KNOWLEDGE AND TRAINING IN AUTISM SPECTRUM DISORDERS AMONG SPECIAL EDUCATION ADMINISTRATORS

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A significant rise in the number of students with autism spectrum disorders (ASD) served in today’s schools requires special education administrators to possess knowledge in this area. The purpose of this study was to determine the general knowledge of special education administrators concerning ASD and knowledge of educational programming, to explore their educational training and professional development experiences in ASD, to identify the training needs of special education administrators in ASD, and to determine if knowledge, training and experience in ASD predict litigation. Using survey methods, data were collected from a sample of 106 special education administrators in Texas. Data revealed special education administrators were most knowledgeable of general characteristics, common myths, and instructional strategies, and less knowledgeable of eligibility criteria. Knowledge regarding educational programming for learners with ASD produced mixed results. Logistic regression analysis revealed general autism knowledge, knowledge of educational programming, training, and experience in ASD were not factors predicting litigation. Although results indicated none of the factors explored in this study were predictors of litigation, areas of need regarding professional development were identified. Implications for future research are also discussed.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>KNOWLEDGE AND TRAINING IN AUTISM SPECTRUM DISORDERS AMONG SPECIAL EDUCATION ADMINISTRATORS</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Methods</td>
<td>6</td>
</tr>
<tr>
<td>Results</td>
<td>11</td>
</tr>
<tr>
<td>Discussion</td>
<td>18</td>
</tr>
<tr>
<td>References</td>
<td>34</td>
</tr>
</tbody>
</table>

**Appendices**

A. EXTENDED LITERATURE REVIEW                                           | 39   |
B. DETAILED METHODOLOGY                                                 | 63   |
C. COMPLETE RESULTS                                                      | 71   |
D. EXTENDED DISCUSSION                                                   | 83   |
E. OTHER ADDITIONAL MATERIALS                                            | 91   |

COMPREHENSIVE REFERENCE LIST                                            | 99   |
# LIST OF TABLES

<table>
<thead>
<tr>
<th></th>
<th>Table Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Results of True/False Questions Regarding General Autism Knowledge</td>
<td>27</td>
</tr>
<tr>
<td>2.</td>
<td>Results of Multiple-Choice Questions Regarding Knowledge of Educational</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Programming</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>District and Respondent Background Information</td>
<td>29</td>
</tr>
<tr>
<td>4.</td>
<td>Preparedness to Address Topics From Special Education Administrator Training</td>
<td>30</td>
</tr>
<tr>
<td>5.</td>
<td>Special Education Administrators’ Perceived Professional Development Needs</td>
<td>31</td>
</tr>
<tr>
<td>6.</td>
<td>Dichotomous Coding of Predictor Variables for Use in Binary Logistic Regression</td>
<td>32</td>
</tr>
<tr>
<td>7.</td>
<td>Litigation: Binary logistic regression results</td>
<td>33</td>
</tr>
<tr>
<td>8.</td>
<td>Analysis by Litigation Type: Binary Logistic Regression Results</td>
<td>34</td>
</tr>
</tbody>
</table>
KNOWLEDGE AND TRAINING IN AUTISM SPECTRUM DISORDERS
AMONG SPECIAL EDUCATION ADMINISTRATORS

Introduction

Effective leadership of special education administrators assumes a constellation of competencies developed through practice and refined over time. At a time of high accountability standards and increased emphasis on access to the general curriculum for students with disabilities under the Individuals with Disabilities Education Improvement Act (IDEIA, U.S.C. § 1400 et seq., 2004), the issues facing school leaders today are exceedingly complex. Success in addressing complex issues requires educational leaders to possess specific personal and technical competencies. Personal competencies or “skills” are essential for meeting the social demands of leadership, while technical competencies or “knowledge” are critical for building organizational capacity in response to change.

To prepare educational leaders, Goodlad (1996) called for the development of stewards to cultivate democracy and foster pedagogy while engaging in active learning in schools. Valesky, Greene, and Isaacs (1997) supported this combination of theory and practice, suggesting that administrative competencies are developed through coursework and field experiences with students receiving special education services. Another approach for preparing special education administrators involves embedding administrative training within the framework of special education instruction (Lovitt, 1993). Preparation of leaders within the field of special education as a conceptual framework builds understanding of students with disabilities and promotes understanding of legally correct and evidence-based instructional opportunities that provide meaningful, educational benefit (Crockett, 2002).
Leaders and ASD

Though preparation of leaders to implement the provisions of a free, appropriate education for learners with ASD requires competency in leadership, there is also a need for particular areas of knowledge. Once such area is autism spectrum disorders (ASD). Autism spectrum disorders (ASD) represent a neurobiological condition characterized by complex and pervasive manifestations affecting communication, socialization, and adaptive behaviors. The number of children identified with ASD has continued to rise at alarming rates over the past decade (Fombonne, 2005). According to national reports, the number of students with ASD served in schools has increased by more than 500 percent (United States Government Accountability Office, 2005). Data collected from the Office of Special Education Programs (OSEP), U. S. Department of Education reflect this increase from nearly 120,000 children with ASD reported in 2002, to 295,999 children in 2007 (Data Accountability Center, n.d.). Questions remain regarding the dramatic increase in prevalence rates. There is evidence to suggest the increase may be due in part to heightened awareness, refined diagnostic practices, development of standardized assessment tools, and environmental factors (Croen, Grether, Hoogstrate, & Selvin, 2002; Fombonne, 2001).

While there is no known cure for ASD, a body of research has emerged in recent history documenting the impact of these conditions on many aspects of the affected person’s life (Dempsey & Foreman, 2001; Heflin & Simpson, 1998; Hume, Bellini, & Pratt, 2005; National Autism Center (NAC), 2009; National Research Council (NRC), 2001). As such, there is growing urgency to identify evidence-based practices for improving outcomes by addressing needs across multiple domains (Dempsey & Foreman, 2001; Heflin & Simpson, 1998; Hume et al.,
As more children with autism spectrum disorders enter the public school system, a wide array of school personnel and related service providers must be adequately prepared with the knowledge and skills to meet the complex needs of learners with ASD, engineer components for effective instruction, and implement interventions with precision and fidelity. According to Simpson, McKee, Teeter, and Beytien (2007), “Indeed there is a general consensus that only by qualified professionals using effective methods in an approved fashion will optimal student outcomes be achieved” (p. 203). Although all stakeholders hold responsibility for achieving positive student outcomes, the special education administrators play a vital role in the public school setting.

The role of special education administrators (which may include directors, executive directors, coordinators), is to ensure appropriate instruction, plan for the provisions of special education and related services, and allocate resources (Thompson & O’Brien, 2007). Because the educational needs of learners with ASD are so complex, knowledge of autism within these contexts is essential for several reasons. First, special education administrators are responsible for ensuring students with disabilities receive a free, appropriate education designed to meet their individual needs. Second, administrators must have knowledge of student needs in order to allocate the resources necessary to realize positive outcomes. Finally, special education administrators must be able to represent district and student interests in issues involving litigation. School districts and parents frequently litigate what constitutes a free, appropriate public education (FAPE) for children with ASD. In fact, Zirkel (2002) reported due process hearings and cases involving students with ASD represent the most rapidly growing area of litigation in special education.
Litigation activity in Texas is reflective of this national trend. From 2005 to September 2010, school districts in 13 regions across the state were involved in 60 due process hearings (TEA, 2010). Of these cases, 27 were litigated on disputes surrounding educational programming, and 25 cases were litigated on issues of evaluation and eligibility. Other issues were related to staff training, parent training, compensatory services, and education in the least restrictive environment (TEA, 2010).

As more children with autism spectrum disorders are served in the public school system, special education administrators’ knowledge of ASD will impact what types of instruction, resources, and related services are made available for developing academic and functional skills. It therefore becomes necessary for special education administrators to have knowledge and training about autism to ensure a free and appropriate education for this expanding heterogeneous population. In addition, knowledge is a precursor for complex decision-making, such as those issues highlighted regarding ASD. Although several studies have examined the knowledge and training of ASD among professionals outside of the school environment (Heidgerken, Geffken, Modi, & Frakey, 2005; Schwartz & Drager, 2008; Stone, 1987), a literature search of electronic databases (ERIC, ESBSCO, PsychLit) failed to produce any studies that specifically investigated the knowledge of ASD among special education administrators.

Current research examining the preparation and professional development of special education administrators is limited to a few studies investigating national certification standards for special education administrators (e.g., Arick & Krug, 1993; Stile & Pettibone, 1980). In contrast, the body of research investigating educational programming for students with ASD continues to expand. Emerging themes have highlighted increased litigation involving
issues related to the educational programming for learners with ASD in the public schools (Etscheidt, 2003; Zirkel, 2002). Instructional methodology and provisions of FAPE are central to these disputes. Consequently, it is paramount for administrators of special education to retain a certain level of knowledge in the area of ASD in order to meet these challenges.

The results of this study highlight the knowledge of ASD among special education administrators and implications for educating learners with ASD. Themes emerged regarding the professional development needs in autism for administrators of special education programs. These findings also suggested training topics for other school leaders, such as campus-level administrators, charged with the oversight of services under IDEIA. Results of this study prompts further inquiry and extends research on administrator competencies for developing and evaluating research-based program components, not only for learners with ASD, but for all learners with disabilities, consistent with IDEIA.

Although no study can singularly address all of these issues, this study investigated special education administrators’ self-reported (a) general knowledge of autism characteristics, (b) knowledge of educational programming associated with autism, (c) training and professional development needs for serving students with autism, and (d) factors related to dispute and resolution activities involving ASD. Specifically, this study addressed the following research questions:

1. What general knowledge do special education administrators have concerning autism spectrum disorders, and what is their knowledge of educational programming?

2. What educational training and professional development experiences do special education administrators receive in autism spectrum disorders?
3. What are the training needs of special education administrators in autism spectrum disorders?

4. Do knowledge, training and experience in autism spectrum disorders predict dispute activities?

Methods

This study focused on knowledge and training in autism spectrum disorders among special education administrators and examined factors that may be predictors of litigation. Survey methods in the form of a questionnaire to collect data from a sample, utilizing web-based technology were employed. This method was utilized because a sampling of respondents across a large geographic area at a low cost was desired (Gall, Gall, & Borg, 2007, p. 228). The target population (N = 475) consisted of special education administrators in Texas who were presented with the survey of 54 carefully constructed items within five sections. The survey platform used for collecting and organizing the data was Qualtrics™ (Qualtrics, Inc., 2010).

Participants

Nonprobability sampling methods in the form of convenience sampling were utilized to recruit participants for this research. Respondents were special education administrators representing local education agencies across Texas. All respondents were current members of the Texas Council of Administrators of Special Education (TCASE) and were included in the 2010 TCASE Directory. Based upon the inclusion criterion of TCASE membership and current tenure as a special education administrator, the sample size for this cross section of the population was 475 subjects. Although there are approximately 1,289 school districts in Texas, not all districts have special education administrators. Some districts belong to shared services
arrangements (SSA). Within a SSA, multiple districts “share” or pool their resources, including special education oversight. The special education administrator representing the interests of all members of the SSA is usually appointed by the fiscal agent.

Institutional Review Board (IRB) approval. The procedures for protecting the rights and welfare of human subjects involved in the study received University of North Texas IRB approval (#09439).

Instrumentation

To investigate knowledge and training in autism spectrum disorders among special education administrators as predictors of disputes, an original 54-item survey adapted from Stone’s Autism Survey (1987) was developed (see Appendix E). The survey consisted of five sections. Section I, Demographic Information, asked participants about district enrollment, number of students meeting IDEIA eligibility for autism, and dispute and resolution activities. Section II, Professional Background and Training, sought to determine training experiences of participants, exposure to learners with autism spectrum disorders, and identified knowledge in key areas. Questions in this section were derived from competencies identified by the Council for Exceptional Children for special education administrators (Council for Exceptional Children, 2008). Section III, UnderstandingRegarding Autism, consisted of true/false questions designed to gain insight into the general knowledge special education administrators had regarding autism. This section targeted information concerning eligibility criteria, characteristics of individuals with autism, current myths regarding autism, instructional strategies, evidence-based practices, and false claims surrounding issues of autism. Items derived from the original Stone survey (1987) were revised to reflect current terminology and person-first language.
Some of these revisions were also extracted from a survey instrument developed by Ray and Mehta (2010) designed to measure knowledge of speech-language pathologists regarding autism.

Section IV, Knowledge of Educational Programming, investigated expertise related to the required educational considerations for learners with autism spectrum disorders. These considerations are mandated by Texas Commissioner of Education rules, (TAC 89.1055(e), Content of the IEP). Section V, Professional Development Needs, asked respondents to rate their individual needs for professional development on topics derived from CEC (2008) knowledge domains. Each topic was rated as ‘L’ if there is a “limited” or no need for information, ‘M’ if there is a “moderate” (some) need for information, or ‘S’ if there is a “significant” (great) need for information.

For the purpose of this study, “knowledge” regarding autism was measured by responses to items in Sections III and IV against a discrete set of criteria for which there was only one correct response. Items in Section III were based upon a general body of knowledge regarding autism that was previously validated in research (Campbell, Reichle, & Von Bourgondien, 1996; Heflin & Simpson, 1998; Simpson, 2005; Simpson et al., 2007; Stone, 1987). Ray and Mehta (2010) recently updated items in this section to improve reliability and validity. Items in Section IV were also measured against a discrete set of criteria with one correct response. Thirteen items in this section were presented in a multiple-choice format. These items were created directly from Texas State rules regarding specific program components that must be considered as part of the Individualized Education Program (IEP) for students with autism, as mandated by Texas Commissioner Rules (TAC 89.1055(e), Content of the IEP).
Items in Sections I and V reflected training topics derived from CEC competencies for special education administrators. Content validity was assumed as a result of the expertise of those who developed them. The CEC competencies were developed by experts in the field of special education throughout the nation. These competencies have been accepted by professional organizations and formally adopted by the Council for Exceptional Children, the largest international professional organization dedicated to improving educational outcomes for students with disabilities (CEC, 2008).

Data Collection Procedures

Prior to launching the survey to special education administrators, a pilot study was conducted. Each of the 20 Education Service Center Autism Consultants representing educational regions across the state, and a cadre of seven doctoral students affiliated with autism research at the University of North Texas were contacted via email. Participants in the pilot study were selected based upon their expertise in the field of autism. Pilot participants received an introductory letter requesting their participation in the pilot study with a direct link to the survey platform. Following completion of the survey, suggestions for improving the study were solicited through an open-ended response frame. Several suggestions for rewording of items were recommended and implemented.

The questionnaire was then launched to the target population to begin the study. Of the 475 participants identified, 433 email addresses were functional. Special education administrators received a direct email explaining the research. The email notification included an introductory statement and provided a direct link to the survey platform. Upon accessing the survey platform, respondents provided informed and voluntary consent for participation.
The survey took approximately 15 minutes to complete. After the three-week response window, the survey link was closed. Of the 139 participants who activated the link, 106 responses were recorded, representing a 24% response rate of the special education administrators surveyed (N = 106).

Data Analysis Procedures

Initial inspection of data for item responses was conducted within Qualtrics® as frequency data displayed as percentages. For in-depth analysis, raw data were then exported into a spreadsheet and coded. To examine factors related to litigation, raw data retrieved from the survey were analyzed utilizing logistic regression statistical methods. Logistic regression is appropriate for testing hypotheses about relationships between a dichotomous outcome variable, and one or more dichotomous predictor variables (Hosmer & Lemeshow, 2000; Peng, Lee, & Ingersoll, 2002). In this study, a four-predictor binary logistic model was fitted to the data to test the relationship between the likelihood special education administrators would be litigated against and their special education teaching experience, experience teaching learners with autism, general autism knowledge, and knowledge of educational programming.

The dependent or outcome variable was litigation. Litigation was defined as all dispute and resolution activities defined by the IDEIA procedural safeguards and included state agency complaints, mediation, resolutions meetings, and due process hearings. The independent, dichotomous predictor variables were professional background and training (Section II), understanding regarding autism (Section III), and knowledge of program components (Section IV). Professional development needs (Section V) were investigated through analysis of within group differences and similarities. District and respondent demographic data were
automatically coded as nominal data as part of logistic regression analysis.

Results

Of the 475 surveys distributed, 139 surveys were initiated and 106 responses were recorded. Represented in the sample were school districts and shared service arrangements with student populations of various sizes. All of the respondents indicated they served students identified with autism.

General Knowledge of Special Education Administrators

Results indicated that special education administrators varied in their general knowledge of ASD eligibility criteria, characteristics, myths, instructional strategies, evidence-based practices, and false claims surrounding issues of autism (Table 1). Although impairment in social interaction is a required feature for autism eligibility, 20% \((n = 21)\) of the participants did not agree. Similarly, stereotyped and repetitive behaviors are required for autism eligibility, yet 60% \((n = 64)\) of participants reported these diagnostic features were not necessary for meeting autism eligibility. Impairment of communication skills is another critical feature required for autism eligibility, and 20% \((n = 21)\) of respondents disagreed with this statement. In contrast, all of the participants understood that self-injurious behaviors were not required for autism eligibility.

Special education administrators appeared to possess greater knowledge regarding general characteristics, myths, instructional strategies and false claims surrounding issues of autism when compared to their knowledge of ASD eligibility criteria (Table 1). All of the participants agreed that some children with autism demonstrate uncoordinated gross and fine motor skills. None of the participants believed that children with autism are deliberately
negativistic and non-compliant. None of the participants believed that autism is caused by a non-nurturing style of parenting. Most of the participants disagreed that children with autism primarily tend to be auditory learners.

Knowledge of Educational Programming

Section IV of the survey investigated special education administrators’ knowledge of educational programming for learners with ASD (Table 2). Responses to the questions posed in this section revealed that most special education administrators knew that for a student with autism who is eligible for special education and related services, all eleven strategies should be included in the Individualized Education Program. Most special education administrators also knew that peer-reviewed, research-based practices for students with autism include Applied Behavior Analysis (ABA). In contrast, special education administrators appeared to have less knowledge that determining the need for Extended School Year (ESY) services for students with autism should be based upon student need, as reported by 63% \( (n = 67) \) of the respondents.

Educational Training and Professional Development Experiences

Demographic data including educational training and professional development experiences are summarized in Table 3. Three participants did not respond to all of the questions in this section, resulting in a sample size of 103 \( (N = 103) \). All of the participants held advanced training above a bachelor’s degree. The majority of special education administrators held a master’s degree \( (n = 79) \), and approximately one fourth of the participants held a doctoral degree \( (n = 24) \). Additional administrator certification was held by a majority of the participants. More than half of the participants held certification as an educational diagnostician, and 13% \( (n = 13) \) held licensure as a licensed specialist in school psychology.
Another 9% \((n = 9)\) were speech/language pathologists, one respondent was a board certified behavior analyst. Total years of experience as a special education administrator was fairly evenly distributed among the sample. The majority of the participants also reported special education teaching experience. Of those with special education teaching experience, 65\% \((n = 68)\) of the sample had taught students with autism.

Overall, participants reported that training as a special education administrator prepared them to address autism-related topics (Table 4). Most participants reported preparedness related to national and state education laws and regulations regarding autism, legal rights and responsibilities of individuals with exceptional learning needs, continuum of program options and services for children with autism, pre-referral and intervention processes and strategies for children with autism, adaptation and modification of curriculum for children with autism, services available to individuals with autism, strategies for identifying individuals with autism, evaluation of student success in the general education curriculum and theories and methodologies of teaching and learning for children with autism. Slightly more than half of the participants reported preparedness regarding evidence-based practices validated for children with autism, disputes involving learners with autism, and human rights of individuals with autism and their families.

Professional Development Needs

Special education administrators were asked to rate their individual need for professional development in ten areas related to educating learners with autism using a 3-point Likert scale (Table 5). Professional development for school staff serving learners with autism was the area for professional development perceived by administrators as the greatest need.
Increasing access to the general curriculum for learners with autism was another topic of perceived significant need. Topics for which professional development was perceived as less critical were, Assessing learners with autism and eligibility determination and Characteristics of autism. Moderate to significant needs were reported by at least one-third of the participants across all professional development topics.

Predictors of Litigation

Binary logistic regression was used to predict the outcome of the dichotomous variable litigation. In logistic regression, the model with the predictor variables is compared to a null or baseline model without the predictor variables and only a constant. The underlying principle is to determine whether one or more predictor variables would improve the null model (Hosmer & Lemeshow, 2000). The probability of an event will occur is 1, and 0 is the event not occurring. To gain a better understanding of factors that may predict litigation, the predictor variables special education teaching experience and experience teaching learners with autism were each coded dichotomously as (1) for experience and (0) for no experience. The predictor variables, general autism knowledge and knowledge of educational programming were entered as continuous variables. The dependent variable of litigation and no litigation activity was also coded dichotomously. Independent variables were special education teaching experience, experience teaching learners with autism, general autism knowledge, and knowledge of educational programming. The higher the predicted value or conditional mean of the independent variables, the more likely special education administrators would be litigated against.
None of the special education administrator variables were statistically significant at \( p < .05 \). The model chi-square test score of 5.562, degrees of freedom (\( df \)) = 5, \( p = .351 \) (\( p < .05 \)) indicated that the special education administrator variables were not significant to the model. The \( p \) values of the predictor variables are shown in Table 7. The predictor variables teaching experience, teaching learners with autism, general autism knowledge, and knowledge of educational programming were entered in the same block using the Enter method in binary logistic regression. A classification cut-off of .50 was used. Although none of the predictor variables were statistically significant, findings of each variable are discussed based on the odds ratio, which is a measure of the effect size.

**Teaching.** Special education teaching experience was not statistically significant at \( p = .689 \) (\( p < .05 \)). The \( \text{Exp}(B) \) 1.181 indicated a positive relationship between special education administrators with special education teaching experience compared to special education administrators with no special education teaching experience and being litigated against. The logit of .166 indicated that when special education teaching experience changed from 0 to 1 and all other independent variables were held constant, the log odds of special education administrators being litigated against increased by about .17. The odds of litigation were about 18% higher for administrators with special education teaching experience than for those without special education teaching experience. The odds ratio of litigation and special education teaching experience to no teaching experience equaled 1.181, or about 1.18 administrators with special education teaching experience per 100 administrators without teaching experience. However, the 95% confidence interval .523 to 2.663 included the probability of litigation (1), which indicated that special education teaching experience was not
a useful predictor. Therefore, based upon the interval with 95% confidence, a unit change in special education teaching experience in the population may not be associated with a change in the odds of being litigated against.

**Autism.** Teaching learners with autism was not statistically significant at $p = .356$ ($p < .05$). The $\text{Exp}(B)$ 1.492 in autism indicated that there was a positive relationship between special education administrators who have taught learners with autism compared to those who have not taught learners with autism and litigation. The logit of .400 indicated that when autism teaching changed from 0 to 1 and all other independent variables were held constant, the log odds of being litigated against were about 1.492 or 49%. The odds ratio of litigation against administrators with autism teaching to litigation against administrators without autism teaching equaled 1.492, or about 149 administrators with autism teaching per 100 administrators without autism teaching. However, the 95% confidence interval .638 to 3.493 included the probability of litigation (1), which indicated that teaching learners with autism was not a useful predictor. Based on the interval with 95% confidence, a unit-change in autism teaching in the population may not be associated with a change in the odds of being litigated against for special education administrators.

**General knowledge.** General autism knowledge was not statistically significant at $p = .653$ ($p < .05$). The $\text{Exp}(B)$ .781 in general knowledge indicated a negative relationship between general autism knowledge and litigation. The logit of -2.47 indicated that when the general knowledge changed from 0 to 1 and all other independent variables were held constant, the log odds of special education administrators being litigated against decreased by .25. For general knowledge the odds of being litigated against were (.781-1) x 100, or 22% lower for special
education administrators with general knowledge of autism than for those administrators without this knowledge. The odds ratio of litigation against those with general knowledge and those without equaled .781, or about 78 with general knowledge per 100 without general knowledge. However, the probability of litigation was within the range of the 95% confidence interval .267 to 2.290, indicating that general knowledge of autism in the population may not be associated with a change in the odds of being litigated against among special education administrators.

*Programming knowledge.* Programming knowledge was not statistically significant at \( p = .102 \) \( p < .05 \). The \( \text{Exp}(B) \) 6.883 in general knowledge indicated that there was a positive relationship between programming knowledge compared to lack of programming knowledge and litigation. The logit of 1.929 indicated that when programming knowledge changed from 0 to 1 and all other independent variables were held constant, the log odds of litigation increased by about 1.93. The odds of litigation were about 588% higher for those with programming knowledge than those without such knowledge. The odds ratio of litigation among those with programming knowledge to those without programming knowledge equaled 6.883, or about 688 with programming knowledge per 100 without programming knowledge. However, the probability of litigation was within the range of 95% confidence interval .683 to 69.362, indicating that programming knowledge was not a useful predictor. Based upon the interval with 95% confidence, a unit-change in programming knowledge in the population may not be associated with a change in the odds of being litigated against as a special education administrator.
Types of litigation. Further analysis was conducted between the different types of dispute avenues included in litigation and the independent variables. Complaints, mediation, resolution, and hearings, when run separately, did not result in statistically significant outcomes.

Discussion

The purpose of this study was to investigate general autism knowledge, autism programming knowledge, and training and experiences of special education administrators, and to determine if any of these factors predicted litigation. This section discusses the interpretations of these findings in relation to the specific research questions: (1) What general knowledge do special education administrators have concerning autism spectrum disorders, and what is their knowledge of program components; (2) What educational training and professional development experiences do special education administrators receive in autism spectrum disorders; (3) What are the training needs of special education administrators in autism spectrum disorders; and (4) Do training and experience in autism spectrum disorders predict dispute and resolution activities? This section also addresses the extent to which findings can impact current practices and autism litigation and includes recommendations for future research.

Contributions of the Study to the Current Literature

Previous studies investigating preparation and professional development of special education administrators are limited to but a few (Arick & Krug, 1993; Crockett, Becker, & Quinn, 2009; Stile & Pettibone, 1980). Researchers have also explored knowledge and training in autism among professional groups other than special education administrators (Chown,
This study was conducted to fill the gap in existing research specifically examining knowledge and training in ASD among special education administrators. The results have highlighted themes regarding knowledge and training and have examined factors related to autism litigation. The following discussion addresses the knowledge and training in ASD among special education administrators.

**General Knowledge in ASD**

The first objective of this study was to examine general ASD knowledge among special education administrators and knowledge of educational programming. Administrators must ensure appropriate instruction, plan for the provision of services, and allocate the resources necessary to deliver a FAPE (Thompson & O’Brian, 2007). Because the educational needs of learners with autism are complex, knowledge in these domains is relevant for informed decision-making to occur (NAC, 2009; NRC, 2001, Simpson, 2005; Volkmar, Lord, Bailey, Schultz, & Klin, 2004).

**General autism knowledge.** As illustrated by the results, special education administrators were most knowledgeable regarding the general characteristics of autism. Some participants continued to endorse current myths regarding autism such as, “Most children with autism have an intellectual disability.” This is relevant because misperceptions of this nature could limit learner access to the general curriculum. Special education administrators demonstrated the greatest variability on questions related to autism eligibility. These results are consistent with prior research that ambiguity and diagnostic uncertainty exist regarding autism eligibility (Fombonne, 2001; Tidmarsh & Volkmar, 2003). One could surmise that
administrators should have knowledge of eligibility criteria for autism, given the propensity for litigation (Etscheidt, 2003; Zirkel, 2002). A possible explanation is that special education administrators are not directly involved in the assessment process, and therefore possess more general than explicit knowledge.

Even though more than half of the participants in this survey were also educational diagnosticians or licensed specialists in school psychology, formal training programs for these specializations do not require coursework specific to autism assessment or eligibility. Training and experience in ASD assessment is a separate pursuit rather than a standard component of formal certification and licensure in Texas.

Knowledge of educational programming. Questions investigating knowledge in this domain were relevant because issues related to autism programming represent the largest and most expensive area of litigation (Etscheidt, 2003; Yell, Katsiyannis, Ryan & McDuffie, 2008; Zirkel, 2002; Zirkel & Gischlar, 2006). Results in this area indicated that in general, special education administrators are knowledgeable regarding most of the strategies that must be considered as part of the IEP (TAC 89.1055(e), Content of the IEP). Few participants demonstrated knowledge for all of the strategies inclusively. Less knowledge was demonstrated on items related to communication strategies, the “gold standard” for research-based practices, and understanding of considerations for extended educational programming. Results may suggest continued research-to-practice gaps, and highlight the need for continued efforts to address this challenge.
Training and Experience

The second objective of this research was to investigate the education, training and professional development experiences of special education administrators in ASD. Although literature suggests that knowledge impacts decision-making (Eisenhardt & Zaracki, 1992; Nutt, 1998; Simon, 1944, 1997; Simon & Newell, 1958; Sutcliffe & McNamara, 2001), little research exists on the professional development of special education administrators (Arick & Krug, 1993; Crockett et al., 2009; Stile & Pettibone, 1980). No other studies have examined special education administrator training and experience specific to ASD. Results of this study revealed that all of the participants held a master’s degree or higher and more than half held additional certifications. The majority of the participants had special education teaching experiences that included teaching learners with autism. This sample is highly educated when compared to the general population. In fact, the level of formal education combined with special education teaching and autism experience of the participants may be factors separating individuals who activated the survey versus individuals who did not.

As previously illustrated, special education administrators reported the least amount of training and preparedness on topics related to disputes involving learners with autism, evidence-based practices for children with autism, and human rights of individuals with autism and their families. These results confirm trends identified in the literature regarding the need for knowledge in ASD (Iovannone et al., 2003; NAC, 2009; Simpson, 2005). Responses also indicate that although special education administrators report knowledge and preparedness in state and national laws and regulations, legal knowledge alone does not prepare leaders to navigate the complexities of disputes involving ASD.
Training Needs

The third objective of this research was to identify the training needs in ASD as reported by special education administrators. Professional development topics derived from CEC knowledge domains were the basis for these topics (CEC, 2008). Special education administrators perceived the most significant professional developments needs related to Best practices for learners with autism, followed by Educational programming for learners with autism. Other areas of need were Increasing access to the general curriculum for learners with autism, and Professional development for school staff serving learners with autism. These results are consistent with current research identifying professional development needs in ASD (NAC, 2009; NRC, 2001; Simpson, 2005).

Factors Predicting Litigation

The fourth and final objective of this research was to explore whether or not training and experience in ASD predicted dispute and resolution activities. Investigation of this question did not reveal statistically significant results for any of the factors identified for inquiry. Special education teaching experience, teaching learners with autism, general autism knowledge, and knowledge of educational programming did not predict or increase the odds of litigation. A positive relationship was found between special education teaching experience, teaching learners with autism, and knowledge of educational programming. This relationship, although not statistically significant, may suggest that individuals working directly in autism-related areas are at increased risk for experiencing disputes. Increased risk may be a logical consequence of the high rate of litigation in ASD reported in the literature (Zirkel, 2002; Zirkel & Gischlar, 2006).
Further inspection of the data was conducted to determine if the type of litigation activity was significantly impacted by general autism knowledge or knowledge of educational programming. When analyzed separately, neither of these factors resulted in statistically significant findings and did not increase the odds for predicting the likelihood of litigation occurring for complaints, mediation, resolution, or hearings to occur when analyzed separately.

**Implications for Practice**

The findings of this study can be utilized to support activities in several areas. First, there is a need to examine the professional development needs identified by special education administrators related to ASD. Although recent research has explored training experiences of special education directors (Crockett et al., 2009), topic-specific training tailored to meet administrator needs is lacking. Engineering professional development experiences to meet the perceived needs of the special education administrator may increase capacity for decision-making and potentially reduce the research-to practice-gap that currently exists, such as knowledge and implementation of research-based interventions. Current literature has focused on the training needs of school personnel other than special education administrators (NAC, 2009; NRC, 2001; Simpson, 2005).

Several avenues exist for disseminating special education administrator professional development needs. Education service centers for each region have designated autism consultants and special education administrators and could use these data to design training that is relevant and widely accessible. Review of these findings by the Texas Education Agency State lead for autism to inform policy and statewide practices would also be valuable. TCASE,
the leading authority for the professional development in special education, could use findings from this research to design training for many school leaders.

Second, special education administrators experience disputes related to ASD for many reasons. Although none of the factors examined in this study were predictors of litigation, it is necessary to further examine possible predictors. It is also relevant to explore alternatives to disputes. Proactive interventions to reverse the present trends in autism litigation could save money, school resources, and relationships (Estcheidt, 2003; Zirkel, 2002; Zirkel & Gischlar, 2006). For example, the development of professionals to serve as impartial mediators (other than state-appointed) and IEP meeting facilitators may be one solution. Building the capacity of key stakeholders at the local level to resolve disputes would certainly be a more desirable outcome than litigation. Therefore, it may timely for state education agencies to restructure current dispute resolution avenues by requiring more diligent efforts at the local level before complaints and requests for hearings can be filed. The current system does not mandate exhaustion of remedies at the lowest level of disagreement, which may be one factor perpetuating the litigation trend.

Limitations of the Study

Several limitations exist within the design of the current study and must be considered when interpreting these results. The most significant limitation of the study was the use of convenience sampling to recruit participants. Convenience sampling was utilized because of the availability of the sample. This sampling technique was useful for the purpose of obtaining general information and for examining particular qualities of the participants consistent with the research questions (Castillo, 2009).
Sampling by this technique, however, may result in sampling bias because some members of the population have no chance of being sampled. Consequently, the extent to which the convenience sample actually represents the entire population cannot be known. In fact, respondents completing the survey all held advanced degrees and reported extensive special education training. Such a high level of formal training may not be a true representation of all school leaders. Additionally, level of training may be a characteristic that affects participation in survey research. It is possible that individuals with extensive training are more willing to demonstrate perceived knowledge than those with less training and experience.

In spite of the small sample size, diversity was evident. Specifically, all 20 regions across the State of Texas were represented. Demographic data also captured districts and shared service arrangements with varied student population size. A review of data did not suggest litigation trends specific to region of the state or size of the student population.

This study only surveyed special education administrators in Texas. Credentialing and training avenues in one state may not be comparable to others so generalization of findings to states or regions outside of Texas is limited. It is also important to recognize that self-reported data on dispute activity may be biased. Finally, several studies have examined ASD knowledge among professionals however, knowledge of ASD as not been quantified.

Recommendations for Future Research

- Extending this line of research to include participants across the region and country would provide a broader view of professional development needs specific to special education administrators and ASD.
• As suggested in the literature and supported by this study, there continues to be a research-to-practice gap regarding knowledge of research-based interventions for learners with autism and implementation in the school environment. The development of effective models for reducing this trend is necessary.

• Although none of the factors investigated in this study predicted disputes in ASD, other factors are worthy of investigation since ASD represents the most litigated area of IDEIA.

• Because working with learners with ASD poses a greater likelihood of being involved in disputes, future research on professional development focusing on mediation and conflict resolution is needed.

• Future research to refine the survey instrument for cross-disciplinary use would increase its utility for exploring autism knowledge and training needs among professionals across settings.

• Another area for further inquiry would be investigating the professional development preferences of special education administrators on perceived topics of need by exploring various training avenues, such as webinars, on-line courses, distance learning, web-based modules, and on-site training.
Table 1

*Results of True/False Questions Regarding General Autism Knowledge, N = 106*

<table>
<thead>
<tr>
<th>Survey statement</th>
<th>% True</th>
<th>% False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children must exhibit impaired social interaction to meet eligibility for autism.</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>To receive a diagnosis of autism, children must exhibit self-injurious behaviors.</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>To receive a diagnosis of autism, children must exhibit behaviors and interests that are repetitive and stereotypical.</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>To receive a diagnosis of autism, children must exhibit impaired communication skills.</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>Some children with autism do not seem to experience pain the same as children without autism.</td>
<td>89</td>
<td>11</td>
</tr>
<tr>
<td>More boys than girls are identified with autism.</td>
<td>96</td>
<td>4</td>
</tr>
<tr>
<td>Some children with autism demonstrate uncoordinated gross and fine motor skills.</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>The bulk of scientific evidence supports a causal relation between childhood vaccinations and autism.</td>
<td>9</td>
<td>91</td>
</tr>
<tr>
<td>Children with autism primarily tend to be auditory learners.</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>Autism is caused by a non-nurturing style of parenting.</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Autism is a developmental disorder.</td>
<td>71</td>
<td>29</td>
</tr>
<tr>
<td>Children with autism are deliberately negativistic and non-compliant.</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Children with autism do not show emotional attachment even toward their parents.</td>
<td>18</td>
<td>82</td>
</tr>
<tr>
<td>Most children with autism do not have spoken language.</td>
<td>12</td>
<td>88</td>
</tr>
<tr>
<td>Most children with autism have an intellectual disability.</td>
<td>36</td>
<td>64</td>
</tr>
<tr>
<td>Some children with autism have intense areas of interest.</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Typically, individuals with autism process information in a non-literal manner.</td>
<td>28</td>
<td>72</td>
</tr>
<tr>
<td>Even with early intervention, the prognosis for independent community functioning of children with autism is poor.</td>
<td>14</td>
<td>86</td>
</tr>
<tr>
<td>Echolalia is a speech pattern less common in children with autism when compared to children with Down Syndrome.</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>Visual schedules for students with autism help them predict and follow the events or routines of the day.</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Children with autism never make eye contact with others.</td>
<td>3</td>
<td>97</td>
</tr>
<tr>
<td>Autism occurs more commonly among higher socioeconomic and educational levels.</td>
<td>19</td>
<td>81</td>
</tr>
<tr>
<td>Children with autism are more intelligent than scores from standardized tests indicate.</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>Many individuals with high functioning autism want friends but have difficulty reciprocating the relationship.</td>
<td>97</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 2

Results of Multiple-Choice Questions Regarding Knowledge of Educational Programming, N = 106

<table>
<thead>
<tr>
<th>Survey statement (Answer)</th>
<th>% Correct</th>
<th>% Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>For a student with autism who is eligible for special education and related services, how many strategies should be included in the Individualized Education Program? (All eleven strategies must be considered and included as determined by the IEP team)</td>
<td>54</td>
<td>46</td>
</tr>
<tr>
<td>Peer-reviewed, research-based practices for students with autism include: (Applied Behavior Analysis)</td>
<td>51</td>
<td>49</td>
</tr>
<tr>
<td>The rigor of research considered the “gold standard” when determining interventions for students with autism would be (Scientifically-based practices)</td>
<td>57</td>
<td>43</td>
</tr>
<tr>
<td>Determining the need for Extended School Year (ESY) services for students with autism is based upon (Student need)</td>
<td>37</td>
<td>63</td>
</tr>
<tr>
<td>The purpose of “daily schedules reflecting minimal unstructured time” for students with autism is (To provide important information to the student and those who work with the student)</td>
<td>49</td>
<td>51</td>
</tr>
<tr>
<td>The purpose of in-home and community-based training for students with autism is to (Both a and b)</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Positive behavior support strategies for students with autism include (Antecedent manipulation, replacement behaviors, reinforcement strategies, and data-based decisions)</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>The term “futures planning” for students with autism refers to (Transition services, which generally begin by age 16, but may begin at an earlier age on an individual basis as determined by the ARD committee)</td>
<td>58</td>
<td>42</td>
</tr>
<tr>
<td>Parent/family training and support for students with autism must be provided by (Qualified personnel with experience in ASD)</td>
<td>62</td>
<td>38</td>
</tr>
<tr>
<td>When determining the staff-to-student ratio for student with autism, the committee should consider (The setting, student’s communication abilities, and present levels of competence in the area of instruction)</td>
<td>48</td>
<td>52</td>
</tr>
<tr>
<td>Communication strategies teachers should consider for students with autism include (Augmentative, incidental, and naturalistic communication interventions)</td>
<td>26</td>
<td>74</td>
</tr>
<tr>
<td>Examples of social skills supports and strategies based on social skills assessment/curriculum for students with autism include (All of the above)</td>
<td>59</td>
<td>41</td>
</tr>
<tr>
<td>The purpose of professional educator/staff support for students with autism is to (Assure the correct implementation of technique and strategies in the IEP)</td>
<td>60</td>
<td>40</td>
</tr>
</tbody>
</table>
Table 3

*District and Respondent Background Information, N = 103*

<table>
<thead>
<tr>
<th>District enrollment</th>
<th>Number</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>&lt; 250</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>250 – 999</td>
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<td>11</td>
</tr>
<tr>
<td>1,000 – 1,999</td>
<td>30</td>
<td>29</td>
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<tr>
<td>2,000 – 4,999</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>5,000 – 9,999</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>10,000 +</td>
<td>24</td>
<td>23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Students with autism</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 50</td>
<td>27</td>
<td>26</td>
</tr>
<tr>
<td>51 – 100</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>101 – 150</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>151 – 200</td>
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<td>12</td>
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<tr>
<td>201 – 250</td>
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<td>5</td>
</tr>
<tr>
<td>251 – 300</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>300 +</td>
<td>13</td>
<td>13</td>
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<table>
<thead>
<tr>
<th>Disputes</th>
<th>Number</th>
<th>Percentage</th>
</tr>
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<tr>
<td>Yes</td>
<td>51</td>
<td>49</td>
</tr>
<tr>
<td>No</td>
<td>52</td>
<td>51</td>
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<table>
<thead>
<tr>
<th>Respondent</th>
<th>Number</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Highest degree earned</td>
<td></td>
<td></td>
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<tr>
<td>Master’s</td>
<td>79</td>
<td>75</td>
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<tr>
<td>Doctorate</td>
<td>24</td>
<td>23</td>
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<table>
<thead>
<tr>
<th>Administrator certification</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>83</td>
<td>81</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>19</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Administration Experience</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 5</td>
<td>25</td>
<td>24</td>
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<tr>
<td>6 - 10</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>11 - 15</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td>16 +</td>
<td>30</td>
<td>29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special education teaching experience</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>1 – 5</td>
<td>29</td>
<td>28</td>
</tr>
<tr>
<td>6 – 10</td>
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<td>28</td>
</tr>
<tr>
<td>11 – 15</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>16 +</td>
<td>24</td>
<td>23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Autism teaching experience</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>68</td>
<td>66</td>
</tr>
<tr>
<td>No</td>
<td>35</td>
<td>34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Professional certificates/licensures</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board Certified Behavior Analyst (BCBA)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Licensed Specialist in School Psychology (LSSP)</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Educational Diagnostician</td>
<td>58</td>
<td>56</td>
</tr>
<tr>
<td>Speech/Language Pathologist (SLP)</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>
Table 4

*Preparedness to Address Topics from Special Education Administrator Training, N = 106*

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>National and state education laws and regulations regarding autism</td>
<td>100</td>
<td>97</td>
</tr>
<tr>
<td>Disputes involving learners with autism</td>
<td>71</td>
<td>67</td>
</tr>
<tr>
<td>Theories and methodologies of teaching and learning for children with autism</td>
<td>90</td>
<td>85</td>
</tr>
<tr>
<td>Adaptation and modification of curriculum for children with autism</td>
<td>92</td>
<td>87</td>
</tr>
<tr>
<td>Continuum of program options and services for children with autism</td>
<td>94</td>
<td>89</td>
</tr>
<tr>
<td>Services available to individuals with autism</td>
<td>87</td>
<td>82</td>
</tr>
<tr>
<td>Pre-referral and intervention processes and strategies for children with autism</td>
<td>82</td>
<td>77</td>
</tr>
<tr>
<td>Process of developing individual education programs for children with autism</td>
<td>96</td>
<td>91</td>
</tr>
<tr>
<td>Evidence-based practices validated for children with autism</td>
<td>77</td>
<td>73</td>
</tr>
<tr>
<td>Strategies for identifying individuals with autism</td>
<td>106</td>
<td>100</td>
</tr>
<tr>
<td>Evaluation of student success in the general education curriculum</td>
<td>84</td>
<td>82</td>
</tr>
<tr>
<td>Legal rights and responsibilities of individuals with exceptional learning needs</td>
<td>105</td>
<td>99</td>
</tr>
<tr>
<td>Human rights of individuals with autism and their families</td>
<td>67</td>
<td>61</td>
</tr>
</tbody>
</table>
Table 5

*Special Education Administrators’ Perceived Professional Development Needs, N = 106*

<table>
<thead>
<tr>
<th>Topic</th>
<th>%L</th>
<th>%M</th>
<th>%S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational programming for learners with autism</td>
<td>17</td>
<td>50</td>
<td>8</td>
</tr>
<tr>
<td>Assessing learners with autism &amp; eligibility determination</td>
<td>35</td>
<td>34</td>
<td>6</td>
</tr>
<tr>
<td>Best practices for learners with autism</td>
<td>11</td>
<td>52</td>
<td>12</td>
</tr>
<tr>
<td>Legal issues and learners with autism</td>
<td>22</td>
<td>39</td>
<td>14</td>
</tr>
<tr>
<td>Characteristics of autism</td>
<td>41</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>Increasing access to the general curriculum for learners with autism</td>
<td>10</td>
<td>47</td>
<td>17</td>
</tr>
<tr>
<td>Professional development for school staff serving learners with autism</td>
<td>5</td>
<td>37</td>
<td>33</td>
</tr>
<tr>
<td>Preschool programming for learners with autism</td>
<td>18</td>
<td>45</td>
<td>12</td>
</tr>
<tr>
<td>Quality program indicators for serving learners with autism</td>
<td>11</td>
<td>46</td>
<td>17</td>
</tr>
<tr>
<td>Parent and family needs of learners with autism</td>
<td>9</td>
<td>55</td>
<td>10</td>
</tr>
</tbody>
</table>

*Note.* L = limited or no need for information; M = moderate or some need for information; S = significant or great need for information.
Table 6

**Litigation: Binary Logistic Regression Results, N = 106**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special education experience</td>
<td>.166</td>
<td>.415</td>
<td>.160</td>
<td>1</td>
<td>.689</td>
<td>1.181</td>
<td>.523</td>
<td>2.663</td>
</tr>
<tr>
<td>Teaching learners with autism</td>
<td>.400</td>
<td>.434</td>
<td>.851</td>
<td>1</td>
<td>.356</td>
<td>1.492</td>
<td>.638</td>
<td>3.493</td>
</tr>
<tr>
<td>General autism knowledge</td>
<td>-.247</td>
<td>.549</td>
<td>2.678</td>
<td>1</td>
<td>.653</td>
<td>.781</td>
<td>.267</td>
<td>2.290</td>
</tr>
<tr>
<td>Knowledge of educational programming</td>
<td>1.929</td>
<td>1.179</td>
<td>.877</td>
<td>1</td>
<td>.102</td>
<td>6.883</td>
<td>.683</td>
<td>69.362</td>
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*95.0% C.I. for Exp(B)*

*p < .05, **p < .01.*
Table 7

Analysis by Litigation Type: Binary Logistic Regression Results, N = 106

<table>
<thead>
<tr>
<th>Type</th>
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<th>B</th>
<th>SE</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95.0% C.I. for Exp(B)</th>
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<td>.112</td>
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<td>.994</td>
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<td>.884 - 1.264</td>
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<td>1.009</td>
<td>.812 - 1.253</td>
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<td>Hearings</td>
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<td>.912 - 1.477</td>
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*p < .05, **p < .01.
References


Individuals with Disabilities Education Improvement Act of 2004. 20 U.S.C. § 1400 et seq.


APPENDIX A

EXTENDED LITERATURE REVIEW
Autism spectrum disorders (ASD) represent a neurobiological condition characterized by complex and pervasive manifestations affecting communication, socialization, and adaptive behaviors. The number of children identified with ASD has continued to rise at alarming rates over the past decade (Fombonne, 2005). According to national reports, the number of students with ASD served in schools has increased by more than 500 percent (United States Government Accountability Office, 2005). Data collected from the Office of Special Education Programs (OSEP), U. S. Department of Education reflect this increase from nearly 120,000 children with ASD reported in 2002, to 295,999 children in 2007 (Data Accountability Center, n.d.). Questions remain regarding the dramatic increase in prevalence rates. There is evidence to suggest the increase may be due in part to heightened awareness, refined diagnostic practices, development of standardized assessment tools, and environmental factors (Croen, Grether, Hoogstrate, & Selvin, 2002; Fombonne, 2001).

While there is no known cure for ASD, a body of research has emerged in recent history documenting the impact of these conditions on many aspects of the affected person’s life (Dempsey & Foreman, 2001; Heflin & Simpson, 1998; Hume, Bellini, & Pratt, 2005; National Autism Center (NAC), 2009); National Research Council (NRC), 2001). As such, there is growing urgency to indentify evidence-based practices for improving outcomes by addressing needs across multiple domains (Dempsey & Foreman, 2001; Heflin & Simpson, 1998; Hume et al., 2005; Koegel, Koegel, & McNerney, 2001; NRC, 2001; Wolery, Barton, & Hine, 2005). As more children with autism spectrum disorders enter the public school system, a wide array of school personnel and related service providers must be adequately prepared with the knowledge and skills to meet the complex needs of learners with ASD, engineer components for effective
instruction, and implement interventions with precision and fidelity. According to Simpson, McKee, Teeter, and Beytien (2007), “Indeed there is a general consensus that only by qualified professionals using effective methods in an approved fashion will optimal student outcomes be achieved” (p. 203). Although all stakeholders hold responsibility for achieving positive student outcomes, the special education administrators play a vital role in the public school setting.

The role of special education administrators (which may include directors, executive directors, coordinators), is to ensure appropriate instruction, plan for the provisions of special education and related services, and allocate resources (Thompson & O’Brien, 2007). Because the educational needs of learners with ASD are so complex, knowledge of autism within these contexts is essential for several reasons. First, special education administrators are responsible for ensuring that students with disabilities receive a free, appropriate education that is designed to meet their individual needs. Second, administrators must have knowledge of student needs in order to allocate the resources necessary to realize positive outcomes. Finally, special education administrators must be able to represent district and student interests in issues involving litigation. School districts and parents frequently litigate what constitutes a free, appropriate public education (FAPE) for children with ASD. In fact, Zirkel (2002) reports that due process hearings and cases involving students with ASD represent the most rapidly growing area of litigation in special education.

The aim of the present study is to investigate general knowledge, autism programming knowledge, and the training and experiences of special education administrators in the area of ASD, additionally, to determine if a relationship exists between these factors and dispute resolution activities of the district in which they serve.
Theoretical Framework for the Proposed Study

This section describes the guiding theoretical framework that serves as the foundation for this proposed study by conceptualizing “knowledge” and exploring factors associated with decision-making. Within a decision-making paradigm, administrative decision-making applied to leadership functions in the field of special education sets the impetus for this proposed study.

What is “Knowledge”

The question, “What is knowledge?” has intrigued the greatest of thinkers throughout history from Plato to Bertrand Russell (Russell, 1948; White, 1976). The absence of discrete and defining features of knowledge has led philosophers throughout history to seek answers to this question. These quests have resulted in a profusion of theories and emergent themes of different types of knowledge and knowing (Allix & Gronn, 2005; Aune, 2008; de Jong & Fergeson-Heffler, 1996). According to de Jong and Fergeson-Heffler (1996), a person’s knowledge base is comprised of different types of knowledge, such as declarative and procedural knowledge. A knowledge base is further characterized by different qualities, such as level (deep or surface) of knowledge, generality of knowledge, automaticity of knowledge, the modality of knowledge, and the structure of knowledge. Cumulatively, literature suggests that knowledge impacts choice, which in turn, impacts decision-making (Eisenhardt & Zaracki, 1992; Nutt, 1998; Simon, 1944, 1997; Simon & Newell, 1958; Sutcliffe & McNamara, 2001).

Decision Making Processes Among Administrators

Since the publication of research by Simon (1944, 1997) and Simon and Newell (1958), the subject of decision-making has been widely explored. The body of literature includes numerous normative models of the decision-making process consisting primarily of three
rational, systematic stages. Stage one involves diagnosis of the problem and definition of the outcome, stage two involves formulation and comparison of alternatives, and stage three involves the decision (Simon, 1997; Simon & Newell, 1958). A decision then is a choice of the preferred alternative and the ruling out of others (Simon (1997).

In his seminal work, *Administrative Behavior*, Herbert Simon explains the role of expertise in administrative decision-making. He asserts,

...to gain the advantages of expertise in decision-making, the responsibility for decisions is allocated so far as possible, in such a way that decisions requiring particular knowledge or skill will rest with individuals possessing that knowledge or skill. (p. 189)

Simon further contends that specialization is fundamental to administrative efficiency (p. 189). In fact, administrators possessing expertise (knowledge) are essential to the success of the organization.

*The Complexities of Educational Leadership*

Effective leadership assumes a constellation of competencies developed through practice and refined over time. At a time of high accountability standards and increased emphasis on access to the general curriculum for students with disabilities under IDEIA, the issues facing school leaders today are exceedingly complex. Success in addressing complex issues requires educational leaders to possess specific personal and technical competencies. Personal competencies or “skills” are essential for meeting the social demands of leadership, while technical competencies or “knowledge” are critical for building organizational capacity in response to change.
To prepare educational leaders, Goodlad (1996) called for the development of stewards to cultivate democracy and foster pedagogy while engaging in active learning in schools. Valesky, Greene, and Isaacs (1997) supported this combination of theory and practice, suggesting that administrative competencies are developed through coursework and field experiences with students receiving special education services. Lovitt (1993) recommended embedding administrative training within the framework of special education. Preparation of leaders within the field of special education as a conceptual framework builds understanding of students with disabilities and promotes understanding of legally correct and evidence-based instructional opportunities that provide meaningful, educational benefit (Crockett, 2002). Preparation of leaders to implement the provisions of a free, appropriate education for learners with ASD requires competency in personal skill areas, as well as competency in particular areas of knowledge.

A review of research and related literature for this study focuses on knowledge as an impetus for responsible decision-making and examines relevant areas of knowledge for special education administrators regarding ASD. Specifically, ASD as a disability category, educational trends, special education case law, multidisciplinary knowledge of ASD, and administrator preparation are examined. The scope of section one focuses on knowledge regarding eligibility criteria for ASD consistent with the Individuals with Disabilities Education Improvement Act (IDEIA, 2004), and highlights prevalence trends over the past decade. Section two discusses the evolution of evidence-based interventions for serving students with ASD in the school setting, and highlights issues related to educational programming. Section three discusses due process guaranteed students with disabilities and chronicles litigation related to ASD. Section four
reviews literature examining the knowledge of ASD among multidisciplinary practitioners.

Section five includes a review of certification and training practices for special education administrators.

**ASD Eligibility and Prevalence Under the IDEIA**

Although Public Law 94-142, the Education for All Handicapped Children Act was passed in 1975 and fully enacted in 1977, a separate disability category for autism was not included at that time. Children with autism were served under other eligibility categories such as Mental Retardation and Other Health Impairment. It was not until the amendment of 1990 (PL 101-476), that a separate category of Autism was added. Renamed the Individuals with Disabilities Education Act (IDEA, 1997), eligibility criteria for autism was determined as:

A developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. The term does not apply if a child's educational performance is adversely affected primarily because the child has a serious emotional disturbance . . .

(34 C.F.R. § 300.8(c)(1)(i))

The addition of autism as a separate category of disability was not a change in the law, but rather a clarification. Students with autism were covered by the law previously, but were now recognized as a separate and distinct class entitled to the law's benefits (Knoblauch & Sorenson, 1998). In 2004, the IDEA was again amended. Under this revision, the definition of autism was
expanded to include children after the age of three if they met the previous criteria for autism. Some states, such as Texas, further broadened the category to include children with pervasive developmental disorders (19 TAC § 89.1040).

The category of pervasive developmental disorders does not appear as part of the federal regulations. For eligibility purposes, all ASD are subsumed within the single category, “Autism”. In contrast, the term “pervasive developmental disorders” is widely used in the clinical and medical communities, originating from the Diagnostic and Statistical Manual – Fourth Edition, Text Revision (DSM-IV-TR, American Psychiatric Association, 2000). Within this source, the category encompasses Rhett’s Disorder, Childhood Disintegrative Disorder, Autistic Disorder, Asperger’s Disorder, and Pervasive Developmental Disorders-Not Otherwise Specified. Despite the differences in terminology, it is well understood within both the school and clinical settings that autism represents a spectrum of characteristics along a continuum. This continuum has resulted in a broadening of the category, which in turn has led to diagnostic uncertainty and challenges regarding accurate case reporting (Fombonne, 2001).

Broadening the definition of autism to encompass a spectrum has been hypothesized as one factor leading to reports of increased prevalence (Fombonne, 2005; Tidmarsh & Volkmar, 2003). Other factors contributing to increased prevalence estimates include better assessment, refined diagnostic practices, and environmental influences (Volkmar, Lord, Bailey, Schultz, & Klin, 2004). Reported prevalence of ASD in recent history has increased at alarming rates. In the educational setting, it was not until autism was identified as a separate diagnostic category under the IDEA that an upward trend emerged nation wide. A review of data collected by the U. S. Department of Education from the public education information management system
(PEIMS) confirms this trend. In 1990, 55,664 children ages six to 21 were identified with autism, compared to 256,863 in 2007 (Data Accountability Center, n.d.). As more children are identified and enter school, school districts must be prepared to provide a free, appropriate public education (FAPE), specially designed to meet their unique educational needs.

**Issues In Educational Programming for Students with Autism Spectrum Disorders**

The mysteries and complexities of autism create a fertile field of debate regarding best practices for intervention and components of a FAPE. The range of educational interventions is extensive and the evidence of efficacy is variable. There is no single intervention proven better than another, or effective for all learners with ASD. While there is no known cure, research indicates that early, intensive intervention produces the greatest promise for improving child outcomes (NAC, 2009; NRC, 2001). According to recommendations by the National Research Council (NRC, 2001), children should receive year-round intensive interventions, a minimum of 25 hours per week, with a recommended student to adult ratio of 2:1.

Cumulatively, research does not support one intervention exclusively over another for improving outcomes for learners with ASD. However, the greatest body of evidence exists in support of behavioral approaches evolving from the science of applied behavior analysis (ABA) (Iovannone, Dunlap, Huber, & Kinkaid, 2003; NAC, 2009; NRC, 2001; Simpson, 2005). Interventions based upon ABA principles involve teaching small, measurable units of behavior systematically. Simple and complex responses are task analyzed into discrete steps. Each step is then taught within a system of reinforcement, prompting, and environmental manipulation to elicit the desired responses (Dempsey & Foreman, 2001). Behavioral approaches such as discrete trial and pivotal response methods often require intense, one-on-one instruction,
Behavioral approaches have reportedly improved outcomes for some learners with ASD, while not resulting in positive outcomes for other children. In the literature, there is controversy surrounding ABA as a potential “cure” for autism (Heflin & Simpson, 1998). Debate also ensues as to whether this approach should be utilized exclusively at the exclusion of other approaches, and if 30-40 hours per week of intensive intervention is required to produce the desired outcomes (Heflin & Simpson, 1998).

In 1987, O. Ivar Lovaas of UCLA reported encouraging results from a treatment group of 19 children with autism who received 40 hours per week of intensive early intervention involving a discrete trial therapy (DTT) methodology. According to results of this study, 47 percent of the children achieved “normal intellectual and educational functioning” and were able to attend public school successfully by the first grade (Lovaas, 1987). Criticisms of the Lovaas study have included the validity of control groups and selection for studies, as well as concerns with the limitations of DTT in development of social play, independence, and adaptability to change (Dempsey & Foreman, 2001). Other criticisms have centered on the inability to replicate the studies and produce similar results. The study has been partially replicated without producing comparable results (Luiselli, Cannon, Ellis, & Sisson, 2000; Sheinkopf & Siegel, 1998). Despite these limitations, substantial claims of improvement involving the Lovaas approach have led parents to seek similar interventions as educational services for their child.

Naturalistic teaching methods evolving within the science of ABA have also been empirically validated. Referred to as “Pivotal Response Training” (PRT), this naturalistic
approach involves interventions based upon a DTT format that occur in the child’s natural environment (Koegel, Koegel, Harrower, & Carter, 1999). Within a natural setting, naturalistic contingencies of reinforcement and consequences directly related to the child’s behavior serve to maintain behaviors and assist with generalization. Critics of this approach contend that long-term effects of this methodology have yet to be verified (Schreibman, 2005, p. 168).

Another approach to autism intervention developed at the University of North Carolina, Chapel Hill, in the 1970s is the multi-treatment intervention, Treatment and Education of Autistic and Related Communication Handicapped Children or “TEACCH” approach. TEACCH emphasizes structured teaching, including physical structure, visual structure, clear daily schedules, work systems, and visual cues to increase independent functioning across a variety of domains (Schopler, Mesibov, & Baker, 1982). Although this approach to structuring learning environments is frequently utilized in the school setting, TEACCH is not supported by the abundance of empirical data as behavior analytic approaches. According to criteria established by the NRC (2001) for evaluating the evidence of efficacy, TEACCH is considered a “promising practice” versus an “evidence-based” methodology.

According to findings of the National Research Council (2001), there is not a sole intervention approach deemed superior to others or deemed effective for all learners. Rather than making specific comparisons between methodologies that cannot be verified, the Council identified characteristics of quality educational programming. Components of effective educational programs for learners with ASD have been identified as functional communication training, social skills training, the direct teaching of play skills, sufficient individualized attention, a focus on functional academics, parent training and participation, and ongoing
Iovannone and colleagues (2003) also investigated effective educational practices for learners with ASD. The authors compared the outcomes of studies on interventions from 1992 to 2001 and identified themes that comprised core components of effective programming. These core components were identified as (a) individualized supports and services, (b) systematic instruction, (c) structured environment, (d) specialized curricula for communication and social skills, (e) functional approaches to behavior, and (f) family involvement (Iovannone et al., 2003). The authors surmised that the most effective educational programs were not contingent upon one approach, but rather relied upon the integration of multiple interventions orchestrated to meet the child’s unique needs.

Simpson (2005) examined evidence of effective interventions for learners with ASD. The interventions were classified as, “Scientifically based practice”, “Promising practice”, “Limited supporting information for practice”, and “Not recommended”. Those interventions based upon the science of ABA, such as discrete trial and pivotal response training, met the highest standard of evidence according to the author. Promising practices included incidental teaching, structured teaching, and picture systems for communication (Simpson, 2005). Cumulatively, the research did not support the endorsement of a specific intervention, but rather echoed the findings of similar studies, that interventions must be individualized and implemented with fidelity.

Most recently, the National Autism Center (NAC) in its *National Standards Report*, established evidences-based practice guidelines for serving individuals with ASD based upon an exhaustive review and analysis of current research (NAC, 2009). A summary of findings from
this project offered four primary considerations when determining interventions for individuals with ASD. First, interventions identified as “Established Treatments” should be prioritized before considering other treatments. Second, professional judgments from a multidisciplinary team must be utilized to determine the effectiveness of selected interventions, based upon the collection and review of data. Third, the values and preferences of key stakeholders, including the individual with ASD, should be considered. And fourth, treatment providers must have the training, skills, and knowledge necessary to implement interventions correctly (NAC, 2009).

The body of evidence surrounding effective instruction and related services for children with ASD continues to evolve (NAC, 2009). As practices supported by research are identified, school personnel must be prepared with the knowledge and skills necessary for providing a FAPE. Failure to do so often erupts into disputes between families and school personnel, setting the stage for dispute resolution and potential litigation.

Due Process and Autism Litigation

The intent of IDEIA is to provide students with disabilities the equal opportunity to succeed as their nondisabled peers but does not guarantee their success or assume responsibility for dictating educational interventions. In essence, the IDEIA (2004) was created to:

Ensure that all children with disabilities have available to them a free appropriate public education that emphasizes special education and related services designed to meet their unique needs and to ensure that the rights of children with disabilities and their parents are protected. (IDEA, 2004, 34 CFR § 300.1)

Within the IDEA framework, procedural and substantive requirements exist. Procedural
safeguards are provided at all stages of the special education process, including the identification, evaluation, placement, and implementation of services to learners with disabilities (Texas Education Agency, 2009). These safeguards represent published mandates that are required elements in the provision of special education services. The substantive requirements of IDEIA refer to elements of FAPE, that each learner’s individualized education program (IEP) must be reasonably calculated to confer educational benefit (Board of Education of the Hendrick Hudson Central School District v. Rowley, 1982). School districts are obligated to meet both procedural and substantive elements and provide students with disabilities an appropriate public education. At times, school personnel and parents disagree on exactly what constitutes an appropriate education. When disputes arise, several mechanisms for resolution under the IDEIA exist. These mechanisms for dispute resolution include filing a complaint with the state’s education agency, requesting mediation by an impartial, state-appointed mediator, participating in resolution meetings, or filing a request for a due process hearing (Zirkel & Gischlar, 2006).

Filing a complaint with the state’s education agency is a procedural element required of IDEIA (2004). If a parent believes that the school district has violated federal or state requirements related to special education, they may file a formal written complaint with the state’s education agency or governing authority. The written complaint must state the violations that occurred and include factual information as supporting documentation (TEA, 2009). The state’s agency investigates the alleged violations and renders a summary of findings. Substantiated allegations require the school district to take corrective actions and submit proof of compliance.
Another avenue for resolving disputes is through the mediation process. Mediation provides an avenue for parents and school districts to resolve disputes without the collateral and emotional damage associated with due process hearings. In contrast, mediation is a confidential venue facilitated by an impartial, state-appointed mediator that allows for more in-depth discussion of the issues and when successful, results in a legally binding agreement between parents and school districts (Hazelkorn, Packard, & Douvanis, 2009).

Reauthorization of IDEA in 2004 expanded requirements for alternate dispute amelioration by requiring parties to participate in a resolution session as a final attempt to resolve disputes prior to convening a due process hearing (Hazelkorn et al., 2009). A study conducted by Hazelkorn and colleagues (2009), investigated the perceptions of special education directors concerning mediation and resolution sessions as alternatives to due process hearings. Of the four states surveyed (N = 260), the vast majority of respondents preferred either mediation or resolution in lieu of due process proceedings.

According to Etscheidt (2003), due process hearings involving autism programming represents the fastest growing and most expensive area of litigation in the area of school law (Yell, Katsiyannis, Ryan, & McDuffie, 2008; Zirkel, 2002; Zirkel & Gischlar, 2006). This is due, in part, to the complex nature of the disorder and the unique needs of the learner with ASD.

Educational challenges faced by learners with ASD can be substantial (NRC, 2001; Simpson, 2005; Volkmar et al., 2004). Consequently, defining the components of an appropriate education developed to address those challenges can be a daunting task that often leads to disputes between school districts and parents.

Zirkel (2002) concluded as more learners with ASD are served under the IDEIA, increases
in the number of autism-related cases litigated are expected to rise. The author provided a comparative analysis of 290 published decisions concerning learners with ASD from 1980 to 2000. Findings of this study revealed that the number of autism litigation cases was steeply rising, and that court decisions across a wide variety of issues slightly favored school districts.

In a separate study, Etscheidt (2003) reviewed the outcomes of 68 administrative and judicial decisions related to educational programming for learners with ASD. Three factors were identified as contributing to the determination that an IEP provided educational benefit. First, the goals developed must be aligned with the evaluation data. Second, members of the IEP must be qualified and have training and knowledge of ASD when making placement decisions. Third, the instructional methodology must be sufficient to achieve the goals contained in the IEP. The sufficiency of one methodology was not determined by a comparison, but rather by evidence that the methodology would meet the unique needs of the child and result in educational benefit (Etscheidt, 2003).

Increased trends in litigation involving learners with autism are evident across the nation. Most of these disputes involve issues of instructional methodology and the provisions of FAPE. The cost of litigating such issues is exorbitant, significantly impacting school district and personal family budgets. The high cost of fees represents only one area of collateral damage. Other areas of loss include time, emotion, and relationships between parents and schools (Zirkel, 2002).

Litigation trends in Texas are reflective of those reported at the national level. In 2007, fifty-nine total due process hearings were litigated across the state. Of those cases heard, 39 percent of the disputes involved autism-related issues concerning the provisions of a free,
appropriate public education (Texas Education Agency, 2008). These data do not encompass all avenues of dispute resolution available to families and school districts, such as mediation, resolution meetings, or complaints filed with the state education agency. Specific data regarding activities in these areas involving issues of ASD are not available for analysis at the state level.

Issues surrounding a FAPE for students with ASD are not limited to disputes over instructional methods. In fact, instructional methods comprise only one element of a FAPE designed to provide meaningful education benefit. Staff must be knowledgeable and well-trained, program components must be aligned to evidence-based practices, and instruction, related services, supplies, materials, and ancillary supports must be made available and must be orchestrated to meet the unique needs of each student with ASD. Orchestration of an individualized education program for students with ASD requires knowledge and skills of autism among a multidisciplinary team of educators and other professionals.

Knowledge of ASD Among Multidisciplinary Practitioners

A body of literature examining training and knowledge in ASD among professionals continues to evolve from lines of research originating from a seminal study conducted by Wendy Stone in 1987. To examine cross-disciplinary perspectives on ASD, Stone developed a 23-item survey to assess professionals’ general knowledge of autism and of the diagnostic criteria used to diagnose the disorder. The four disciplines included in the survey were pediatrics, clinical psychology, school psychology, and speech/language pathology. Responses to the surveys were compared with responses obtained from a select group of experts in the field of autism. Results of the study revealed numerous misconceptions regarding social,
emotional, and cognitive aspects of the disorder. Some misconceptions were specific to certain disciplines, while other misconceptions were shared by all groups. For example, only speech/language pathologists viewed autism as an emotional disorder, while all four disciplines attributed unrealistically high cognitive potential to persons with autism. Between-group differences regarding diagnostic criteria were also evident (Stone, 1987).

Stone and Rosenbaum (1988) conducted a follow-up study using only the knowledge and beliefs portions of the Autism Survey to evaluate parents’ and teachers’ views of autism. A group of 47 teachers and group of 47 parents of children with autism completed the survey. Group responses were compared to those obtained from a group of 22 “specialists” in autism across the nation. Results of this study indicated that both teachers and parents held misconceptions regarding the cognitive, developmental, and emotional features of autism. The authors also suggested that discrepant views between groups might have implications on collaboration efforts (Stone & Rosenbaum, 1988).

In 2005, Heidgerken, Geffken, Modi, and Frakey further extended this line of research by exploring the knowledge and beliefs about autism across multiple health care professions. The original Autism Survey (Stone, 1987) was administered to professionals comprising two groups for comparative purposes, those professionals who worked closely with children as specialists in the diagnosis and treatment of autism, versus traditional primary health care providers who had less exposure on a regular basis to children with autism. Results of the study indicated that when compared to experts in the field of autism, specialists and primary providers exhibited some belief patterns consistent with outdated research (Heidgerken et al., 2005). For example, specialists and primary providers endorsed higher prevalence rates in the upper socioeconomic
categories. Both groups were also less likely to endorse the necessity of special education placement within the public school. Overall, findings indicated greater differences among primary care providers versus specialists and experts in the field. Specifically, primary care providers endorsed views of treatment and discourse of autism that contradicted current research. Implications of this research suggested the need for continued education for primary health providers and highlighted the necessity of strong referral networks.

Similar results were obtained by Preece and Jordan (2007) through their exploratory investigation of social workers’ understanding of autism spectrum disorders. Utilizing a revised version of the Autism Survey (Stone, 1987) to capture features of the social care profession, the survey sought opinions regarding the causes and diagnosis of ASD; general knowledge of ASD; perceived characteristics of ASD; and the treatment of ASD, including specialized provisions. Twenty-three respondents replied, reflecting a 96% response rate (Preece & Jordan, 2007). Although this study employed a small sample size, the results followed trends similar to prior research. Variability was indicated in all domains, and suggested the need for autism-specific training for this group of professionals.

Schwartz and Drager (2008) surveyed speech-language pathologists (SLP) using an original 52-item questionnaire to determine the amount of knowledge and level of training that practicing school-based SLP had regarding autism. Participants of this study included 67 practicing SLP representing 33 different states across the country. Clinical and educational training, characteristics of autism, and competency in working with children with autism were explored. Results of the survey suggested that additional training and preparation of SLP were needed to serve children with autism in the school environment.
The need for knowledge and training among law enforcement officials regarding autism has also been recognized (Chown, 2009). In response to increased incidents of individuals with ASD involved in the criminal justice system as both victims and perpetrators of crimes, Chown conducted a survey of police officers in the United Kingdom to investigate their knowledge and awareness of ASD. Results of this study concluded police officers were generally unable to deal appropriately with persons with autism (Chown, 2009).

Prior research examining the knowledge and skills of autism among professionals has highlighted variability in each area, while also identifying potential training needs among various practitioners. In the school setting, the mandate for decision-making by a multidisciplinary team requires all persons involved in the IEP process to be knowledgeable. This requirement is not unique to teachers, but encompasses all providers, including related service personnel, instructional leaders, and special education administrators.

*Training and Certification of Special Education Administrators*

Special education represents a multi-dimensional system, incorporating interrelated functions and activities such as assessment, instruction, curriculum, personnel, transportation, finance, and professional development related to the provisions of IDEA (Thompson & O’Brian, 2007). In order to orchestrate activities associated with each function, special education departments typically consist of middle management positions that are separate from campus-based staff and upper level administrative positions. Within this framework, it is typical for the special education administrator to hold primary responsibility for oversight of a school district’s special education program.

Crockett and colleagues (2009) conducted an extensive content analysis of 474 abstracts
from educational journals to capture the complexion of special education leadership from 1970 to 2009. Prevalent topics included law and policy, personnel development, leadership roles and responsibilities, learning environments, and student accountability. Current literature from 2000-2009 revealed less guidance on contemporary issues facing today’s special education administrators, such as collaboration, technology, and leadership preparation (Crockett, Becker, & Quinn, 2009).

As the administrative representative for the district regarding matters subsumed under the IDEIA, the special education administrator typically bears the brunt of responsibility for mediating parent and district disputes when issues arise. Special education administrators oversee the provisions of a FAPE for all students with disabilities and ensure school district compliance with the procedural and substantive requirements of IDEIA. For students with ASD, this knowledge must encompass knowledge of eligibility criteria, evaluation procedures, and the quality components of effective educational programming.

A review of literature reveals few studies examining state certification and training requirements for special education administrators (Arick & Krug, 1993; Stile, Abernathy & Pettibone, 1986; Stile & Pettibone, 1980). This could be due in part to variations in certification requirements among states, and alternate routes to administrator certification. Stile and Pettibone (1980) conducted a national survey of state certification requirements for special education administrators. Findings indicated that 26 states offered credentialing in special education administration. Although not offering separate certification for directors of special education, 12 states required special education coursework as part of general administrator certification. Stile and Pettibone (1980) also reported that seven states did not offer any type of
special education coursework or credentialing at all as part of the general administrator credential.

A 5-year follow-up study by Stile, Abernathy, and Pettibone (1986) found little difference in the special education administration credentials from the previous study. Instead of 12 states offering special education coursework as part of the general administration certificate in 1979, that number increased to 20. The number of states offering a separate special education administration certificate decreased from 26 to 23. The authors concluded that while the inclusion of special education courses in general administrator training was a positive trend toward reducing the dualism that existed in public schools; this alone would not guarantee excellence or competence on special education matters.

Arick and Krug (1993) surveyed special education administrators’ perceptions on policy and personnel issues. In rating their need for special education-related training needs, the three highest rated were collaboration of special/general educators and others, evaluation of program effectiveness/quality, and adaptation of curricula and instruction for students. Training in the area of education for students with severe disabilities was rated seventh out of 17. Recommendations from this study included expanding course offerings at institutions of higher learning to better prepare administrators to oversee the provision of special education services (Arick & Krug, 1993).

In Texas, administrator certification programs have changed over the past ten years. In 1999, supervisor, general administrator, and superintendent certifications were available. Currently, administrator credentialing options are limited to principal and superintendent certifications. According to Texas Administrative Code (19 TAC § 241.1), eligibility for
certification as a principal requires a master’s degree, 12 graduate hours of common administrative coursework, a teaching certificate, and two years of creditable teaching experience. There are no state requirements or credentials for special education administrators or any other special education administrative positions in Texas public schools. In addition, no local or state mandated clock hours of continuing education coursework are required to maintain or demonstrate competency. Each local education agency establishes its own standards regarding qualifications for special education administrative positions.

An absence of state standardized certification requirements and professional training guidelines for administrators of special education promotes variability in experience and competence. This variability creates the potential for costly litigation if professionals serving in the demanding role of special education administrator are ill prepared. These discrepancies may also serve as contributing factors to increased litigation involving students with ASD and poor programming.

**Significance of the Study**

As more children with autism spectrum disorders are served in the public school system, special education administrators’ knowledge of ASD will impact what types of instruction, resources, and related services are made available for developing academic and functional skills. It therefore becomes necessary for special education administrators to have knowledge and training about autism to ensure a free and appropriate education for this expanding heterogeneous population. In addition, knowledge is a precursor for complex decision-making, such as those issues highlighted regarding ASD. Although several studies have examined the knowledge and training of ASD among professionals outside of the school environment, a
The literature search of electronic databases (ERIC, EBSCO, PsychLit) failed to produce any studies that specifically investigated the knowledge of ASD among special education administrators.

The rationale for the present study is to build on existing research regarding the knowledge and training of professionals in autism from an educational perspective, and to determine factors that may contribute to disputes and litigation in this area.

Current research examining the preparation and professional development of special education administrators is limited to a few studies investigating national certification standards for special education administrators (e.g., Arick & Krug, 1993; Stile & Pettibone, 1980). In contrast, the body of research investigating educational programming for students with ASD continues to expand. Emerging themes have highlighted increased litigation involving issues related to the educational programming for learners with ASD in the public schools (Etscheidt, 2003; Zirkel, 2002). Instructional methodology and provisions of FAPE are central to these disputes. Consequently, it is paramount for administrators of special education to retain a certain level of knowledge in the area of ASD in order to meet these challenges.
APPENDIX B

DETAILED METHODOLOGY
This study focused on knowledge and training in autism spectrum disorders among special education administrators and examined factors that may predict litigation. Survey methods in the form of a questionnaire to collect data from a sample, utilizing web-based technology were employed. This method was utilized because a sampling of respondents across a large geographic area at a low cost was desired (Gall, Gall, & Borg, 2007, p. 228). The target population consisted of special education administrators in Texas who were presented with the survey of 54 carefully constructed items within five sections. The survey platform used for collecting and organizing the data was Qualtrics™ (Qualtrics, Inc., 2010).

Participants
Nonprobability sampling methods in the form of convenience sampling were utilized to recruit participants for this research. Respondents participating in this study were special education administrators representing local education agencies across Texas. All respondents were current members of the Texas Council of Administrators of Special Education (TCASE) and were included in the 2010 TCASE Directory. TCASE is a professional organization comprised of approximately 1,200 members who administer and support special education programs throughout the state of Texas and is the Texas chapter of the national Council for Administrators of Special Education (CASE). TCASE is considered the premier source of professional development for special education administrators. Membership is not limited to special education administrators, but also includes regional service center personnel, campus principals, assistant principals, and other school personnel with an interest in special education-related matters. Membership in this organization is endorsed by the Texas Education Agency as the source for professional development of special education administrators.
Each year, TCASE publishes a voluntary directory of its membership that includes contact information for special education administrators throughout the State of Texas. Email addresses were retrieved from this directory and entered into a subdirectory coded on an EXCEL spreadsheet. The survey was only made available to those members of TCASE who registered their email addresses. Based upon the inclusion criterion of TCASE membership and current tenure as a special education administrator, the sample size for this cross section of the population was 475 subjects. Although there are approximately 1,289 school districts in Texas, not all districts have special education administrators. Some districts belong to shared services arrangements (SSA). Within a SSA, multiple districts “share” or pool their resources, including special education oversight. The special education administrator representing the interests of all members of the SSA is usually appointed by the fiscal agent.

*Institutional Review Board (IRB) approval.* The procedures for protecting the rights and welfare of human subjects involved in the study received University of North Texas IRB approval (#09439).

**Instrumentation**

To investigate knowledge and training in autism spectrum disorders among special education administrators as predictors of disputes, an original 54-item survey adapted from Stone’s Autism Survey (1987) was developed (see Appendix E). The survey consisted of five sections. Section I, Demographic Information, asked participants about district enrollment, number of students meeting IDEIA eligibility for autism, and dispute and resolution activities. Section II, Professional Background and Training, sought to determine training experiences of participants, exposure to learners with autism spectrum disorders, and identified knowledge in
key areas. Questions in this section were derived from competencies identified by the Council for Exceptional Children for special education administrators (Council for Exceptional Children, 2008). Section III, Understanding Regarding Autism, consisted of true/false questions designed to gain insight into the general knowledge special education administrators had regarding autism. This section targeted information concerning eligibility criteria, characteristics of individuals with autism, current myths regarding autism, instructional strategies, evidence-based practices, and false claims surrounding issues of autism. Items derived from the original Stone survey (1987) were revised to reflect current terminology and person-first language. Some of these revisions were also extracted from a survey instrument developed by Ray and Mehta (2010) designed to measure knowledge of speech-language pathologists regarding autism.

Section IV, Knowledge of Educational Programming, investigated expertise related to the required educational considerations for learners with autism spectrum disorders. These considerations are mandated by Texas Commissioner of Education rules, (TAC 89.1055(e), Content of the IEP). Section V, Professional Development Needs, asked respondents to rate their individual needs for professional development on topics derived from CEC (2008) knowledge domains. Each topic was rated as ‘L’ if there is a “limited” or no need for information, ‘M’ if there is a “moderate” (some) need for information, or ‘S’ if there is a “significant” (great) need for information.

For the purpose of this study, “knowledge” regarding autism was measured by responses to items in Sections III and IV against a discrete set of criteria for which there was only one correct response. Items in Section III were based upon a general body of knowledge
regarding autism that was been previously validated in research (Campbell et al., 1996; Heflin & Simpson, 1998; Simpson, 2005; Simpson et al., 2007; Stone, 1987). Ray and Mehta (2010) recently updated items in this section to improve reliability and validity. Items in Section IV were also measured against a discrete set of criteria with one correct response. Thirteen items in this section were presented in a multiple-choice format. These items were created directly from Texas State rules regarding specific program components that must be considered as part of the IEP for students with autism, as mandated by Texas Commissioner Rules (TAC 89.1055(e), Content of the IEP).

Items in Sections I and V reflected training topics derived from CEC competencies for special education administrators. Content validity was assumed as a result of the expertise of those who developed them. The CEC competencies were developed by experts in the field of special education throughout the nation. These competencies have been accepted by professional organizations and formally adopted by the Council for Exceptional Children, the largest international professional organization dedicated to improving educational outcomes for students with disabilities (CEC, 2008).

Data Collection Procedures

Prior to launching the survey to special education administrators, a pilot study was conducted. Each of the 20 Education Service Center Autism Consultants representing educational regions across the state, and a cadre of seven doctoral students affiliated with autism research at the University of North Texas were contacted via email. Participants in the pilot study were selected based upon their expertise in the field of autism. Pilot participants received an introductory letter requesting their participation in the pilot study with a direct link
to the survey platform. Following completion of the survey, suggestions for improving the study were solicited through an open-ended response frame. Several suggestions for rewording of items were recommended and implemented. Results of the pilot study also highlighted the need to refine several custom features of the *Qualtrics™* (Qualtrics, Inc., 2010) survey platform to meet the parameters of this study. Specifically, time limits were removed and filters to reduce spam blocking were activated. The pilot study concluded two weeks after the initial contact.

The questionnaire was then launched to the target population to begin the study. Of the 475 participants identified, 433 email addresses were functional. Special education administrators received a direct email explaining the research. The email notification included an introductory statement and provided a direct link to the survey platform. Upon accessing the survey platform, respondents provided informed and voluntary consent for participation. By clicking, “BEGIN NOW”, respondents indicated consent to participate in the survey. The survey took approximately 15 minutes to complete. A total of 56 participants completed the survey during the first week of the study. This prompted a second email encouraging respondent participation. The second week resulted in the activation of 98 survey links and the completion of 22 additional surveys for a total of 78 recorded survey responses.

Prior to the third reminder, a personal email was sent by the co-investigator. This reminder encouraged participation and stressed the relevance of individual responses to the outcome of this research. Serving as a prompt to facilitate the highest possible response rate, a third and final e-mail was sent to the members of the target population who had not yet initiated a link to the survey. After the three-week response window, the survey link was
closed. Of the 139 participants who activated the link, 106 responses were recorded, representing a 24% response rate of the special education administrators surveyed (N = 106).

Raw data archived in the Qualtrics® platform was assigned a pseudonym to maintain confidentiality. Archived data were also password protected. All files containing data relating to this study were retained on a password protected external drive, and stored in a locked file drawer.

Data Analysis Procedures

Initial inspection of data for item responses was conducted within Qualtrics™ as frequency data displayed as percentages. For in-depth analysis, raw data were then exported into a spreadsheet and coded. To examine factors related litigation, raw data retrieved from the survey were analyzed utilizing logistic regression statistical methods. Logistic regression is appropriate for testing hypotheses about relationships between a dichotomous outcome variable, and one or more dichotomous predictor variables (Hosmer & Lemeshow, 2000; Peng, Lee, & Ingersoll, 2002). The goal of logistic regression is to create the best fitting model that predicts the probability of an event occurring based on a set of predictor variables (Hosmer & Lemeshow, 2000). In this study, a four-predictor binary logistic model was fitted to the data to test the relationship between the likelihood special education administrators would be litigated against and their special education teaching experience, experience teaching learners with autism, general autism knowledge, and knowledge of educational programming. The binary logistic regression analysis was carried out by the Logistic procedures in PASW (SPSS, 2009) in the Microsoft environment. The logistic regression analysis included overall model evaluation, statistical tests of individual predictors, goodness-of-fit statistics, and assessment of the
predicted probabilities (Peng et al., 2002).

The dependent or outcome variable was litigation. Litigation was defined as all dispute and resolution activities defined by the IDEIA Procedural Safeguards and included state agency complaints, mediation, resolutions meetings, and due process hearings. The independent, dichotomous predictor variables were professional background and training (Section II), understanding regarding autism (Section III), and knowledge of program components (Section IV). Professional development needs (Section V) were investigated through analysis of within group differences and variance. District and respondent demographic data were automatically coded as nominal data as part of logistic regression analysis. Results explored variation in responses to items in Sections III and IV of the survey. The analytic tool utilized for data analysis was the computer software program, Predictive Analytics SoftWare (PASW; SPSS, Inc., 2009). This tool allowed for data coded on an Excel spreadsheet to be imported for in-depth analysis.

Minimum observation-to-predictor ratios were maintained by ensuring the adequacy of sample sizes. Literature does not offer specific sample sizes regarding logistic regression (Peng et al., 2009). Utilizing the G*Power3 package, sample size was determined through power analysis as \( n = 10 \) (Faul, Erdfelder, Lang, & Buchner, 2007).

Of the 139 respondents who activated the survey, 33 cases stopped responding after completing Section II, Professional Background and Training. Because these participants did not answer questions related to autism knowledge, these cases were deleted from analysis, resulting in a total sample of 106 (\( N = 106 \)).
APPENDIX C

COMPLETE RESULTS
Of the 475 surveys distributed, 139 surveys were initiated and 106 responses were recorded. Represented in the sample were school districts and shared service arrangements with student populations of various sizes. All of the participants reported serving students with autism.

**General Knowledge of Special Education Administrators**

Results indicated that special education administrators vary in their general knowledge of ASD eligibility criteria, characteristics, myths, instructional strategies, evidence-based practices, and false claims surrounding issues of autism (Table 1). Although impairment in social interaction is a required feature for autism eligibility, 20% of the participants did not agree. Similarly, stereotyped and repetitive behaviors are required for autism eligibility, yet 60% of participants reported these diagnostic features were not necessary for meeting autism eligibility. Impairment of communication skills is another critical feature required for autism eligibility, and 20% of respondents disagreed with this statement. In contrast, all of the participants understood that self-injurious behaviors were not required for autism eligibility.

Special education administrators appeared to possess greater knowledge regarding general characteristics, myths, instructional strategies and false claims surrounding issues of autism (Table 1). All of the participants agreed that some children with autism demonstrate uncoordinated gross and fine motor skills. None of the participants believed that children with autism are deliberately negativistic and non-compliant. None of the participants believed that autism is caused by a non-nurturing style of parenting. Most of the participants disagreed that children with autism primarily tend to be auditory learners.
Knowledge of Educational Programming

Section IV of the survey investigated special education administrators’ knowledge of educational programming for learners with ASD (Table 2). Responses to the questions posed in this section revealed that most special education administrators knew that for a student with autism who is eligible for special education and related services, all eleven strategies should be included in the Individualized Education Program. Most special education administrators also knew that peer-reviewed, research-based practices for students with autism include applied behavior analysis. In contrast, special education administrators appeared to have less knowledge that determining the need for Extended School Year (ESY) services for students with autism should be based upon student need, as reported by 63% of the respondents.

Educational Training and Professional Development Experiences

Demographic data including educational training and professional development experiences are summarized in Table 3. Data revealed the majority of special education administrators held a master’s degree, and approximately one fourth of the participants held a doctoral degree. Additional administrator certification was held by a majority of the participants. More than half of the participants held certification as an educational diagnostician, and 13% \((n = 13)\) held licensure as a licensed specialist in school psychology. Another 9% \((n = 9)\) were speech/language pathologists, one respondent was a board certified behavior analyst. Total years of experience as a special education administrator was fairly evenly distributed among the sample. The majority of the participants also reported special education teaching experience. More than half of the participants reported they had taught learners with autism.
Overall, participants reported that training as a special education administrator prepared them to address autism-related topics (Table 4). Most participants in the sample (N = 106) reported preparedness related to national and state education laws and regulations regarding autism (97%), legal rights and responsibilities of individuals with exceptional learning needs (99%), continuum of program options and services for children with autism (89%), pre-referral and intervention processes and strategies for children with autism (77%), adaptation and modification of curriculum for children with autism (87%), services available to individuals with autism (82%), strategies for identifying individuals with autism (100%), evaluation of student success in the general education curriculum (82%), and theories and methodologies of teaching and learning for children with autism (85%). Slightly more than half of the participants reported preparedness regarding evidence-based practices validated for children with autism (73%), disputes involving learners with autism (67%), and human rights of individuals with autism and their families (61%).

Professional Development Needs

Special education administrators were asked to rate their individual need for professional development in ten areas related to educating learners with autism using a 3-point Likert scale (Table 5). Professional development for school staff serving learners with autism was the area for professional development perceived by administrators as the greatest need. Increasing access to the general curriculum for learners with autism was another topic of perceived significant need. Topics for which professional development was perceived as less critical were, Assessing learners with autism and eligibility determination and Characteristics of
autism. Moderate to significant needs were reported by at least one-third of the participants across all professional development topics.

**Binary Logistic Regression Model**

Binary logistic regression was used to predict the outcome of the dichotomous variable *litigation*. In logistic regression, the model with the predictor variables is compared to a null or baseline model without the predictor variables and only a constant. The underlying principle is to determine whether one or more predictor variables would improve the null model (Hosmer & Lemeshow, 2000). The probability of an event will occur is 1, and 0 is the event not occurring. 

$B$ is the un-standardized regression coefficient and is the logit coefficient (Hosmer & Lemeshow). The logit represents the value of the change in the log odds of the dependent variable per one-unit change in the predictor variable, holding all other predictor variables constant. The logistic regression output model includes the $B$, the standard error of $B$, the Wald statistic, the degrees of freedom, the significance level of the Wald, and the exponentiated coefficient or Exp($B$). The Exp($B$) is the odds ratio and is used to measure the effect size (Hosmer & Lemeshow, 2000). When the Exp($B$) is 1.0, there is no change and the independent variable has no effect on the dependent variable. When the Exp($B$) is over 1.0, a positive relationship exists. When the Exp($B$) is less than 1.0, a negative relationship exists and the odds will decrease. Confidence intervals of the Exp($B$) represent a low to high range of the event occurring in the population. If the probability of the event is within the range of the confidence interval, a unit change in the independent variable may have no effect on the change of odds in the dependent variable, indicating that the independent variable is not an effective predictor (Hosmer & Lemeshow, 2000).
Predictors of Litigation

To gain a better understanding of factors that may predict litigation, the predictor variables *special education teaching experience* and *experience teaching learners with autism* were each coded dichotomously as 1 for experience and 0 for no experience. The predictor variables, *general autism knowledge* and *knowledge of educational programming* were entered as continuous variables. The dependent variables of litigation (1) and no litigation (0) were also coded dichotomously. Independent variables were special education teaching experience, experience teaching learners with autism, general autism knowledge, and knowledge of educational programming. The higher the predicted value or conditional mean of the independent variables, the more likely special education administrators would be litigated against.

None of the special education administrator variables were statistically significant at $p < .05$. The model chi-square test score of 5.562, degrees of freedom ($df = 5, p = .351 (p < .05)$ indicated that the special education administrator variables were not significant to the model. The $p$ values of the predictor variables are shown in Table 7. The predictor variables teaching experience, teaching learners with autism, general autism knowledge, and knowledge of educational programming were entered in the same block using the Enter method in binary logistic regression. A classification cut-off of .50 was used. Although none of the predictor variables were statistically significant, findings of each variable are discussed based on the odds ratio, which is a measure of the effect size.

*Teaching.* Special education teaching experience was not statistically significant at $p = .689 (p < .05)$. The $\text{Exp}(B) 1.181$ indicated a positive relationship between special education
administrators with special education teaching experience compared to special education administrators with no special education teaching experience and being litigated against. The logit of .166 indicated that when special education teaching experience changed from 0 to 1 and all other independent variables were held constant, the log odds of special education administrators being litigated against increased by about .17. The odds of litigation were about 18% higher for administrators with special education teaching experience than for those without special education teaching experience. The odds ratio of litigation and special education teaching experience to no teaching experience equaled 1.181, or about 118 administrators with special education teaching experience per 100 administrators without teaching experience. However, the 95% confidence interval .523 to 2.663 included the probability of litigation (1), which indicated that special education teaching experience was not a useful predictor. Therefore, based upon the interval with 95% confidence, a unit change in special education teaching experience in the population may not be associated with a change in the odds of being litigated against.

**Autism.** Teaching learners with autism was not statistically significant at $p = .356 (p < .05)$. The $\text{Exp}(\beta) 1.492$ in autism indicated that there was a positive relationship between special education administrators who have taught learners with autism compared to those who have not taught learners with autism and litigation. The logit of .400 indicated that when autism teaching changed from 0 to 1 and all other independent variables were held constant, the log odds of being litigated against were about 1.492 or 49%. The odds ratio of litigation against administrators with autism teaching to litigation against administrators without autism teaching equaled 1.492, or about 149 administrators with autism teaching per 100 administrators
without autism teaching. However, the 95% confidence interval 0.638 to 3.493 included the probability of litigation (1), which indicated that teaching learners with autism was not a useful predictor. Based on the interval with 95% confidence, a unit-change in autism teaching in the population may not be associated with a change in the odds of being litigated against for special education administrators.

*General knowledge.* General autism knowledge was not statistically significant at $p = 0.653$ ($p < 0.05$). The Exp($B$) 0.781 in general knowledge indicated a negative relationship between general autism knowledge and litigation. The logit of -2.47 indicated that when the general knowledge changed from 0 to 1 and all other independent variables were held constant, the log odds of special education administrators being litigated against decreased by 0.25. For general knowledge the odds of being litigated against were (0.781-1) x 100, or 22% lower for special education administrators with general knowledge of autism than for those administrators without this knowledge. The odds ratio of litigation against those with general knowledge and those without equaled 0.781, or about 78 with general knowledge per 100 without general knowledge. However, the probability of litigation was within the range of the 95% confidence interval 0.267 to 2.290, indicating that general knowledge of autism in the population may not be associated with a change in the odds of being litigated against among special education administrators.

*Programming knowledge.* Programming knowledge was not statistically significant at $p = 0.102$ ($p < 0.05$). The Exp($B$) 6.883 in general knowledge indicated that there was a positive relationship between programming knowledge compared to lack of programming knowledge and litigation. The logit of 1.929 indicated that when programming knowledge changed from 0
to 1 and all other independent variables were held constant, the log odds of litigation increased by about 1.93. The odds of litigation were about 588% higher for those programming knowledge than those without such knowledge. The odds ratio of litigation among those with programming knowledge to those without programming knowledge equaled 6.883, or about 688 with programming knowledge per 100 without programming knowledge. However, the probability of litigation was within the range of 95% confidence interval .683 to 69.362, indicating that programming knowledge was not a useful predictor. Based upon the interval with 95% confidence, a unit-change in programming knowledge in the population may not be associated with a change in the odds of being litigated against as a special education administrator.

Litigation by Type

Further inspection of the data was conducted to determine if the type of litigation activity was significantly impacted by general autism knowledge or knowledge of educational programming. When analyzed separately, neither of these factors resulted in statistically significant findings and did not increase the odds for predicting the likelihood of litigation occurring for complaints, mediation, resolution, hearings or all types of litigation to occur. A more detailed explanation of each type of litigation and the results are provided.

Complaints. General autism knowledge was not a significant predictor of complaints. The Exp(B) .992 indicated a slightly negative relationship. The logit of -.008 indicated that when general autism knowledge changed from 0 to 1 and all other independent variables were held constant, the log odds of no complaints to complaints equaled .992. Knowledge of educational programming was also not a significant predictor of complaints. The Exp(B) 1.089 indicated that
there was a positive relationship between knowledge of educational programming and complaints. The logit of .085 indicated that when knowledge changed from 0 to 1 and all other independent variable were held constant, the log odds of experiencing complaints increased by about .09. Based on the interval with 95% confidence, a unit-change in knowledge of educational programming in the population may not be associated with a change in the odds of complaints.

Mediations. General autism knowledge was not a significant predictor of mediations. The Exp($B$) 1.062 indicated a slightly positive relationship. The logit of .060 indicated that when general autism knowledge changed from 0 to 1 and all other independent variables were held constant, the log odds of no mediations to mediations equaled 1.062. Knowledge of educational programming was also not a significant predictor of mediations. The Exp($B$) -.084 indicated a slightly negative relationship between knowledge of educational programming and mediations. The logit of -.084 indicated when knowledge of educational programming changed from 0 to 1 and all other independent variable were held constant, the log odds of mediations decreased by about .08. Based on the interval with 95% confidence, a unit-change in knowledge of educational programming in the population may not be associated with a change in the odds of mediations.

Resolutions. General autism knowledge was not a significant predictor of resolutions. The Exp($B$) 1.057 indicated a slightly positive relationship. The logit of .056 indicated when general autism knowledge changed from 0 to 1 and all other independent variables were held constant, the log odds of no mediations (0) to mediations (1) equaled 1.057. Knowledge of educational programming was also not a significant predictor of resolutions. The Exp($B$) .009
indicated a miniscule relationship between knowledge of educational programming and resolutions. The logit of .009 indicated when knowledge of educational programming changed from 0 to 1 and all other independent variable were held constant, the log odds of resolutions increased by about .009. Based on the interval with 95% confidence, a unit-change in knowledge of educational programming in the population may not be associated with a change in the odds of resolutions.

**Hearings.** General autism knowledge was not a significant predictor of hearings. The \( \text{Exp}(B) .061 \) indicated a slight relationship. The logit of .061 indicated when *general autism knowledge* changed from 0 to 1 and all other independent variables were held constant, the log odds of no hearings to hearings equaled 1.063. *Knowledge of educational programming* was also not a significant predictor of hearings. The \( \text{Exp}(B) -.017 \) indicated a slightly negative relationship between knowledge of educational programming and hearings. The logit of -.017 indicated when knowledge of educational programming changed from 0 to 1 and all other independent variable were held constant, the log odds of hearings decreased by about .02. Based on the interval with 95% confidence, a unit-change in knowledge of educational programming in the population may not be associated with a change in the odds of hearings.

**All.** General autism knowledge was not a significant predictor of all litigation activities combined. The \( \text{Exp}(B) .949 \) indicated a slightly negative relationship. The logit of -.052 indicated when *general autism knowledge* changed from 0 to 1 and all other independent variables were held constant, the log odds of not all litigation to all equaled .949. *Knowledge of educational programming* was also not a significant predictor of all litigation. The \( \text{Exp}(B) 1.160 \) indicated there was a positive relationship between knowledge of educational programming and all
litigation. The logit of .149 indicated when knowledge changed from 0 to 1 and all other
independent variable were held constant, the log odds of experiencing all litigation increased
by about .15. Based on the interval with 95% confidence, a unit-change in knowledge of
educational programming in the population may not be associated with a change in the odds of
all litigation.
APPENDIX D

EXTENDED DISCUSSION
The purpose of this study was to investigate general autism knowledge, autism programming knowledge, and training and experiences of special education administrators, and to determine if any of these factors predicted litigation. This section discusses the interpretations of these findings in relation to the specific research questions: (1) What general knowledge do special education administrators have concerning autism spectrum disorders, and what is their knowledge of program components; (2) What educational training and professional development experiences do special education administrators receive in autism spectrum disorders; (3) What are the training needs of special education administrators in autism spectrum disorders; and (4) Do training and experience in autism spectrum disorders predict dispute and resolution activities? This section addresses the extent to which findings can impact current practices for special education administrators and includes recommendations for future research.

Contributions of the Study to the Current Literature

Previous studies investigating preparation and professional development of special education administrators are limited to but a few (Arick & Krug, 1993; Crockett, Becker, & Quinn, 2009; Stile & Pettibone, 1980). Researchers have also explored knowledge and training in autism among professional groups other than special education administrators (Chown, 2009; Heidgerken et al., 2005; Preece & Jordan, 2007; Ray & Mehta, 2010; Schwartz & Drager, 2008; Stone, 1987; Stone & Rosenbaum, 1988). This study has been conducted to fill the gap in existing research specifically examining knowledge and training in ASD among special education administrators. The results have highlighted themes regarding knowledge and training and have
examined factors related to autism litigation. The following discussion addresses the knowledge and training in ASD among special education administrators.

General Knowledge in ASD

The first objective of this study was to examine general ASD knowledge among special education administrators and knowledge of educational programming. Administrators must ensure appropriate instruction, plan for the provision of services, and allocate the resources necessary to deliver a FAPE (Thompson & O’Brian, 2007). Because the educational needs of learners with autism are complex, knowledge in these domains is relevant for informed decision-making to occur (NAC, 2009; NRC, 2001, Simpson, 2005; Volkmar et al., 2004).

General autism knowledge. As illustrated by the results, special education administrators were most knowledgeable regarding the general characteristics of autism. Some participants continued to endorse current myths regarding autism such as, “Most children with autism have an intellectual disability.” This is relevant because misperceptions of this nature could limit learner access to the general curriculum. Special education administrators demonstrated the greatest variability on questions related to autism eligibility. These results are consistent with prior research that ambiguity and diagnostic uncertainty exist regarding autism eligibility (Fombonne, 2001; Tidmarsh & Volkmar, 2003). One could surmise administrators should have knowledge of eligibility criteria for autism, given the propensity for litigation (Etscheidt, 2003; Zirkel, 2002). A possible explanation is special education administrators are not directly involved in the assessment process, and therefore possess more general than explicit knowledge.
Knowledge of educational programming. Questions investigating knowledge in this domain were relevant because issues related to autism programming represent the largest and most expensive area of litigation (Etscheidt, 2003; Yell, Katsiyannis, Ryan & McDuffie, 2008; Zirkel, 2002; Zirkel & Gischlar, 2006). Results in this area indicated in general, special education administrators are knowledgeable regarding most of the strategies that must be considered as part of the IEP (TAC 89.1055(e), Content of the IEP). Few participants demonstrated knowledge for all of the strategies inclusively. Less knowledge was demonstrated on items related to communication strategies, the “gold standard” for research-based practices, and understanding of considerations for extended educational programming. Results may suggest continued research-to-practice gaps, and highlight the need for continued efforts to address this challenge.

Training and Experience

The second objective of this research was to investigate the education, training and professional development experiences of special education administrators in ASD. Although literature suggests knowledge impacts decision-making (Eisenhardt & Zaracki, 1992; Nutt, 1998; Simon, 1944, 1997; Simon & Newell, 1958; Sutcliffe & McNamara, 2001), little research exists on the professional development of special education administrators (Arick & Krug, 1993; Crockett et al, 2009; Stile & Pettibone, 1980). No other studies have examined special education administrator training and experience specific to ASD.

Results of this study revealed all of the participants held a master’s degree or higher and more than half held additional certifications. The majority of the participants had special education teaching experiences that included teaching learners with autism. As previously
illustrated, special education administrators reported the least amount of training and preparedness on topics related to disputes involving learners with autism, evidence-based practices for children with autism, and human rights of individuals with autism and their families. These results confirm trends identified in the literature regarding the need for knowledge in ASD (Iovannone et al., 2003; NAC, 2009; Simpson, 2005).

Training Needs

The third objective of this research was to identify the training needs in ASD as reported by special education administrators. Professional development topics derived from CEC knowledge domains were the basis for these topics (CEC, 2009). Special education administrators perceived the most significant professional developments needs related to Best practices for learners with autism, followed by Educational programming for learners with autism. Other areas of need were Increasing access to the general curriculum for learners with autism, and Professional development for school staff serving learners with autism. These results are consistent with current research identifying professional development needs in ASD (NAC, 2009; Schreibman, 2005; Simpson et al., 2007).

Factors Predicting Litigation

The fourth and final objective of this research was to explore whether or not training and experience in ASD predicted dispute and resolution activities. Investigation of this question did not reveal statistically significant results for any of the factors identified for inquiry. Special education teaching experience, teaching learners with autism, general autism knowledge, and knowledge of educational programming did not predict or increase the odds of litigation. A positive relationship was found between special education teaching experience, teaching
learners with autism, and knowledge of educational programming. This relationship, although not statistically significant, may suggest individuals working directly in autism-related areas are at increased risk for experiencing disputes.

Implications for Practice

The findings of this study can be utilized to support activities in several areas. First, there is a need to examine the professional development needs identified by special education administrators related to ASD. Although recent research has explored training experiences of special education directors (Crockett et al., 2009), topic-specific training tailored to meet administrator needs is lacking. Engineering professional development experiences to meet the perceived needs of the special education administrator may increase capacity for decision-making and potentially reduce the research-to practice-gap that currently exists, such as knowledge and implementation of research-based interventions. Current literature has focused on the training needs of school personnel other than special education administrators (NAC, 2009; NRC, 2001; Schreibman, 2005; Simpson, 2005; Simpson et al., 2007).

Second, special education administrators experience disputes related to ASD for many reasons. Although none of the factors examined in this study were predictors of litigation, it is necessary to further examine possible predictors. It is also relevant to explore alternatives to disputes. Proactive interventions to reverse the present trends in autism litigation could save money, school resources, and relationships (Estcheidt, 2003; Zirkel, 2002; Zirkel & Gischlar, 2006). For example, the development of professionals to serve as impartial mediators (other than state-appointed) and IEP meeting facilitators may be one solution. Building the capacity of key stakeholders at the local level to resolve disputes would certainly be a more desirable
outcome than litigation. Therefore, it may timely for state education agencies to restructure current dispute resolution avenues by requiring more diligent efforts at the local level before complaints and requests for hearings can be filed. The current system does not mandate exhaustion of remedies at the lowest level of disagreement, which may be one factor that perpetuates the litigation trend.

Limitations of the Study

Several limitations exist within the design of the current study and must be considered when interpreting these results. The most significant limitation of the study was the use of convenience sampling to recruit participants. Convenience sampling was utilized because of the availability of the sample. This sampling technique was useful for the purpose of obtaining general information and for examining particular qualities of the participants consistent with the research questions (Castillo, 2009).

Sampling by this technique however, may result in sampling bias because some members of the population have no chance of being sampled. Consequently, the extent to which the convenience sample actually represents the entire population cannot be known. Although several attempts were made to increase participation rates, the sample size was low and not reflective of the general population. Further analysis of respondent data revealed all 20 regions across the state were represented by at least one member of the sample.

In addition, this study only surveyed special education administrators in Texas, so generalization of findings to other states or regions is also limited. It is important to recognize that self-reported data on dispute activity may also be biased. Several studies have examined
ASD knowledge among professionals, but there are currently no definitive guidelines to objectively measure one’s knowledge of ASD.

**Recommendations for Future Research**

- Extending this line of research to include participants across the region and country would provide a broader view of professional development needs specific to special education administrators and ASD.

- As suggested in the literature and supported by this study, there continues to be a research-to-practice gap regarding knowledge of research-based interventions for learners with autism and implementation in the school environment. The development of effective models for reducing this trend is necessary.

- Although none of the factors investigated in this study predicted disputes in ASD, other factors are worthy of investigation since ASD represents the most litigated area of IDEIA.

- Because working with learners with ASD poses a greater likelihood of being involved in disputes, future research on professional development focusing on mediation and conflict resolution is needed.

- Future research to refine the survey instrument for cross-disciplinary use would increase its utility for exploring autism knowledge and training needs among professionals across settings.

- Another area for further inquiry would be investigating the professional development preferences of special education administrators on perceived topics of need by exploring various training avenues, such as webinars, on-line courses, distance learning, web-based modules, and on-site training.
APPENDIX E

OTHER ADDITIONAL MATERIALS
Dear Special Education Administrator,

An increase in the prevalence of autism spectrum disorders (ASD) has created a need to examine the preparation of personnel involved in serving students with ASD. As a special education administrator, your assistance is needed, and would be appreciated.

Dr. Bertina Combes, a faculty member at the University of North Texas, Department of Educational Psychology, along with her doctoral student Heather Hughes, are seeking to learn more about the knowledge base and training needs of special education administrators in the area of ASD. This will be accomplished through a research survey entitled "Knowledge and Training in Autism Spectrum Disorders Among Special Education Administrators". You are being asked to complete a 60-item survey that will take about 15 minutes. The survey seeks information about your knowledge and experience with ASD, your district's services to students with ASD, and your perceived training needs in ASD.

Completion of the survey involves no foreseeable risks. Your participation in the study is voluntary. Further, you may discontinue taking the survey at any time. Survey procedures utilized will not allow you to be identified personally. Data gathered will be reported on a group basis. Though the study will not benefit you directly, results of the study will be beneficial to those responsible for training teachers, administrators and others who work directly with students with ASD. If you have questions regarding this study, please contact Dr. Bertina Combes at the University of North Texas at Bertina.Combes@unt.edu or by phone at (940)565-2628. You may also contact Heather Hughes at [contact information redacted].

You may print a copy of the Informed Consent Notice for your records. This project has been reviewed and approved by the University of North Texas Institutional Review Board (940) 565-3940. Contact the UNT IRB with any questions regarding your rights as a research subject.

Clicking the “BEGIN SURVEY” button below indicates
-You have read and understand the information provided above and that you may contact Dr. Combes if you have questions about the study.
-You have been told the possible benefits and the potential risks and/or discomforts of the study.
-You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits.
-You understand why the study is being conducted and how it will be performed.
-You understand your rights as a research participant and you voluntarily
-You understand your rights as a research participant and you voluntarily consent to participate in this study.

BEGIN SURVEY

This e-questionnaire consists of five sections including demographic information, professional background and training, your understanding regarding autism, knowledge of educational programming, and professional development needs. The term “autism” is used to include students with both low and high functioning autism. The questionnaire should take approximately 15 minutes to complete.

Section 1 – Demographic Information
1. What is your district K-12 enrollment?
2. Approximately how many students in your district have been formally identified as having autism?
3. National and state data indicate meeting the needs of students with autism poses legal challenges for school districts. Meeting the needs of students with autism poses legal challenges for my district.
   a) Yes
   b) No
4. My district has been involved in disputes involving students with autism.
   a) Yes
   b) No
5. Please check (✓) the type of disputes experienced by your district involving students with autism.
   - Texas Education Agency complaint
   - Mediation
   - Resolution meetings
   - Due Process hearings
   - All of the above
   - None

Section II – Professional Background and Training
1. What is your highest degree earned?
   a) I do not have a degree
   b) Bachelor’s
   c) Master’s
   d) Doctorate
2. Do you hold administrator certification?
   a) Yes
   b) No
3. How many total years have you served as a Special Education Administrator?
   a) 1-5
   b) 6-10
   c) 11-15
   d) 16+

4. How many years of special education teaching experience do you have?
   a) 0
   b) 1-5
   c) 6-10
   d) 11-15
   e) 16+

5. Have you ever taught students with autism?
   a) Yes
   b) No

6. Please check (✓) the professional certificates and licensures that you currently hold.
   - Board Certified Behavior Analyst
   - Board Certified Associate Behavior Analyst
   - Licensed Specialist in School Psychology
   - Educational Diagnostician
   - Speech/Language Pathologist
   - Other (please specify):
   - None

7. Please check (✓) the topics from the list that your training as a special education administrator prepared you to address.
   - National and state education laws and regulations regarding autism
   - Disputes involving learners with autism
   - Theories and methodologies of teaching and learning for children with autism
   - Adaptation and modification of curriculum for children with autism
   - Continuum of program options and services for children with autism
   - Services available to individuals with autism
   - Pre-referral and intervention processes and strategies for children with autism
   - Process of developing individual education programs for children with autism
   - Evidence-based practices validated for children with autism
   - Strategies for identifying individuals with autism
### Section III – Understanding Regarding Autism

Note whether the following statements are True, False or Do Not Know.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Children must exhibit impaired social interaction to receive a diagnosis of autism.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>2. To receive a diagnosis of autism, children must exhibit self-injurious behaviors.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>3. To receive a diagnosis of autism, children must exhibit behaviors and interests that are repetitive and stereotypical.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>4. To receive a diagnosis of autism, children must exhibit impaired communication skills.</td>
<td>True</td>
<td>False</td>
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<tr>
<td>5. Some children with autism do not seem to experience pain in the same as children without autism.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>6. More boys than girls are diagnosed with autism.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>7. Some children with autism demonstrate uncoordinated gross and fine motor skills.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>8. The bulk of scientific evidence supports a causal relation between childhood vaccinations and autism.</td>
<td>True</td>
<td>False</td>
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<tr>
<td>9. Children with autism primarily tend to be auditory learners.</td>
<td>True</td>
<td>False</td>
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<tr>
<td>10. Autism is caused by a non-nurturing style of parenting.</td>
<td>True</td>
<td>False</td>
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<tr>
<td>11. Autism is a developmental disorder.</td>
<td>True</td>
<td>False</td>
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<tr>
<td>12. Children with autism are deliberately negativistic and non-compliant.</td>
<td>True</td>
<td>False</td>
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<tr>
<td>13. Children with autism do not show emotional attachment even toward their parents.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>14. Most children with autism do not have spoken language.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>15. Most children with autism have an intellectual disability.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>16. Some children with autism have intense areas of interest.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>17. Typically, individuals with autism process information in a non-literal manner.</td>
<td>True</td>
<td>False</td>
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<tr>
<td>18. Even with early intervention, the prognosis for independent community functioning of children with autism is poor.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>19. Echolalia is a speech pattern less common in children with autism when compared to children with Down Syndrome.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>20. Visual schedules for students with autism help them predict and follow the events or routines of the day.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>21. Children with autism never make eye contact with others.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>22. Autism occurs more commonly among higher socioeconomic and educational levels.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>23. Children with autism are more intelligent than scores from standardized tests indicate.</td>
<td>True</td>
<td>False</td>
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<tr>
<td>24. Many individuals with high functioning autism want friends but have difficulty reciprocating the relationship.</td>
<td>True</td>
<td>False</td>
</tr>
</tbody>
</table>
Section IV – Knowledge of Educational Programming

Select the most appropriate response from the multiple options provided.

1. For a student with autism who is eligible for special education and related services, how many strategies should be included in the Individualized Education Program?
   a) No more than 3 strategies
   b) There are no specific strategies to consider
   c) All eleven strategies must be considered and included as determined by the IEP team.
   d) The first five prioritized strategies identified by the IEP team

2. Peer-reviewed, research-based practices for students with autism include:
   a) Facilitated communication
   b) Social stories
   c) Applied Behavior Analysis
   d) Relationship Theory

3. The rigor of research considered the “gold standard” when determining interventions for students with autism would be
   a) Scientifically-based practices
   b) Promising practices
   c) Limited supporting information for practices
   d) Not recommended

4. Determining the need for Extended School Year (ESY) services for students with autism, is based upon
   a) Availability of staff over the summer
   b) Regression and recoupment data exclusively
   c) Student need
   d) Present levels of achievement and functional performance

5. The purpose of “daily schedules reflecting minimal unstructured time” for students with autism is
   a) To keep track of the services provided throughout the school day
   b) Document progress on the IEP
   c) Provide important information to the student and those who work with the student
   d) Provide a list of activities completed each day

6. The purpose of in-home and community-based training for students with autism is to
   a) Increase generalization of skills from one environment to another
   b) Reinforce skills in a variety of settings
   c) Teach new skills in different settings to increase independence
   d) Both a and b

7. Positive behavior support strategies for students with autism include
   a) A time-out continuum based upon the individual needs of the child
   b) Consequences that occur naturally in the learning environment
   c) Antecedent manipulation, replacement behaviors, reinforcement strategies, and data-
based decisions
d) Data collection techniques that are based upon Theories of Learning

8. The term “futures planning” for students with autism refers to

a) Skills for work and leisure
b) Developing a transition plan at age 16
c) Developing employability skills and job placement opportunities
d) Transition services, which generally begin by age 16, but may begin at an earlier age on an individual basis as determined by the ARD committee

9. Parent/family training and support for students with autism must be provided by

a) Person who is a Licensed Professional Counselor
b) Qualified personnel with experience in Autism Spectrum Disorders
c) A qualified person that is selected by the family or caregiver
d) School district personnel

10. When determining the staff-to-student ratio for students with autism, the committee should consider

a) The student’s strengths, preferences, and reinforcers
b) The setting, student’s communication abilities, and present level of competence in the area of instruction
c) The time of day, number of other students in the setting, and the training level of the teacher providing the instruction
d) How many students are in the setting throughout the school day

11. Communication strategies teachers should consider for students with autism include

a) Facilitated communication
b) Picture Exchange Communication System
c) American Sign Language
d) Augmentative, incidental, and naturalistic communication interventions

12. Examples of social skills supports and strategies based on social skills assessment/curriculum for students with autism include

a) Circle of Friends
b) Video modeling
c) Social stories
d) All of the above

13. The purpose of professional educator/staff support for students with autism is to

a) Avoid the need to contract for professional services
b) Increase positive relations between home and school
c) Assure the correct implementation of techniques and strategies in the IEP
d) Meet the requirements of the settlement agreement with parents
### Section V- Professional Development Needs

Please rate your individual need for professional development on the following topics, ‘L’ if there is a “Limited” or no need for information, ‘M’ if there is a “Moderate” (some) need for information, or ‘S’ if there is a “Significant” (great) need for information.

<table>
<thead>
<tr>
<th>Topic</th>
<th>L</th>
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<tbody>
<tr>
<td>1. Educational programming for learners with autism</td>
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<td>2. Assessing learners with autism &amp; eligibility determination</td>
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<td>3. Best practices for learners with autism</td>
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<td>4. Legal issues and learners with autism</td>
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<td>5. Characteristics of autism</td>
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<td>6. Increasing access to the general curriculum for learners with autism</td>
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<td>7. Professional development for school staff serving learners with autism</td>
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<td>8. Preschool programming for learners with autism</td>
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<td>9. Quality program indicators for serving learners with autism</td>
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<td>10. Parent and family needs of learners with autism</td>
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<tr>
<td>11. Other (please specify):</td>
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</table>
COMPREHENSIVE REFERENCE LIST


Data Accountability Center (n.d.). *Individuals with Disabilities Education Act (IDEA) data.* Retrieved from https://www.ideadata.org/arc_toc9.asp#partbCC


Individuals with Disabilities Education Improvement Act of 2004. 20 U.S.C. § 1400 et seq.


