers for. However, since nearly 60% of study participants reported that their preparation programs contained some content on autism within coursework, but they also reported that they felt unprepared. This seems to

suggest that whatever content was included in coursework was inadequate. Further interviewees reported that field experiences, assignments related directly with ASD students, or experience working in practicum settings including ASD students would have improved their preparedness. This suggests that, one way to enhance course content modules might be to add required field experiences in settings where pre-service teachers are working with autistic students.

Strengthening field experiences within teacher preparation programs as a critical element to preparedness was an important theme that emerged in the literature review, which suggested that when teachers reported feeling underprepared, there was a correlating lack of specific coursework or field experiences (Faez & Valeo, 2014; Hamilton-Jones & Vail, 2013; Kahn & Lewis, 2014). The results of my study contribute to this body of literature as well, as survey participants also overwhelmingly agreed that specialized preparation was necessary to teach autistic students successfully, and again, interviews provided context via descriptions of particular challenges the interviewees had experienced in schools.

The results of my study may provide some useful considerations for developing content within teacher preparation programs that would expose pre-service teachers to information and knowledge about autism before entering the field. Yet, despite widespread agreement that educators who teach autistic students should have specialized preparation (Barnhill, Polloway, & Sumutka, 2011; Barnhill, Sumutka, Polloway & Lee, 2014; Hendricks, 2011; Morrier et al., 2011; Marder & deBettencourt, 2012), we still have no shared conception of what this should look like, in spite of the national professional standards. Without shared conceptions of what teacher preparation programs should look like for special educators who teach autistic students, teachers may be entering the field with varying conceptions of how to teach autistic students. As my literature review revealed, because there is no single educational method that is effective for



every autistic child (National Research Council [NRC], 2001; Schreibman et al., 2015; Kasari & Smith, 2013; Simpson 2005), determining the appropriate content of teacher education programs is not a straightforward task.

One way that teacher educators determine the content of preparation programs is through the use of knowledge standards set forth by professional organizations and by states. The teachers in my study were asked to rate their familiarity with the CEC standards in this study and knowledge levels for teachers who had pursued a license in severe disabilities were higher than in moderate. This suggests that, to some degree, teacher preparation programs are using and integrating the foundational knowledge of the standards into their preparation programs, and teachers may be applying them in their classrooms. If programs aligned their coursework and fieldwork requirements to the national professional standards, it would be a start toward ensuring some consistency in the preparation of educators who teach autistic students. The CEC standards, for example, were vetted by a range of diverse diverse professionals, including members NCATE, CEC, special education teachers, families, and importantly, autistic self-advocates.

Some interviewees' accounts suggested that in some instances teachers are being trained to use EBPs as de facto teaching standards. This is evident in emerging academic research as well (Alexander, Ayers, & Smith, 2015; Barnhill et al. 2011, Hall, 2015). While designed for autistic children, supporters of the practices may utilize them to offer teacher educators and educators a framework for what special educators of autistic students should know and be able to do. However, there are limited studies about how educators are prepared to use the practices, and many criticisms of them (e.g., Dawson, Mottron, & Gernsbacher, 2007; Dawson & Gernsbacher, 2010; Shyman, 2012, 2015). Also, as the participants in my study indicated, they do not

frequently use EBPs in their classrooms as they believe EBPs may not directly account for the complex interactions that may occur in classrooms and with individual learners; this is a finding that has been previously documented in the academic literature (Callahan, Henson, & Cowan, 2008; Morrier, Hess, & Heflin, 2011). Teachers' unwillingness to use EBPs could be further explored in the field to determine its relationship to their own philosophies or whether the EBPs offer a conception of teaching that may be too "technical."

This study was guided by ideas related to *professionalization of teaching*, that is, the process by which a field—like teaching or teacher education—claims and acquires jurisdictional authority (Yinger & Hendricks-Lee, 2000) over that field. Professionalization requires that the field itself must establish and widely implement shared standards "by which the education and performance of teachers must be judged can be raised and clearly articulated" (Shulman, 1987, p. 3-4). Since there is not yet agreement about how to educate autistic students, it is not yet universally clear what special educators need to know and be able to do to be well-prepared to teach autistic students. Professionalization is one way to understand the multitude of ideas, challenges, philosophies, practices, and standards that arose in my study. If careful attention is paid to the experiences of special educators who teach autistic students, progress toward conceptualizing shared understanding of how future teachers should be prepared may be possible. I propose that this dissertation research may offer one step toward understanding how to address this complexity in the research literature by prioritizing teacher perspectives in the design of programs; consistent use of standards in teacher education programs may improve the overall sense of preparedness for special education teachers entering the field. The use of autism specific coursework, guided by standards and efforts toward professionalization, may be

necessary to adequately prepare special educators to teach autistic students, but also to ensure educational equity and access to quality teachers for autistic students.

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## Appendix A: Survey

### Consent

Dear Education Colleague,

This is an invitation to participate in a research study titled, “Massachusetts Educators' Perceptions of Preparedness to Teach Autistic Students.” You were selected because you are a lead teacher who has worked with students with autism in a school setting. If you decide to participate and fully complete the survey, you will have an opportunity to enter a drawing to win one of four \$25 gift cards to Starbucks.

The purpose of this study is to measure the preparedness of Massachusetts educators to teach autistic students. I am administering an online survey to identify the preparation that you have had to teach, the training in autism that you have received; the extent to which you feel prepared based on your educational experiences; and your beliefs about autism and your knowledge of methods to teach autistic students. I am asking Massachusetts educators to participate by answering a series of questions about these four areas. If you choose, you may indicate your willingness to be contacted for a follow-up interview.

The study will be conducted through this online survey. This online survey, which constitutes research on teacher education, and is completely voluntary, is anonymous and should take approximately 15 minutes to complete. You may stop the survey at any time. If you choose not to participate, it will not affect your relations with Boston College. You are free to withdraw or skip questions for any reason. There are no penalties for withdrawing or skipping questions.

There are no direct benefits to you, but you may feel gratified knowing that you helped further scholarly work in this research area. You will not be compensated for the time you take to complete this survey. There are no costs to you associated with your participation. There are no known risks associated with participating in this study. However, there may be risks that are unknown at this time. No identifying data will be contained within the survey or the results. The researcher will exert all reasonable efforts to keep your responses and your identity confidential. All records will be maintained in a password-protected file, on a password-protected computer. Please note that regulatory agencies, the Boston College Institutional Review Board, and Boston College internal auditors may review research records.

The results of this study will be used for scholarly purposes only and may be shared with the researcher, Elizabeth Stringer Keefe, and her dissertation Chair, Dr. Marilyn Cochran-Smith.

If you have any questions about the research study, please contact Elizabeth Stringer Keefe at [elizabeth.keefe@bc.edu](mailto:elizabeth.keefe@bc.edu). This research is being supervised by Dr. Marilyn Cochran-Smith ([cochrans@bc.edu](mailto:cochrans@bc.edu) or 617.552.0674) and Dr. Patrick Proctor ([proctoch@bc.edu](mailto:proctoch@bc.edu) or 617.552.6466). This research has been reviewed according to Boston College Institutional Review Board (IRB) procedures for research involving human subjects. If you have questions



pertaining to this study, you may contact the Boston College Office for Research Protections at [irb@bc.edu](mailto:irb@bc.edu), or 617.552.4778.

If you decide to participate, click the box below indicating your understanding. I encourage you to print this page for your records.

*If you agree to the statements above and agree to participate in this study, please select "Consent Given" below.*

*Once you are ready to proceed, click the arrow button to proceed to the survey questions.*

### **Preparation/Training Experiences**

The following questions provide background information about you and educational experiences.

1. Please indicate the type of Massachusetts teaching license you currently hold. If you hold more than one license, please indicate your primary teaching area.
  1. I do not hold a Massachusetts license
  2. Moderate Disabilities PK-8
  3. Moderate Disabilities 5-12
  4. Severe Disabilities (all levels)
  5. Early Childhood PK-2
  6. Elementary 1-6
  7. Middle school/content area
  8. High school/content area
  
2. In what type of program did you receive your primary teaching license?
  1. Bachelor's degree program
  2. "5th year" (BA +1, post-baccalaureate)
  3. Post-baccalaureate license-only program
  4. Master's degree program
  5. Alternative certification program (Teach for America, etc.).
  6. State alternative route: transcript review or Department of Education program
  7. Reciprocity (license from another state)
  8. Other
  
3. I hold the following *additional* teaching licenses to teach in Massachusetts. Please do not include the license you just selected.
  1. I do not hold any additional license(s).
  2. Moderate PK-8
  3. Moderate 5-12
  4. Severe Disabilities (all levels)

5. Early Childhood PK-2
  6. Elementary 1-6
  7. Middle School Content area
  8. High School content area
  9. Other
4. What coursework related to autism did you take during the program where you received your primary teaching license?
1. do not have a teaching license
  2. no courses
  3. no courses specific to autism, but courses which included modules or content dedicated to autism
  4. a single course focused on autism (1)
  5. more than one course focused on autism (2-3)
  6. a series of courses designated as a specialization or concentration in autism (4+)
5. Please list other autism training you have had, including certifications such as BCBA or Floortime, professional development, seminars or workshops, conferences or additional coursework outside of a licensure program. Please be as specific as possible, and for each experience please indicate the number of years.
6. Please list any mentoring experiences in autism you have had, such as with an administrator, specialist (SLP, OT, etc.), consultant, professor, veteran teacher, etc. For each experience, please indicate the number of years.
7. Did you have experience teaching students with autism BEFORE your licensure program? If yes, please explain and indicate the number of years. If no, write 0.

### **Preparedness**

8. Overall, how prepared to teach autistic students did you feel when you **first** started teaching autistic students?
1. Not at all prepared
  2. Poorly prepared

- 3. Adequately prepared
- 4. Well prepared

9. Overall, how prepared to teach autistic students do you feel **now** to teach autistic students?

- 1. Not at all prepared
- 2. Poorly prepared
- 3. Adequately prepared
- 4. Well prepared

**10. When I first started teaching autistic students, I:**

	1. Strongly Disagree	2. Disagree	3. Agree	4. Strongly Agree
felt prepared to teach subject matter concepts, knowledge and skills in ways that enable autistic students to learn.				
understood how autistic students are different from one another and how they learn.				
felt prepared to support <u>all</u> autistic students [non-verbal to highly verbal] to achieve high academic standards.				
felt prepared to evaluate curriculum materials for their usefulness and appropriateness for autistic students.				
felt prepared to identify the appropriate educational support				

or intervention and match it to an autistic student's curricular need.				
felt prepared to consult, plan and solve problems with colleagues in support of students with autism.				
felt confident working with parents/families of autistic students.				
understood that neurodevelopmental and biological factors influence the learning of autistic students.				
felt prepared to support autistic students in general education settings.				
felt if I had received more autism training before working with autistic students, I would be a more effective teacher.				
felt prepared to teach students with autism.				

**Beliefs**

11. The following questions pertain to your views about autism. Please rate the degree to which you agree or disagree with the following statements.

Autistic students:

	1. Strongly Disagree	2. Disagree	3. Agree	4. Strongly Agree
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have different educational needs than other special education students.				
should be educated alongside their typically developing peers.				
don't often have friendships like their typically developing peers.				
require resources not typically used with other special education students.				
can be successfully independently employed.				
can attend college.				
vary in their presentation, making it difficult to teach autistic students the same way.				
can have successful romantic relationships.				
should not participate in general education unless their behavior warrants it.				

require a variety of approaches to help them learn.				
who are non-verbal can successfully participate in general education.				
require a variety of approaches to help them learn.				
won't usually have romantic relationships.				
will not likely attend college.				
can succeed academically regardless of their perceived level of functioning.				
can have authentic friendships with typically developing peers.				
require a teacher with specialized knowledge to be successful				

**12. Please indicate the degree to which you agree or disagree with the following statements.**

13. Please select the answer that best matches.

I know the recommended evidenced based and emerging practices for				
---	--	--	--	--

students with autism.				
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**Knowledge**

**14. The following statements pertain to educational supports, practices and interventions.**

Using the following scale, please rate your knowledge and use of the practices below.

- |                        |                                     |
|------------------------|-------------------------------------|
| 1 – no knowledge       | 1- never use                        |
| 2 – limited knowledge  | 2 – rarely use                      |
| 3 – adequate knowledge | 3 – use often                       |
| 4 - vast knowledge     | 4 – disagree with/choose not to use |

	Knowledge				Use			
	1	2	3	4	1	2	3	4
Antecedent Based Interventions								
Computer-Aided Instruction								
Differential Reinforcement								
Discrete Trial Training								
Extinction								
Functional Behavior Assessment								
Functional Communication Training								
Joint Attention Training								
Naturalistic Intervention								
Peer Mediated Intervention								
Picture Exchange Communication System (PECS)								
Pivotal Response Training								
Prompting								
Reinforcement								
Response Interruption/Redirection								
Self-Management								
Social Narratives								

Social Skills Training Groups								
Speech Generating Devices								
Structured Work Systems								
Task Analysis								
Time Delay								
Video Modeling								

15. The next questions refer to the foundational knowledge you have about autism in learner development.

- 1 – no knowledge
- 2 – limited knowledge
- 3 – adequate knowledge
- 4 - vast knowledge

	1	2	3	4
Medical aspects and implications for learning for autistic students				
Core and associated characteristics of autistic students				
Co-existing conditions and ranges that exist at a higher rate than in the general population				
Sensory challenges of autistic students				
Speech, language, and communication of autistic students				
Adaptive behavior needs of autistic students				
Impact of theory of mind, central coherence, and executive function on learning and behavior				



Impact of neurological differences on learning and behavior				
Impact of self-regulation on learning and behavior				
Evidence-based career/vocational transition programs for autistic students				
Specialized curriculum designed to meet the needs of autistic students				
Definitions and issues related to the identification of autistic students				
Continuum of placement and services available for autistic students				
Historical foundations and classic studies of autism				
Trends and practices in the field of autism				
Theories of behavior problems of autistic students				
Perspectives held by autistic individuals				

16. The next questions refer to the foundational knowledge you have **in the area of instruction for autistic students.**

	1	2	3	4
Planning instruction for independent functional life skills and adaptive behavior				

Planning and implementing instruction and related services for autistic students that is both age-appropriate and ability-appropriate				
Planning systematic instruction based on learner characteristics, interests, and ongoing assessment				
Matching levels of support to changing needs of the student				
Using instructional strategies that fall on a continuum of child-directed to adult-directed in natural and structured context				
Transferring, lifting and positioning techniques				
Structuring physical environment to provide optimal learning for autistic students				

**17. Consider the extent you know about/feel prepared in the areas of communication and social development for autistic students.**

	1	2	3	4
Using specialized instruction to enhance social participation across environments				
Providing pragmatic language instruction that facilitates social skills				
Providing autistic students strategies to				

avoid and repair miscommunications				
Implementing instructional programs that promote effective communication skills using verbal and augmentative/alternative communication systems for autistic students				
Providing specialized instruction for spoken language, reading and writing for autistic students				
Providing instruction in self-regulation				
Utilizing student strengths to reinforce and maintain social skills				

18. The next questions refer to the foundational knowledge you have **in the area of behavior for autistic students**.

	1	2	3	4
Consistently use of proactive strategies and positive behavioral supports				
Providing instruction in self-regulation				
Develop strategies for monitoring and analyzing challenging behavior and its communicative intent				
Conduct functional behavior assessments that lead to development of behavior support plans				

19. The next questions refer to the foundational knowledge you have **in the following areas of assessment for autistic students.**

	1	2	3	4
Specialized terminology used in the assessment of autistic students				
Assessments of environmental conditions that promote maximum performance of autistic students				
Components of assessment for the core areas for autistic students				
Individual strengths, skills and learning styles of autistic students				
Select, adapt and use assessment tools and methods to accommodate the abilities and needs of autistic students				

20. The next questions refer to the foundational knowledge you have **in the area of transition planning for autistic students.**

	1	2	3	4
Planning instruction for independent functional life skills and adaptive behavior				
Evidence-based career/vocational transition programs for autistic students				
Involving autistic students in the transition planning process				
Transition needs including linkages to				

supports and agencies focusing on life long needs				
Providing instruction in community-based settings				
Concepts of self determination, self-advocacy, community and family support and impact in the lives of autistic students				
Collaborate with team members to plan transition to adulthood that encourages full community participation				

21. In your own words, please define “evidence-based.”

Teacher Characteristics (Demographics)

22. What is the overall number of years you have been teaching?

1. 0-1 year
2. 2-4 years
3. 5-10 years
4. 10-14 years
5. 15-20
6. 21+

23. How many years have you taught students with autism?

1. 0-1 year
2. 2-4 years
3. 5-10 years
4. 10-14
5. 15-20
6. 21+

24. What age/grade level do you primarily teach now?

1. Early Intervention (birth-3 years)
2. Preschool (approx 3-5 years)
3. Elementary (K- grade 5). please indicate (K-2), (gr. 3-5) or All (K-5)

4. Middle School (grades 6-8)
5. High School (grades 9-12)
6. High School Transition (approx. ages 18-22)
7. Adult program
8. Other \_\_\_\_\_

25. What other age/grade levels have you taught in the past? Select all that apply.

1. Early Intervention
2. Preschool
3. Elementary (K-5)
4. Middle School
5. High School
6. High School Transition
7. Adult program

26. Highest degree earned:

1. Bachelor
2. Master
3. CAGS (advanced graduate study)
4. Terminal degree (EdD or PhD)

27. If you hold a license, what type?

1. I do not currently hold a license.
2. preliminary license
3. initial license
4. professional license
5. temporary (one year waiver or reciprocity)

28. What is your gender identity?

1. Male
2. Female
3. Other

29. What is your age?

1. 21-25
2. 26-30
3. 31-35
4. 36-40
5. 41-45
6. 46-50
7. 51-55
8. 56-60
9. 60+

30. What is your race/ethnicity?

1. African American/Black
2. Native American Indian/Alaskan Native
3. Asian/Asian American
4. Pacific Islander
5. Hispanic/Latino
6. White
7. Two or more

31. Do you, or does anyone in your family, or immediate circle, have a disability? Please select all that apply.

1. I have a disability
2. A family member has a disability
3. Someone in my immediate circle has a disability
4. None of these apply

32. I am willing to be contacted for a follow up interview, and my email address is: