Early childhood educators’ understanding of common childhood mental health diagnoses and procedures

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Abstract
Rates of Attention-Deficit/Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) diagnoses have increased in recent years (Center for Disease Control and Prevention [CDC], 2010; CDC 2012). Both of these disorders require symptoms to be present during early developmental periods (American Psychiatric Association, 2013). As young children spend much of their time in childcare, Early Childhood Educators (ECEs) are likely to encounter children with these disorders (Federal Interagency Forum on Child and Family Statistics, 2007). However, there is little research on the role of ECEs in the process of identification and referral of children for evaluation or mental health services or ECEs’ knowledge about ADHD and ASD. This study evaluated the knowledge of ECEs about ADHD and ASD and the process of referring children for services. It also evaluated the effects of a 2-hour training on ECEs’ knowledge about these disorders using the Knowledge of Attention Deficit Disorder Scale (Sciutto, Terjesen, & Bender Frank, 2000) and the Autism Survey (Stone & Rosenbaum, 1988), as well as a brief demographics/teaching history questionnaire. Results indicated that ECEs had low knowledge levels regarding ADHD, but greater knowledge of ASD. Knowledge of ADHD and ASD increased significantly pre- and post-training. ECEs had greater knowledge of the symptoms of ADHD than the causes, course, or treatment of the disorder. This study contributes to the body of literature regarding ECEs’ knowledge and training, specifically in the domain of childhood disorders such as ADHD and ASD. The study also provides evidence for the need for increased ECE training regarding these childhood disorders as well as the efficacy of short-term training for increasing knowledge in those domains.
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EARLY CHILDHOOD EDUCATORS’ UNDERSTANDING OF COMMON CHILDHOOD MENTAL HEALTH DIAGNOSES AND PROCEDURES

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Abstract

Rates of Attention-Deficit/Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) diagnoses have increased in recent years (Center for Disease Control and Prevention [CDC], 2010; CDC 2012). Both of these disorders require symptoms to be present during early developmental periods (American Psychiatric Association, 2013). As young children spend much of their time in childcare, Early Childhood Educators (ECEs) are likely to encounter children with these disorders (Federal Interagency Forum on Child and Family Statistics, 2007). However, there is little research on the role of ECEs in the process of identification and referral of children for evaluation or mental health services or ECEs’ knowledge about ADHD and ASD. This study evaluated the knowledge of ECEs about ADHD and ASD and the process of referring children for services. It also evaluated the effects of a 2-hour training on ECEs’ knowledge about these disorders using the Knowledge of Attention Deficit Disorder Scale (Sciutto, Terjesen, & Bender Frank, 2000) and the Autism Survey (Stone & Rosenbaum, 1988), as well as a brief demographics/teaching history questionnaire. Results indicated that ECEs had low knowledge levels regarding ADHD, but greater knowledge of ASD. Knowledge of ADHD and ASD increased significantly pre- and post-training. ECEs had greater knowledge of the symptoms of ADHD than the causes, course, or treatment of the disorder. This study contributes to the body of literature regarding ECEs’ knowledge and training, specifically in the domain of childhood disorders such as ADHD and ASD. The study also provides evidence for the need for increased ECE training regarding these childhood disorders as well as the efficacy of short-term training for increasing knowledge in those domains.

Keywords: ADHD, Autism Spectrum Disorder, early childhood education, teacher knowledge, training
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Introduction

Young children spend much of their lives in preschool or childcare. In 2005, 61% of children 6 years of age and under were enrolled in some kind of non-parent childcare on a regular basis (Federal Interagency Forum on Child and Family Statistics, 2007). Preschool is a time of rapid development and learning. Often, it is the first time children experience classroom structure. They are required to sit still in small and large groups, share their toys, wait their turn, and follow directions (Oregon Department of Education, 2006). It is a time for children to learn how to interact socially, how to better communicate their needs, and how to be part of a class peer group. These tasks can be difficult for any young child at first; however, children who have childhood disorders may have more difficulty adjusting to these aspects of preschool (Wilens et al., 2002; Reszka, Odom, & Hume, 2012). Further, preschool can be an important time for identification of some childhood disorders, as the environment may make certain symptoms more noticeable. Comparisons to other children of the same age are more readily available, and thus, parents and teachers may become more aware of atypical behaviors that children exhibit.

The present study focuses on two common childhood disorders that are usually first diagnosed in infancy and early childhood, Autism Spectrum Disorder (ASD) and Attention-Deficit/Hyperactivity Disorder (ADHD). These disorders were selected because of the prevalence of symptoms in the preschool years (Egger, Kondo, & Andergold, 2006; Kogan et al., 2009). In addition, the preschool setting often plays a large role in the early referral and treatment of these disorders. Thus, another focus of this study is to evaluate the knowledge, role and impact of Early Childhood Educators (ECEs) in the identification and understanding of these disorders.
This literature review begins with a general introduction to these two common childhood disorders, ADHD and ASD, and their prevalence in preschool populations. This review also addresses the importance of the role of ECEs as key individuals in the process of referral and diagnosis for preschoolers with disorders. Although ECEs may be the first people, outside of family members, to see a child’s symptoms, it is unknown how much knowledge ECEs have about the aforementioned disorders. Additionally, although ECEs may recognize children who struggle in their classrooms, it is unclear how much knowledge or comfort ECEs have regarding the process of referring children and their parents for evaluation and mental health services. This review addresses the existing literature on the knowledge ECEs have about ADHD and ASD. Furthermore, it examines the existing literature on the efficacy of short-term training as a method to increase ECEs’ knowledge of these disorders.

Definitions

Prior to establishing the evidence base, it is important to define the specific terminology used in this literature. Several terms will be used throughout the literature review to describe individuals who work with preschool-age children, such as early childhood educator, preschool teacher, and pre-service teachers or educators. For the purposes of this paper, early childhood educators (ECEs) are defined as educators working with children under the age of 5 in a preschool or childcare center. This term is used interchangeably with the term preschool teacher, as these terms are frequently used in this manner throughout the literature and in common vernacular. Educators working with children in Kindergarten through fifth grade will be referred to as elementary school teachers or elementary educators. Pre-service teachers are defined as individuals who are in training to become educators, but are not yet licensed. Pre-service
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teachers will be used to define elementary school teachers in training; whereas, pre-service ECEs will refer to early childhood educators in training.

**Attention-Deficit/Hyperactivity Disorder**

Attention-Deficit/Hyperactivity Disorder (ADHD) is characterized by symptoms of inattention and/or hyperactivity and impulsivity. Some of the symptoms must occur prior to age 12. The symptoms must also cause impairment in multiple areas of a child’s life, such as school and home (American Psychiatric Association, 2013). In 2010, 9.5% of 4 to 17 year olds in the United States were diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD), making it one of the most commonly diagnosed childhood disorders in the country (Bloom, Cohen, & Freeman, 2011). The rate of ADHD diagnosed in children ages 2 to 5 is 3.3% (Egger, Kondo, & Andergold, 2006). The reason for the lower rate of ADHD in preschool children is unknown; however, a potential explanation is the difficulty distinguishing atypical from typical behavior at this age. Some of the symptoms of ADHD, such as distractibility and hyperactivity, can be considered normal or typical in preschool children. Additionally, it is possible that children’s inattention and hyperactive/impulsive symptoms do not cause functional impairment until they enter kindergarten and face increased demands for behavioral control. The Centers for Disease Control and Prevention (2010) reported a 21.8% increase in ADHD diagnoses between 2003 and 2007. Although this increase in diagnoses may be related to increased recognition of the symptoms, the substantial prevalence increase indicates a need for further research on this disorder.

**Autism Spectrum Disorder**

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that includes symptoms of impaired social communication and interaction, such as nonverbal communication
or social-emotional reciprocity, repetitive behaviors and circumscribed interests (American Psychiatric Association, 2013). An ASD diagnosis also requires symptoms to be present during the early developmental period. Additionally, an ASD diagnosis may include delayed or impaired language development and/or intellectual impairment (American Psychiatric Association, 2013). In 2012, the Centers for Disease Control (CDC) reported that the rate of ASD diagnosis was 1.14%, or 1 in 88 children. The rate for males was 1 in 54, and the rate for females was 1 in 252 (CDC, 2012). The rate of ASD in children 3 to 5 years old has been found to be 1 in 117 (Kogan et al., 2009). Although this rate is lower than that of ADHD diagnoses, the rate of ASD has been rapidly increasing, making it the focus of much public discussion and research. The Centers for Disease Control and Prevention (2012) reported that the rate of ASD diagnosis increased 23% from 2006 to 2008 alone. It is unclear whether this increase in diagnosis is related to a true increase in the incidence of the disorder or better recognition and diagnosis; however, the result is an increase in the number of children who may require services and treatment. Thus, there is a need for further research and understanding about ASD referral, diagnosis, and treatment.

**Importance of Early Childhood Educators in the Referral and Diagnostic Process**

Because young children spend much of their time in childcare, early childhood educators are positioned to be some of the first to notice children's difficulties. As ADHD and ASD diagnoses require the presence of symptoms during the early developmental period, it is likely that early childhood educators will encounter children who have these disorders (American Psychiatric Association, 2013). Early childhood educators may play an important role in the recognition and referral of first signs of ADHD or ASD. In one study, pediatricians and child psychiatrists reported that 46.4% of the referrals they received for ADHD came from teachers.
EARLY CHILDHOOD EDUCATORS’ KNOWLEDGE OF CHILDHOOD DISORDERS (Sax & Kautz, 2003). Teachers are also included in many school-based and multidisciplinary ADHD and ASD interventions (Abramowitz & O’Leary, 1991; Barkley, 2002; DuPaul & Eckert, 1997; Greene & Ablon, 2006; Segall & Campbell, 2012; Rogers & Vismara, 2008). As ADHD and ASD diagnosis rates increase, early childhood educators will more frequently encounter the disorder in their classrooms. Knowledge of the symptoms and referral process for ADHD and ASD would be beneficial to early childhood educators and their students. Thus, the question arises: how much do early childhood educators know about ADHD and ASD? Further, how well do they recognize symptoms of these disorders so as to make appropriate referrals?

Literature Review

Early Childhood Educators’ and Teachers’ Knowledge of Childhood Disorders

The body of literature regarding early childhood educators’ knowledge of childhood disorders is historically underdeveloped, with most studies conducted in the last 10 years. Due to the nature of the literature base, the few studies that do exist have produced contradicting findings regarding ECEs’ knowledge of childhood disorders. This section reviews studies in which ECEs’ knowledge of childhood disorders were investigated, as well as studies in which elementary school educators’ knowledge were investigated, when relevant.

Early Childhood Educators’ and Teachers’ knowledge of ADHD. The findings regarding early childhood educators’ knowledge vary across studies. In one study, Lian, Ying, Tean, Lin, Lian, and Yun (2007) investigated early childhood educators’ knowledge about childhood developmental and behavior disorders as well as normal development. Participants included 503 preschool teachers in Singapore. They completed a questionnaire containing questions about Attention-Deficit/Hyperactivity Disorder (ADHD), and Autism Spectrum Disorder (ASD), learning disorders, and normal development, as well as questions about their
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attitudes, perceptions, and practices regarding these disorders. The results indicated that teachers had an overall low level of knowledge about childhood disorders. Early childhood educator knowledge of ADHD was especially low, as a score over 50% was obtained by only 32% of teachers.

In the same study, higher education levels, previous experience with childhood disorders, and formal training in Early Childhood Education were all associated with higher levels of knowledge about childhood disorders and development. Additionally, although 75% of preschool teachers reported that they did not feel equipped to help students with these developmental or behavioral disorders, most reported an interest in receiving further training and education in this area.

Stormont and Stebbins (2005) also examined preschool teachers’ knowledge of ADHD. In their study, 138 preschool teachers in a Midwestern city completed a questionnaire regarding the causes, course, and treatment of ADHD in preschoolers as well as their experiences with and opinions about the disorder. Stormont and Stebbins (2005) reported that most incorrect responses were related to the assessment and diagnosis of ADHD. They reported that 65% of preschool teachers in this sample did not feel that they had an understanding of the assessment process for ADHD. Similar to findings by Lian et al. (2007), higher teacher education levels were associated with greater knowledge about ADHD. However, contrary to what was found by Lian et al., Stormont and Stebbins’ results indicated that teachers were able to correctly answer many questions about ADHD. The discrepancy in findings could be related to the location of the study. The study by Lian et al. was conducted in Singapore, whereas Stormont and Stebbins’ study was conducted in the Midwestern United States. It is possible that ADHD is more widely publicized and frequently discussed in the United States than it is in Singapore, creating a larger
awareness of its symptoms and treatment in the general public. Additionally, it is possible that the education requirements for early childhood educators in Singapore differ from those in the United States. Thus, further research is needed to obtain clearer information about teachers’ knowledge bases.

The body of literature regarding elementary school teachers’ knowledge and attitudes about ADHD is larger than that of early childhood educators. Sciutto, Terjesen, and Bender Frank (2000) conducted a correlational study with elementary school teachers. Participants were 149 teachers from six public elementary schools in the New York area. Teachers in the study completed the Knowledge of Attention Deficit Disorders Scale (KADDS), which was created and pilot tested by the authors. The KADDS measures knowledge of ADHD in three areas: symptoms/diagnosis, treatment, and general information about ADHD, such as the causes and trajectory of the disorder. Participants provided demographics and information about their teaching experience, including number of years of teaching, grade level, specialization, and experience with children who had ADHD. To measure self-efficacy, they rated their perceived ability to teach a child with ADHD on a 7-point scale. Results indicated that years of teaching experience, experience with children who were diagnosed with ADHD, and teacher self-efficacy were positively correlated with knowledge about ADHD. In general, teachers were more knowledgeable about the area of symptoms/diagnosis than about the treatment and general causes and course of ADHD. Teachers had more knowledge about well-known symptoms of ADHD, such as hyperactivity, and less knowledge about situational factors, such as the effects of novel versus familiar stimuli. The authors stated that the well-known features of ADHD are not necessarily helpful in accurately diagnosing the disorder and suggested that interventions
involve other distinguishing factors and symptoms might reduce the number of inaccurate referrals.

To explore the impact of elementary school teachers’ knowledge level on their decisions to refer students for assessment, Ohan, Cormier, Hepp, Visser, and Strain (2008) conducted a study similar to Sciutto et al. (2000), but they added a practical component. A total of 140 elementary school teachers in Melbourne, Australia, completed a demographics questionnaire as well as the ADHD Knowledge Scale created by Jerome, Gordon, and Hustler (as cited by Ohan et al., 2008). This measure assessed teachers’ knowledge of biological and familial factors in ADHD, the course of the disorder, and interventions. Additionally, participants read vignettes describing children with ADHD symptoms and responded to questions about their expectations of the child, their likelihood of referring the child for assessment, and their perceptions of treatment benefits. Results indicated that, on average, teachers answered 76% of the questions on the ADHD Knowledge Scale correctly. In general, teachers correctly answered questions about symptoms more frequently than they answered questions about the causes, course, and treatment of the disorder. Most teachers were able to identify that ADHD can exist without predominantly hyperactive/impulsive symptoms. Furthermore, results indicated that teachers’ knowledge had an impact on their responses to the vignettes. Teachers with higher levels of knowledge were more likely than those with lower levels to report seeking referrals for assessment and perceive treatment as beneficial. Ohan et al. (2008) stated that their study supported the recommendations of other experts to educate teachers about ADHD.

Groenewald, Emond, and Sayal (2009) reached a similar conclusion in their study of the recognition and referral of girls with ADHD. This study included 436 teachers from 40 elementary schools in England. The participants were given a vignette describing a 9-year-old...
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girl with either combined subtype or inattentive subtype of ADHD. After reading the vignette, participants answered questions about their perceptions of the girl’s difficulties, their decision about whether she needed a referral, and their belief about whether she could benefit from various interventions. The questionnaire also included demographic questions. Results indicated that most teachers identified the presence of a difficulty or problem; however, they tended to conceptualize the difficulties as problems with emotion or attention, not as a disorder. The participants were also less likely to identify the possibility of a disorder and recommend a referral if they perceived the girl to have only attention difficulties rather than a combined subtype. Additionally, few teachers reported that medication might be beneficial. The authors suggested that teachers may not see inattention as a part of an ADHD diagnosis. They also suggested that health care professionals and teachers should work together to improve recognition of ADHD and access to services for children diagnosed with this disorder.

In another study, Kos, Richdale, and Jackson (2004) investigated differences in knowledge about ADHD between pre-service and in-service elementary school teachers. Participants were 120 in-service elementary school teachers and 45 pre-service elementary school teachers in Victoria, Australia. Teachers completed a questionnaire created by the researchers. The questionnaire included questions about previous teaching experience as well as perceived knowledge of ADHD. Additionally, teacher knowledge questions were based on previously used measures (Jerome et al., 1994; Sciutto et al., 2000). Results indicated that in-service teachers had significantly higher levels of both perceived and actual knowledge of ADHD than did pre-service teachers. However, the number of years of teacher experience was not associated with higher levels of knowledge about ADHD in in-service teachers (Kos et al.,
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2004). This was not consistent with the findings of Sciutto et al. (2000), in which teacher experience was associated with overall greater knowledge levels about ADHD.

Vereb and DiPerna (2004) also investigated elementary school teachers’ knowledge of ADHD. Participants were 47 elementary school teachers in Pennsylvania and New Jersey. Teachers completed a questionnaire created by the researchers called the Knowledge of ADHD Rating Evaluation (KARE). This measure consisted of questions regarding knowledge of the etiology, symptoms, and course of ADHD, and included a separate scale regarding the treatment of ADHD (Vereb & DiPerna, 2004). Additionally, teachers answered questions about previous teaching experience and training, as well as their own acceptability of both behavioral and medication treatments for ADHD. Results from the study indicated that teachers obtained a mean score of 21.57 out of 31 items correct on the teacher knowledge scale, and a mean score of 6.53 out of 12 on the treatment scale. Knowledge of ADHD symptoms, etiology, prognosis, and treatment was related to greater teacher-reported previous training on ADHD. Greater knowledge was also related to both medication and behavioral treatment acceptability. Teaching experience was not significantly related to knowledge about ADHD symptoms or treatment, which was consistent with Kos et al. (2004), but inconsistent with Sciutto et al. (2000). This study demonstrates that teachers’ knowledge of ADHD is likely more related to the amount of training teachers had specific to ADHD than it is to the number of years they had taught.

Additionally, Dunne (2008) conducted a study of elementary school teachers’ knowledge of ADHD and ASD. In this study, 53 elementary school teachers completed questionnaires regarding previous training, experience with and knowledge of ADHD and ASD. The questionnaire included teaching demographics questions regarding previous training about specific childhood disorders as well as interest in receiving training on those disorders.
Additionally, it included questions about prior exposure to students with ADHD, ASD, and other disorders. The KADDS (Sciutto et al., 2000) was administered as a measure of teacher knowledge of ADHD. Results indicated that teachers had mixed levels of knowledge about ADHD. Teachers were more likely to correctly answer questions about the symptoms of ADHD than the diagnosis, prevalence, and treatment of the disorder (Dunne, 2008). Additionally, results from this study indicated that teacher-reported prior training about childhood disorders was not significantly related to greater knowledge about ADHD. Overall, this study indicated that teachers had greater overall knowledge of the symptoms of ADHD than the treatment of it, and that training was not significantly related to greater knowledge levels.

In summary, several studies examined teachers’ knowledge and perceptions of ADHD and demonstrated somewhat mixed results. Some studies indicated that early childhood educators and elementary school teachers had a poor knowledge base about ADHD, whereas others indicated that teachers had some basic knowledge of the disorder’s symptoms. Results from several studies indicated that elementary school teachers and early childhood educators had foundational knowledge of the symptoms of ADHD, but lacked knowledge of the assessment, diagnosis, and treatment of it (Stormont & Stebbins, 2005; Sciutto et al., 2000; Ohan et al., 2008; Dunne, 2008). These mixed results could be related to methodological differences, as many of these studies examined teacher knowledge in different ways. However, these studies generally indicate that teachers may have a good knowledge base about ADHD symptoms, but they may need more education and training on the causes, treatment, and recognition of ADHD symptoms in order to refer students and families to appropriate mental health professionals.

**Early Childhood Educators’ and Teachers’ knowledge of ASD.** The body of literature on early childhood educators’ knowledge of ASD is also limited and the results mixed.
Early Childhood Educators’ Knowledge of Childhood Disorders

In the study by Lian et al. (2007), researchers investigated early childhood educators’ knowledge of ASD in addition to ADHD and other disorders. Results indicated that teachers had a fair level of knowledge of ASD, with 68% of teachers obtaining a score over 50% on a knowledge questionnaire. However, the authors reported that most teachers believed ASD was curable, indicating that teachers still had some sizeable misconceptions about ASD.

Johnson, Porter, and McPherson (2012) also examined early childhood educators’ knowledge of ASD. Participants included 148 pre-service early childhood teachers in three Southeastern universities in the US, who were specializing in children birth through age 5. Participants completed a questionnaire that assessed perceived ASD knowledge, actual ASD knowledge, experience with ASD, and sources of information about ASD. Results indicated that early childhood educators had an overall low level of knowledge about the symptoms of ASD. Teachers were most familiar with the symptoms of repetitive behaviors, poor response to change, and lack of eye contact, and less familiar with symptoms of intellectual disability and using toys in unintended or unusual ways. Many of the teachers also mistakenly identified certain symptoms of ADHD, such as hyperactivity and excessive talking, as symptoms of ASD. Additionally, in this sample, previous experience with ASD was not predictive of higher scores on actual ASD knowledge measures.

Barned, Flanagan Knapp, and Neuharth-Pritchett (2011) also investigated pre-service early childhood educators’ knowledge and attitudes about ASD. Fifteen participants at a Southeastern university completed the Autism Inclusion Questionnaire, which included information about the knowledge of ASD, as well attitudes towards inclusive education. Additionally, four of the participants completed an interview following the questionnaire. Results of the questionnaire indicated that pre-service teachers had a larger number of
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misconceptions about ASD than correct answers. Many teachers did not recognize the role of early intervention in assisting students with ASD. However, most of the sample was able to correctly identify the core diagnostic criteria. The interview portion of the study indicated that the four teachers had varying levels of knowledge about ASD. Additionally, similar to the results found by Johnson et al. (2012), some of the teachers confused symptoms of ASD with symptoms of ADHD. Barned et al. reported that while all the teachers correctly identified the core symptoms, the qualitative portion of the study indicated a lack of depth in pre-service ECEs’ understanding of ASD.

In addition to studies examining early childhood educators’ knowledge of ASD, Segall and Campbell (2012) investigated elementary school teachers’ knowledge of ASD symptoms, course, and treatment, as well as its relationship to attitudes about classroom inclusion. Participants were 196 elementary, middle, and high school teachers and school psychologists in 45 Georgia schools. Forty-nine general education teachers and 68 special education teachers completed the Autism Inclusion Questionnaire, and a Knowledge of Autism Spectrum Disorder questionnaire, which assessed questions about the diagnosis, symptoms, treatment, and etiology of ASD (Segall & Campbell, 2012). They also completed measures about their attitudes toward various classroom behaviors and classroom practices. Results indicated that general education teachers demonstrated significantly lower ASD knowledge than did special education teachers. Additionally, general education teachers indicated that they did not know the answer to questions significantly more than special education teachers. The researchers also found that both knowledge of ASD and experience with ASD predicted greater awareness of ASD interventions. The findings from this study indicate that there is a need for increased training regarding ASD
for general educators, and that greater knowledge of ASD may affect teachers’ knowledge and willingness to use ASD interventions in the classroom.

Dunne (2008) also found that elementary school teachers had a need for training on ASD. In this study, 54 elementary school teachers’ knowledge and misperceptions about ASD were evaluated. In addition to teaching history and the KADDS, teachers completed the Autism Survey (Stone & Rosenbaum, 1988) as a measure of ASD knowledge. Results from this study indicated that elementary school teachers had greater knowledge of the symptoms and range of severity in ASD than the cognitive abilities of children with ASD. Additionally, prior training in this study was not significantly related to greater knowledge of ASD.

In summary, studies of teacher knowledge about ASD also demonstrated somewhat mixed results. Lian et al. (2007) and Johnson et al. (2012) found that early childhood educators had foundational knowledge of well-known symptoms of ASD, whereas Barned et al. (2011) found that early childhood teachers had a lack of knowledge of ASD symptoms. Both Johnson et al. and Barned et al. found that teachers confused symptoms of ASD with symptoms of ADHD. Additionally, Segall and Campbell (2012) found that general educators had less knowledge of ASD than did special educators, but that an increase in knowledge of ASD symptoms was a strong predictor for increased knowledge and willingness to use appropriate interventions. Finally, Dunne (2008) found that teachers had a generally good understanding of ASD general features, but had some misconceptions about the cognitive abilities of children with ASD. These studies of both elementary school teachers and early childhood educators indicated that teachers may have a need for further training about these childhood diagnoses and that an increase in knowledge may result in positive outcomes for teaching practices. Additionally, due
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to the mixed results and overall lack of research about teachers’ knowledge of ASD, it is clear that more research is needed in this area.

**Factors related to ECE and Teachers’ knowledge of ADHD and ASD Diagnoses.**

There are a number of factors that have been implicated in the literature as being related to an ECE’s or a teacher’s reported knowledge of ADHD and ASD. Some of these factors include level of education, prior training, exposure to children with the relevant diagnoses, and length of service as an ECE or a teacher. The factors of most interest in the current study are prior experience with children with ADHD and ASD, prior training, and level of education.

Although some studies have included these factors, especially prior experience with children diagnosed with the disorder (Sciutto et al., 2000; Lian et al., 2007; Vereb & DiPerma, 2004) and prior training on these diagnoses (Kos et al., 2004), there is a general lack of systematic evidence regarding the effect of various factors on knowledge levels. Three studies were found that have addressed the question of prior experience. The first study by Lian and colleagues (2007) found that previous experience with childhood disorders was related to greater knowledge about ADHD, ASD, and other childhood disorders. They also found that prior formal training was related to increased knowledge of those disorders (Lian et al., 2007). Sciutto and colleagues (2000) also found that prior experience with ADHD was related to greater knowledge of the disorder amongst elementary school teachers. Similar results were found in a study of ASD knowledge, as Segall and Campbell (2012) found that previous experience with ASD was related to greater knowledge of ASD.

Although these studies indicated that previous experience may be correlated with increased knowledge, other researchers reported contradicting results. Johnson and colleagues (2012) found that previous experience with ASD was not predictive of ASD knowledge.
Additionally, Kos and colleagues (2004) found that the number of years of teaching experience in general was not related greater knowledge of ADHD. In another similar study, the number of years of teaching experience was not related to knowledge about ADHD, but previous training was related (Vereb & DiPerna, 2004). In summary, the evidence of the contribution of these factors to ECE and teacher knowledge has been mixed. Therefore more research is necessary to investigate the effects of previous experience and training on ECE knowledge and practices.

One solution that has been proposed to increase ECE/teacher knowledge of common childhood disorders is teacher training. The following section reviews studies that have investigated providing training to teachers about these disorders. Most of this literature focuses on elementary school teachers. It is important to determine if short-term training can increase teachers’ knowledge and ability to educate and care for children with ADHD and ASD diagnoses.

**Teacher Training**

There are few studies in the literature regarding the effects of training on preschool teachers’ knowledge of ADHD and ASD. However, there has been a small amount of research conducted on the effects of training for elementary school teachers. Several of these studies have demonstrated that teacher trainings or in-services can be effective in increasing knowledge about ADHD and ASD. This section reviews the effects of training on elementary school teachers given the lack of studies available on preschool teachers.

**Teacher Training on ADHD.** Jones and Chronis-Tuscano (2008) investigated the efficacy of an in-service training on ADHD with elementary school teachers. Participants were 142 elementary school teachers in the Washington, DC area. Seventy-four teachers received the in-service training and 68 were in a waitlist control group. The training consisted of information
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regarding ADHD symptoms, diagnosis, and treatment, as well as methods of behavior management for the classroom. Teachers’ knowledge of ADHD was measured prior to and one month following the in-service. Knowledge of ADHD was measured using a 25-item scale modeled after those used in previous research. The scale included questions about the causes, assessment, symptoms, and treatment of ADHD, as well as classroom management strategies. Results indicated that prior to the training teachers in both groups endorsed little prior training on ADHD. Teachers in the in-service group demonstrated significantly more knowledge about ADHD following the training than prior to the training. Teachers in the in-service group also demonstrated a greater increase in knowledge about ADHD than did those in the waitlist-control group. Thus, in this sample of elementary school teachers, in-service training about ADHD was effective in increasing teachers’ knowledge about this disorder.

In another study, researchers investigated the influence of an educational training on elementary school teachers’ ability to screen for ADHD in their classrooms (Sayal, Hornsey, Warren, MacDiarmid, & Taylor, 2006). Participants were 96 teachers and 659 parents of children aged 4 to 11. This study was conducted in four stages. In the first stage, teachers were given a class list and were asked to identify which students in their class had ADHD, based on the DSM-IV criteria. In the second stage, teachers completed the Strengths and Difficulties Questionnaire (SDQ) for students in their class. The SDQ includes questions about child hyperactivity, emotional, and conduct problems, and level of distress and impairment. Parents also completed this questionnaire for their children. Both teacher and parent SDQ data was used in an algorithm to predict probable ADHD. In the third stage, teachers participated in a brief educational training about ADHD. The training included information about the diagnosis, symptoms, progression, and treatment of ADHD. In the fourth stage, teachers repeated the initial
exercise of identifying students with ADHD using the DSM-IV criteria. Results indicated that teachers more readily identified students as having ADHD following the training. Following the training, the concordance rate between teacher ratings, and identification of ADHD using the SDQ algorithm were significantly higher than prior to the training. Thus, teachers more accurately identified symptoms of ADHD in their own students following the training.

In another study, researchers investigated the effects of training on teachers’ knowledge of ADHD and other mental disorders (White et al., 2011). Participants were 137 elementary school teachers in Connecticut. Teachers completed a measure created by the researchers, which included questions about ADHD, Obsessive-Compulsive Disorder (OCD), and Tourette’s disorder. They then participated in a brief training regarding the symptoms and course of ADHD, OCD, and Tourette’s. Teachers were again administered the knowledge measure six weeks after the training. Results indicated that prior to the training the mean percentage of correct responses for ADHD was 38%. Following the training, the mean score for the ADHD portion of the test was 52%, which was a significant increase from the pre-test scores. The authors noted that the teachers who obtained the lowest scores on the pre-test demonstrated the greatest increase in scores on the post-test, indicating that the training was effective in increasing teacher’s knowledge about mental health, particularly for those who had little initial knowledge (White et al., 2011). Similar studies have been conducted to assess the effects of elementary school teacher training programs for autism symptoms.

**Teacher Training on ASD.** Ling and Mak (2012) investigated the effects of training on teachers’ knowledge of ASD. Participants were 311 teachers and staff in special education schools in Hong Kong. Participants were divided into two training groups and a control group. Both training groups received psychoeducation about ASD and instructions on how to complete
a functional behavior analysis. One group also received training about teaching emotion regulation skills. Staff completed measures of ASD knowledge, their perceived confidence in working with children with ASD, and their attributions of challenging child behavior prior to the training and again following the training. Results indicated that teachers and staff in both training groups had a significant increase in knowledge of ASD from pre-test to post-test compared to the control group. Additionally, the group receiving psychoeducation as well as information about emotion regulation demonstrated a significant increase in perceived efficacy working with children with ASD.

Probst and Leppert (2008) evaluated the efficacy of an ASD training program for elementary school teachers working with students with ASD. The training consisted of three sessions over three months that covered the symptoms, causes, assessment, and treatment of ASD, as well as teaching methods. The 10 teachers in the study were given a Classroom Child Behavioral Symptoms Questionnaire to complete for each of their students prior to the training and again six months after the training. Additionally, they were given measures of teacher stress and a questionnaire about implementing learning methods taught in the training. Results indicated that according to teacher reports, students’ behavioral symptoms significantly improved from pre-test to post-test. Additionally, teacher stress decreased significantly from pre-test to post-test, and nine of the 10 teachers reported using the skills taught to them in the training. Although the researchers in this study did not specifically evaluate the effects of training on teachers’ knowledge of ASD, it demonstrated that a teacher training can have a positive impact on both teachers and their students.

Robbins (2010) conducted a study as part of a dissertation to evaluate the effects of both online and face-to-face trainings for elementary school teachers. Participants were 12 pre-
service special education teachers enrolled in a course about ASD. Seven of the students were enrolled in a face-to-face section of the course, and five in the online section. Teachers completed a questionnaire designed for the study prior to and following the course. Results indicated that participants had low overall knowledge of ASD prior to taking the course. Additionally, both groups demonstrated significantly greater knowledge of ASD following the course, although the face-to-face group demonstrated a greater increase than did the online group. This study was not an evaluation of a brief training; however, it does demonstrate that teachers may benefit from receiving training about ASD.

In summary, studies of teacher training have demonstrated that training has been effective for increasing elementary school teachers’ knowledge. Elementary school teacher knowledge of ADHD symptoms and treatment, and ability to screen for those symptoms in their classroom increased following trainings (Jones & Chronis-Tuscano, 2008; White et al., 2011). Additionally, knowledge of ASD increased in several studies following training; Ling & Mak, 2012; Probst & Leppert, 2008; Robbins, 2010). Because these studies were conducted with elementary school teachers who may have different educational training than early childhood educators, it is possible that the findings from these studies may not generalize as well to early childhood educators. However, as both groups work with children on a daily basis, they likely have some similar knowledge of child development and basic strategies for working with children. Additionally, many early childhood educators’ and elementary school teachers’ skills and experiences overlap, as they both work in classroom settings and have similar behavioral requirements of students. Thus, trainings for elementary school teachers may also be informative for those working in early childhood education settings.
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Summary

As the rates of ADHD and ASD diagnoses increase, teachers will generally be more likely to encounter students exhibiting symptoms of those disorders. Much of the research has focused on elementary school teachers’ knowledge of these disorders, rather than early childhood educators. However, both disorders require symptoms to be present in childhood, thus it is important that early childhood educators understand these disorders, as they will likely also encounter children with symptoms of ADHD and ASD. Because there has been a dearth of research on early childhood educators’ knowledge of ADHD and ASD, it remains unclear how much early childhood educators know about these disorders and the process of referring children for evaluation and services. Additionally, results from the small body of existing research about teacher trainings on ADHD and ASD have indicated that elementary school teachers’ knowledge of these disorders increases after training. Further research is necessary to determine if such training will be effective for early childhood educators.

Aim of the Present Study

The purpose of the present study was to further examine early childhood educators’ knowledge and perceptions of ADHD and ASD, as well their understanding of the referral process for evaluation of these and other disorders. Additionally, the focus of this study was to examine the efficacy of a brief training on increasing early childhood educators’ knowledge of these disorders. Both of these factors, knowledge and improved skills following training, are essential to the development of early childhood educators’ ability to participate in the process of referral and diagnosis for children who experience symptoms of ADHD and ASD in the preschool years.
The primary hypotheses for the current study are as follows:

1. It is hypothesized that early childhood educators will have low levels of knowledge regarding ADHD and ASD diagnoses. This knowledge level is expected to be less than 50% correct responses to the questions on two knowledge questionnaires (i.e., the KADDS and the Autism Survey, respectively).

2. It is hypothesized that teachers will have higher levels of knowledge and familiarity regarding the symptoms of ADHD and ASD than about the causes, course, referral, or treatment of the disorders.

3. It is hypothesized that short-term training will increase early childhood educators’ knowledge regarding ADHD and ASD diagnoses.

4. It is hypothesized that short-term training will increase teacher-reported confidence and level of comfort with referring a child for evaluation for ADHD and ASD symptoms.

The exploratory hypotheses for the current study are as follows:

5. It is hypothesized that higher levels of teacher-reported prior training on ADHD and ASD will be related to higher scores on ADHD and ASD knowledge questionnaires.

6. It is hypothesized that exposure to children with ADHD or ASD diagnoses in the work setting will be positively related to ADHD and ASD knowledge scores.

7. It is hypothesized that the number of years an ECE has been working in the field will be related to higher ADHD and ASD knowledge scores.

Method

Participants

Participants included 23 female early childhood educators employed at a childcare center located in the Pacific Northwest. The age range of the participants ranged from 19 to 65 years.
old \((M = 37.47, SD = 16.10)\). Participants who identified as Caucasian comprised 66.7\% of the sample and 23.8\% identified as Latino. Additionally, one participant identified as Native American and one participant identified as Dominican and Caucasian. Participants’ years of experience teaching in Early Childhood Education settings ranged from 0.25 years to 30 years, with a mean of 9.08 years \((SD = 9.52)\). Nineteen percent of participants reported having had formal training on ADHD and 23.8\% of participants reported having received formal training on ASD.

**Procedure**

This study was approved by the Institutional Review Board (IRB# 0004173) at Pacific University. After IRB approval, participants were recruited by the childcare center. The center distributed an invitation to a multiple hour training about the nature, referral, and evaluation of childhood disorders. One participant chose to attend the training but did not consent to participate in the research portion. One participant was not a member of the current staff at the childcare center, but was invited by another employee. This individual participated in the training and provided informed consent; therefore, her data was included in the study. Staff members came from two childcare center locations for the training. The training took place in a large room at the main location. The center director, associate director, and multiple staff members participated. Participants represented employees working with all ages of children at the childcare center, from infants to kindergarteners. Upon arrival, employees who chose to attend the training were invited to participate in the research study. Prior to the beginning of the training, participants were given the informed consent document. Those who consented were given a packet of 3 questionnaires including a demographic and teaching history questionnaire,
the Knowledge of Attention Deficit Disorders Scale (KADDS; Sciutto et al., 2000), and the Autism Survey (Stone & Rosenbaum, 1988).

In order to protect participant confidentiality while preserving the ability to link responses across time, participants wrote code names on their questionnaires so they could be linked to later questionnaires. Following the training, participants were given all three questionnaires again with the addition of an evaluation form. Participants wrote their code names on top of the form before turning them in to the researchers. Participants were also asked to put their names on a slip of paper to be entered into a drawing if they desired to do so. Upon completion of the forms, a drawing was held for two gift cards to thank the ECEs for their participation. The entire set of activities lasted approximately 2.5 hours. A few weeks later, participants were given a certificate of completion for the training to count for their state required training hours.

**Measures**

**Demographics and Teaching History.** To obtain information about early childhood educators’ demographics and teaching background, a demographics and teaching history questionnaire was created. This questionnaire included basic demographic information as well as questions about teachers’ levels of education, lengths of time working in the childcare field, and lengths of time at their current childcare center. Additionally, the teaching history portion was adapted from Dunne (2008) and included questions about teachers’ prior experiences and trainings about early childhood disorders. Other questions asked about level of comfort with the process of referring a child for services (see Appendix A).

**Knowledge of ADHD.** Knowledge of ADHD was measured using the Knowledge of Attention Deficit Disorders Scale (KADDS; Sciutto et al., 2000). The KADDS measures
knowledge of ADHD in three areas: symptoms/diagnosis, treatment, and general information about ADHD, such as the causes and trajectory of the disorder. The measure contains 39 questions in a True/False/Do Not Know format. There is a total score as well as three subscale scores for the measure: Symptoms/Diagnosis, Treatment, and Associated Features (Sciutto & Feldhamer, n.d.). The Cronbach’s alpha coefficient for the KADDS ranges from .80 (Bender, 1996) to .87 (Sciutto et al., 2000). According to the authors of the KADDS (Sciutto & Feldhamer, n.d.), validity was examined in several ways. The more experience teachers had with ADHD, the higher they scored on the KADDS (Sciutto et al., 2000), supporting the validity of the measure. Additionally, the authors reported that teachers’ KADDS scores increased after training and this finding was used as an indication of validity (Sciutto & Feldhamer, n.d.). There are no external studies of the KADDS by other researchers that provide support for its validity.

**Knowledge of ASD.** Early childhood educator knowledge of ASD was examined using a reduced version of the Autism Survey (Stone & Rosenbaum, 1988). The first section of the Autism Survey contains 22 items assessing knowledge and beliefs about the diagnosis, etiology, and features of ASD (Campbell, Reichle, & Van Bourgondien, 1996). The second section includes a checklist of symptoms for Autism. Only the first half of the survey was used in the present study for the sake of timeliness. Responses to items for the first section of the Autism survey are rated on a 6-point Likert scale, with 1 indicating “Fully Agree” and 6 indicating “Fully Disagree.” A past examination of the internal consistency reliability of the Autism Survey reported a Cronbach’s alpha coefficient of .74 (Campbell et al., 1996). Using confirmatory factor analysis, Campbell et al. (1996) identified three “rogue” items that did not fit with the other items on the scale and needed to be removed. Following their recommendation, those items were not included in the current study.
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Results

Preliminary Analyses

Prior to conducting the main analyses, several steps were taken to prepare the data. First, all data were entered into an Excel spreadsheet and later imported into SPSS version 21. As noted in the methods section, the codenames provided by the participants were used to link data prior to and after the training. Before conducting the hypothesized analyses, the data were screened for missing data, outliers, and normality.

Missing Data. Some data were missing for 10 of the questionnaires. One participant did not complete the second questionnaire. Another participant left a page of a questionnaire blank. These two questionnaires were removed from the data set due to the extent of the missing data. Eight questionnaires were missing fewer than five data points. These were included in the data set, and mean scores were used in place of total scores for the KADDS and the Autism Questionnaire to utilize more of the available data. Thus, only two sets of participant data were removed and the rest were included in the main analyses.

Outliers and Assumptions of Normality. Univariate outliers were assessed by evaluating z-scores for each of the raw scores on the KADDS and the Autism Questionnaire. Z-scores with an absolute value of 3.00 or above were considered outliers. Using this criterion, no outliers were found. The assumption of normality was assessed using the Shapiro-Wilk test. Shapiro-Wilk tests were not significant for the KADDS pre-test or either of the Autism Questionnaires, indicating that these data were normally distributed. However, the Shapiro-Wilk test for the Associated Features subscale of the KADDS post-test was significant indicating that this scale was not normally distributed. Although this scale was not normally distributed, a decision was made not to transform the scale. Further, tests of normality were significant for
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several questions from the teaching history questionnaire, including those regarding comfort with the referral process, and likelihood of referring students for services. Responses to these demographic items were not normally distributed. It is important to note that several of the demographic items that were non-normally distributed are not part of the hypothesized analyses; therefore, a non-normal distribution is not concerning for these variables. Only non-normality in the hypothesized variable of the likelihood of referring children for services is considered to have influence on the results.

Descriptive Statistics

Participants’ years of early childhood teaching experience ranged from 0.25 years to 30 years. The mean was 9.08 years of experience \((Mdn = 5.00, \ SD = 9.52)\). The mean number of years employed at the childcare center where this study took place ranged from 0.25 to 29 years \((M = 5.01, \ Mdn = 2.00, \ SD = 8.10)\). Nineteen percent of participants reported that they had received some form of training about ADHD in the past, and 23.8% of participants reported that they had received some form of training about ASD in the past. Nineteen percent of participants also reported that they had taught at least one student diagnosed with ADHD, whereas 47.6% of participants reported that they had taught at least one child with ASD. On average, participants reported having “fewer than one” student currently receiving early intervention services \((M = 0.30, \ SD = 0.66)\), with responses ranging from zero to two students. Additionally, participants reported an average of 1.67 \((SD = 3.75)\) students in their classes who had ever received early intervention services, with responses ranging from zero to 17 students.

Main Hypotheses

Hypothesis 1: Early childhood educators will have low levels of knowledge regarding ADHD and ASD diagnoses. This knowledge level is expected to be less than 50%
correct of the questions on knowledge questionnaires (i.e., the KADDS and the Autism Survey, respectively). To test this hypothesis, mean scores were evaluated for both the KADDS and the Autism Survey. Because the KADDS responses were coded as 1 for correct and 0 for incorrect, the scores were considered to be less than 50% correct if the mean was below 0.5. Frequency statistics were run to determine the percentage of participants who obtained a mean KADDS score below 0.5 on the pre-test. Frequency statistics indicated that 71.4% of participants obtained a score below 0.5. This indicates that prior to the training the majority of participants had a knowledge level of ADHD that was below 50%.

To test this hypothesis in regards to ASD knowledge, mean scores for the Autism Survey pre-test were analyzed. Scores on the Autism Survey ranged from 1 to 6, with scores of 1 to 3 indicating an incorrect response, and scores of 4 to 6 indicating a correct response. In order to compare scores on the Autism Survey to scores on the KADDS, scores of 1 to 3 were recoded as 0 or incorrect, and scores of 4 to 6 were recoded as 1 or correct. The mean score was then recalculated and a mean score of 0.5 or below was considered to be less than 50% correct. This is not the method utilized by the authors of the test; however, it provided information that was more easily comparable to the results for the ADHD scale. Based on the mean scores, 85.7% of participants obtained a mean score above 0.5, and 14.3% of participants obtained a mean score of 0.5 or below. This indicates that in this sample, the majority of participants obtained knowledge scores above 50%. Overall, participants demonstrated less initial knowledge about ADHD and greater initial knowledge about ASD. The majority of participants obtained scores of less than 50% on knowledge about ADHD and scores of more than 50% on knowledge of ASD.

Hypothesis 2: Early Childhood Educators will have higher levels of knowledge and familiarity regarding the symptoms of ADHD and ASD, than about the causes, course,
referral, or treatment of the disorders. To evaluate this hypothesis in regards to ADHD, the mean score for the Symptoms and Diagnosis subscale of the KADDS was compared with the mean scores on the Associated Features subscale and the Treatment subscale. Two paired-samples t tests were conducted to evaluate whether early childhood educators’ scores on the Symptoms and Diagnosis subscale were greater than their scores on the Associated Features subscale or the Treatment subscale. The results of the first t test indicated that the mean Symptoms score ($M = 0.54, SD = 0.23$) was significantly greater than the mean Associated Features ($M = 0.34, SD = 0.13$) score, $t(20) = 4.17, p < .001$. The 95% confidence interval surrounding the mean difference ranged from 0.05 to 0.10. The effect size, $d$, was 0.91, indicating a large effect. The results of the second t test indicated that the mean Symptoms score ($M = 0.54, SD = 0.23$) was also significantly greater than the mean Treatment score ($M = 0.38, SD = 0.16$), $t(20) = 3.01, p = .007$. The 95% confidence interval surrounding the mean difference ranged from 0.05 to 0.26. The effect size, $d$, was 0.66, indicating a medium effect. Therefore, knowledge of the symptoms and diagnosis of ADHD was greater than knowledge of both the course and associated features as well as the treatment of ADHD.

To evaluate the second hypothesis for ASD, the mean was taken from items 1, 7, 9, 12, 18, and 22 on the Autism Survey to represent knowledge of ASD symptoms. Likewise, the mean was taken from items 2, 10, 15, 17, 16, and 19 to represent knowledge of the course of ASD, and the mean of items 3, 14, and 20 were used to represent knowledge of ASD treatment. Two paired-samples t tests were conducted to compare the mean scores on ASD symptom knowledge with ASD treatment knowledge and knowledge of the course of ASD. Results from the first t-test indicated that the mean symptoms score ($M = 4.16, SD = 0.71$) was not significantly different from the mean ASD course score ($M = 4.33, SD = 0.77$), $t(20) = -1.41, p =$
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.174. Additionally, the results of the second paired-samples $t$-test indicated that the symptoms score ($M = 4.16, SD = 0.71$) was not significantly different from the mean treatment score ($M = 4.41, SD = 0.81$), $t(20) = -1.50, p = .149$. Thus, no differences were found among different types of knowledge for ASD.

Hypothesis 3: Short-term training will increase early childhood educators’
knowledge regarding ADHD and ASD diagnoses. To evaluate this hypothesis, two paired-samples $t$-tests were conducted to determine if there were differences in scores on the ADHD and ASD questionnaires pre- and post-training. The first paired-samples $t$-test was conducted to compare the mean total scores on the KADDS pre- and post-training. Results indicated that the mean KADDS score at Time 2 ($M = 0.66, SD = 0.11$) was significantly greater than the mean KADDS score at Time 1 ($M = 0.40, SD = 0.12$), $t(20) = 9.29, p < .001$. The 95% confidence interval surrounding the mean difference ranged from 0.20 to 0.32. The effect size, $d$, was 2.03, indicating a large effect.

The second paired-samples $t$-test was conducted to compare the mean total scores on the Autism Survey pre- and post-training. Results indicated that the Autism Survey mean score at Time 2 ($M = 4.33, SD = 0.59$) was significantly greater than the mean score at Time 1 ($M = 4.12, SD = 0.57$), $t(20) = 2.16, p = .044$. The 95% confidence interval surrounding the mean difference ranged from 0.01 to 0.42. The effect size, $d$, was 0.47, indicating a medium effect. Therefore, results indicated that knowledge scores for both ADHD and ASD increased significantly from Time 1 to Time 2.

Hypothesis 4: Short-term training will increase teacher-reported likelihood of
referring a child for evaluation for ADHD and ASD symptoms. To evaluate this hypothesis, a paired-samples $t$-test was conducted to compare participants’ pre- and post-training responses
to a question about their likelihood to refer a student for services. Higher scores indicated greater agreement with the statement. Results indicated that the mean score at Time 2 ($M = 4.45, SD = 1.57$) was not significantly different from the mean score at Time 1 ($M = 3.95, SD = 1.82$), $t(20) = 1.49, p = .154$. This indicates that there was not a significant increase in likelihood of referring a child for evaluation pre- and post-training. Additionally, a related factor, understanding of the referral process, was included to evaluate this hypothesis. To evaluate whether participants believed they had a greater understanding of the process of referring children for mental health services and evaluation following the training, responses from pre- and post-test were compared. Higher scores indicated greater agreement with the statement that participants understand the referral process. Pre- test and post-test scores were compared using a paired-samples $t$-test. Results indicated that the mean score at Time 2 ($M = 4.881, SD = 1.12$) was significantly greater than the mean score at Time 1 ($M = 2.62, SD = 1.60$), $t(20) = 5.76, p < .001$. The 95% confidence interval surrounding the mean difference ranged from 1.44 to 3.08. This indicates that although teachers’ likelihood of referring a child for services did not change significantly following the training, their reported understanding of the referral process did increase significantly following the training.

**Exploratory Hypotheses**

**Hypothesis 5:** Higher levels of teacher reported prior training on ADHD and ASD will be related to higher scores on ADHD and ASD knowledge questionnaires. To evaluate this hypothesis, independent-samples $t$-tests were conducted to compare scores on ADHD an ASD between participants who had received previous training on ADHD and ASD and those who did not. The first independent samples $t$-test was conducted to compare scores on the KADDS between participants who reported receiving prior training on ADHD and those who did
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not. Prior to interpreting the results, a Levene’s test for homogeneity of variance was conducted to determine whether the assumption of homogeneity of variance was violated. The Levene’s test was not significant ($F = 1.73, p = .204$), thus, equal variances were assumed. Results indicated that there was no significant difference in the mean KADDS score between individuals who received prior training ($M = 0.41, SD = 0.07$) and individuals who did not receive prior training ($M = 0.39, SD = 0.13$), $t(19) = 0.80, p = .802$.

The second independent samples $t$-test was conducted to compare mean scores on the Autism Survey between individuals who had received prior training on ASD and those who did not. Levene’s test was not significant ($F = 0.052, p = .822$), and therefore, equal variances were assumed. Results indicated that there was not a significant mean difference between individuals who had received prior training ($M = 4.45, SD = 0.41$) and those who did not ($M = 4.01, SD = 0.56$), $t(19) = 1.56, p = .136$.

**Hypothesis 5: The number of students with ADHD or ASD that a teacher has been exposed to in the work setting will be positively related to ADHD and ASD knowledge scores.** Based on the nature of the responses to the questionnaires, there were not enough participants who said they had worked with children with ADHD and ASD to evaluate this hypothesis using the number of children the ECE was exposed to in their work setting. Instead, two groups were created for each disorder: participants who reported that they had worked with children with ADHD and those who reported that they had not, and participants who reported having worked with children with ASD and those who did not. Knowledge scores on the ADHD and ASD measures were compared for these groups. Independent samples $t$-tests were conducted to evaluate differences on scores between the two groups for ADHD and ASD separately. The first independent samples $t$-test was conducted to evaluate mean score
differences on the KADDS between participants who had ever worked with a student with ADHD and those who had not. Prior to interpreting the results, a Levene’s test for homogeneity of variance conducted to determine whether the assumption of homogeneity of variance was violated. The Levene’s test was not significant ($F = 0.13, p = .72$) and equal variances were assumed. Results indicated that participants who had prior experience with ADHD ($M = 0.43, SD = 0.11$) did not have significantly different scores on the KADDS from participants who did not have experience with students with ADHD ($M = 0.37, SD = 0.13$), $t(16) = 0.92, p = .373$.

The second independent samples $t$-test was conducted to evaluate mean score differences on the Autism Survey between participants who had previously worked with at least one student with an ASD and participants who had not. Results from the Levene’s test were not significant ($F = 0.62, p = .439$), and equal variances were assumed. Results from the $t$-test indicated that participants with previous experience with students with ASD ($M = 4.45, SD = 0.35$) had a significantly greater mean score on the Autism Survey than individuals without previous experience with students with ASD ($M = 3.81, SD = 0.58$), $t(19) = 3.05, p = .007$. The 95% confidence interval surrounding the mean difference ranged from 0.20 to 1.08. The effect size, $d$, was 3.05, indicating a large effect. Thus, results from this hypothesis indicate that in this sample prior experience with ADHD was not significantly related to ADHD knowledge scores, whereas prior experience with ASD was significantly related to higher ASD knowledge scores. However, this result is qualified by the fact that more ECEs reported experience with children with ASD diagnoses than children with ADHD diagnoses.

**Hypothesis 7: The number of years an ECE has been working in the field will be related to higher ADHD and ASD knowledge scores.** To evaluate this hypothesis, two Pearson product moment correlations were conducted to determine if there was a relationship
between the number of years participants had been working in early childhood education and their scores on both ADHD and ASD knowledge. There was a small positive correlation between years of experience and ADHD knowledge scores; however, the correlation was not significant, \( r(19) = .38, p = .110 \). Additionally, there was a positive small correlation between years of experience and ASD knowledge scores, although this finding was also not significant, \( r(19) = .39, p = .101 \). In this sample, the number of years of teaching experience was not significantly related to higher ADHD or ASD knowledge scores.

**Discussion**

Preschool can be an important time when childhood disorders such as ADHD and ASD are first recognized and diagnosed. As many children spend much of their time in childcare, Early Childhood Educators (ECEs) play an important role in the process of recognizing children who struggle in the childcare setting. Unfortunately, little research has been conducted to investigate how well equipped ECEs are in their ability to recognize possible symptoms of childhood disorders such as ADHD and ASD, and to provide the appropriate referrals to families. The purpose of this study was to investigate the knowledge of ECEs regarding ADHD and ASD, two disorders commonly diagnosed in childhood. Another aim of this study was to evaluate the efficacy of a short-term training to increase knowledge of these disorders as well as ECE’s familiarity with the process of referring children for mental health services. This section summarizes the results of this study, examines how it compares to previous research and points to directions for future research.

**Summary of Results and Implications**

One of the first steps of this study was to examine the pre-existing training, experiences, and knowledge of the participants. Approximately one-quarter to a one-fifth of ECEs had prior
training regarding ADHD and ASD diagnoses. Thus, the majority of the participants had no prior training with these common childhood disorders. In terms of their prior experiences working with children with these disorders, the number of ECEs with experience working with children with an ASD diagnosis was more than double the number with experience working with a child with an ADHD diagnosis. Most of the ECEs had some prior exposure to children with an ASD or an ADHD diagnosis. However, very few of the ECEs had children in their classrooms who were receiving intervention services. Finally, over half of the ECEs were fairly experienced having worked in childcare for more than five years.

A main goal of this study was to examine ECEs’ knowledge of ADHD and ASD prior to a brief in-service training. Results indicated that ECEs’ knowledge levels of ADHD were low, as the majority participants scored less than 50% on questions in this domain. However, ECEs demonstrated greater initial knowledge levels about ASD, with the majority of participants obtaining a score greater than 50% on the Autism Survey. The finding that ECEs have low initial knowledge levels regarding ADHD is consistent with the findings of Lian and colleagues (2007), who also found that the majority of ECEs scored less than 50% on an ADHD knowledge task. However, these findings are inconsistent with those of Stormont and Stebbins (2007), who found that ECEs had generally good levels of knowledge regarding ADHD. This is also inconsistent with the findings of Sciutto et al. (2000) and Ohan et al. (2008) who found that elementary school teachers had basic knowledge regarding ADHD. One explanation for the differences found between this study and prior literature is that studies on elementary school teachers may not be generalizable to early childhood educators. Behaviors present in ADHD that distinguish a seven-year-old child from his peers may be typical in a group of three-year-olds. Further, the number of children diagnosed with ADHD is greater in a school-aged
population, and thus, elementary school teachers may have greater experience with children who have been diagnosed with ADHD than ECEs.

The finding that most ECEs scored greater than 50% on the Autism Survey is consistent with the findings of some researchers that most ECEs had generally good foundations of knowledge about ASD and its symptoms (Johnson et al., 2012; Lian et al., 2007). This finding was inconsistent, however, with studies demonstrating that ECEs confused symptoms of ASD with those of ADHD and other disorders (Barned et al., 2011). This question was not addressed in this study as we did not attempt to have the participants categorize symptoms as characteristic of one disorder or another.

It is also inconsistent with research that has demonstrated that elementary school teachers had low levels of knowledge about ASD (Segall & Campbell, 2012). It is possible that this is reflective of the recent emphasis of the media on early recognition and diagnosis of ASDs, which may be more relevant to ECEs than to elementary educators (CDC, 2013). Additionally, it could be reflective of the finding that a large number of participants had prior experience with children with ASD, which was related to greater knowledge in this sample. Further, ASD is often diagnosed in the preschool years before children enter elementary school; thus, this fact may increase ECEs awareness of this disorder.

Another goal of this study was to examine whether preschool teachers had higher levels of knowledge regarding the symptoms of ADHD and ASD than the etiologies, courses, referrals, and treatments of these disorders. Results indicated that preschool teachers did have greater knowledge of ADHD symptoms than the etiology, course, referral, and treatment of the disorder. This is consistent with previous research (Stormont & Stebbins, 2007; Sciutto et al., 2000; Ohan et al., 2008; Groenewald et al., 2009). Although in the current study, preschool teachers
demonstrated greater knowledge regarding the symptoms of ADHD, this was not true of their knowledge of ASD symptoms. Results indicated that there were no significant differences between knowledge of the symptoms of ASD and the causes, course, or treatment of it. Although this is consistent with research that demonstrated that teachers had misconceptions in multiple areas of knowledge about ASD (Barned et al., 2012; Segall & Campbell, 2012), in this study ECEs had greater knowledge of ASD as a whole and thus, differences across domains of knowledge may have been obscured by overall higher levels in all domains. Further, it is important to note that the Autism Survey does not have subscales specific to the domains of symptoms, causes, course, referral, or treatment. Thus, in this study these domains were created by comparing representative questions from the Autism Survey. Given these limitations, the finding that there are no significant differences in teacher knowledge among these domains should be interpreted with caution. Further research is necessary to investigate these different types of teacher knowledge and what types of additional information needs to be provided to ECEs regarding certain aspects of these disorders.

Another main goal of this study was to investigate the efficacy of a short-term training on ECEs’ knowledge of ADHD and ASD. Overall, results of this study supported the use of short-term training with ECEs, as knowledge scores increased for both ADHD and ASD. Participants’ knowledge levels significantly increased from pre-training to post-training. On average, the participants mean scores on the KADDS increased by 26%, and their mean scores on the Autism Survey increased by an average of 2.17 points on a 6-point scale. This is consistent with previous research that demonstrated that training was effective in increasing elementary school teachers’ knowledge of ADHD (Jones & Chronis-Tuscano, 2008; White et al., 2011) as well as increasing the ability to recognize symptoms in children (Sayal et al., 2006). Additionally, the
findings from this study are consistent with research that demonstrated efficacy in increasing elementary school teachers’ knowledge of ASD (Ling & Mak, 2012; Robbins, 2010). In summary, the results from this study are consistent with previous literature and support the effectiveness of short-term training on increasing ECE knowledge of childhood disorders.

Finally, an additional aim of this study was to investigate the effects of short-term training on ECEs’ likelihood of referring children for evaluation or services. Results indicated that participants were not significantly more likely to refer a child for services following the training. However, participants did report a greater understanding of the referral process. There was little previous research regarding the effects of training on increasing likelihood of referral. However, previous research demonstrated that teachers with greater knowledge of childhood disorders were more likely to refer a child for mental health services (Ohan et al., 2008). Additionally, previous research demonstrated that recognition of symptoms in children led to greater likelihood of referral (Groenewald et al., 2009). Thus, the findings from the current study are somewhat inconsistent with previous literature, as it would be expected that increased knowledge of ADHD and ASD would be related to increased referral behaviors. However, it may be that the information was so new to the participants, that they had not yet changed their comfort level with the referral processes. Further, there may be other factors that affect the likelihood of referral such as prior experience with children with the disorder, confidence in one’s judgments about the child, and not viewing referral as part of one’s job responsibilities. It may be that knowledge and experience interact to increase teacher comfort, and also that the teacher’s role (i.e., assistant, lead teacher, center director, etc.) influences his or her perception of whether or not he or she would make a referral. This question was not examined in this study.
Several exploratory hypotheses were also examined in this study. One exploratory hypothesis was that teacher-reported prior training on ADHD and ASD would be related to greater scores on knowledge questionnaires. This hypothesis was unsupported for both ADHD and ASD. This is inconsistent with some of the research that has demonstrated that prior training was related to greater knowledge scores (Lian et al., 2007; Kos et al., 2004). However, as the research is limited in this area, further investigation is necessary to determine the impact of prior training on ADHD and ASD knowledge. In addition, we did not assess the extent and depth of the prior training nor how long ago the training occurred and these factors may have impacted the findings.

Another exploratory hypothesis in this study was that prior experience with children with ADHD or ASD would be positively related to greater scores on knowledge questionnaires. Results indicated that ECEs who had prior teaching experience with children who had ADHD did not have significantly greater knowledge scores than those who did not have prior experience with ADHD. This was inconsistent with prior research that demonstrated that prior experience with ADHD was related to greater knowledge about the disorder (Lian et al., 2007; Sciutto et al., 2000; Vereb & DiPerna, 2004). However, most of the studies that investigated this area were conducted with elementary school teachers. It is possible that the type or extent of prior experience with ADHD differs in ECEs. It is also not known if the prior experience was in the current setting of the daycare center. Additionally, it is possible that the lack of relationship found in this study is related to the small number of participants who endorsed prior experience with ADHD. Further research in this area is necessary to adequately determine the ways in which this factor may contribute to ECE knowledge.
In contrast, results from the current study indicated that ECEs with prior experience with ASD did have greater knowledge regarding ASD than those who did not have prior experience. This is consistent with some prior research, which indicated that prior experience teaching children with ASD was related to greater knowledge of the disorder (Lian et al., 2007; Segall & Campbell, 2012). This finding is inconsistent with a study by Johnson and colleagues (2012), who found that previous experience with ASD was not related to greater knowledge. More research is necessary in this area to determine whether prior experience with childhood disorders is related to greater knowledge of the disorder.

A final exploratory hypothesis was that greater years of teaching experience would be related to greater levels of knowledge regarding ADHD and ASD. Results indicated that this hypothesis was unsupported in this sample. This is consistent with the findings of Kos and colleagues (2004), who found that the number of years of prior teaching experience was not related to greater knowledge of ADHD. It is also consistent with the findings of Vereb and DiPerna (2004), who found no significant relationship between years of teaching experience and ADHD knowledge.

In summary, there were a number of significant and positive findings from this study. While preschool teachers in this sample had generally low initial knowledge about ADHD, they had generally good initial knowledge of ASD. Additionally, preschool teachers had greater knowledge of the symptoms of ADHD than of the cause, course, referral, and treatment of the disorder; however, this was not the case for ASD. Prior training was not related to greater demonstrated knowledge of either ADHD or ASD; however, prior experience was related to greater knowledge of ASD. Finally, short-term training was effective as a way to increase ECEs’ knowledge about both ADHD and ASD, as well as their comfort with the general process
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of referring children for services. Results from this study add to the overall growing body of literature regarding the knowledge and training of ECEs about ADHD and ASD. Additionally, it supports previous research emphasizing the importance and efficacy of training preschool teachers in these areas. In the following sections, limitations of the current study will be discussed, as well as possible future directions for research.

Limitations

This study had several limitations. The sample size was small and less than the 30 participants generally considered the sample size needed for inferential statistics (Field, 2009). The small sample size could have resulted in a reduced ability to detect differences among participants. Additionally, the small sample size may have reduced the variability among participants, especially since this was a convenience sample where all of the participants were employees at one childcare center. Another limitation to this study was that the sample may not have been representative of the general ECE population. The majority of the sample was Caucasian, female, and lived in the same general geographic area. Additionally, this sample was drawn from a childcare center in an area of higher socioeconomic status. This limits the generalizability of the study to ECEs who are not of the same gender, ethnicity, socioeconomic status, and geographic area as those in the current study. Additionally, most of the ECEs had five or more years of experience in early childhood education, which may not be representative of ECEs in other geographic or socioeconomic areas with several participants having worked at the setting for over five years.

Another limitation to this study was that this study was conducted in a small play room as the setting for the short-term training. Participants completed the measures while in the same room, sitting close together. Although they were told not to discuss their responses with each
other, it is possible that this could have occurred at some point during the data collection process. Additionally, it is possible that being near other participants could have impacted their responses. One way this could be addressed is through manipulation of the environment. If possible, participants could be required to complete the measures at individual desks in a separate room prior to attending the training or online. This might reduce the impact of proximity to other participants.

Another limitation to this study was that the Autism Survey and the KADDS were rated on different scales leading to differences in their psychometric properties. In addition, the scales did not cover all of the exact same domains (Stone & Rosenbaum, 1988; Sciutto et al., 2000). This made it difficult to compare scores between the two measures. Additionally, although the Autism Survey has been used in several studies of teacher knowledge, it was created in 1988 (Stone & Rosenbaum, 1988; Dunne, 2008), and therefore, some aspects of this measure may not be reflective of the current conceptualization of ASD as revisions to this diagnosis have occurred (American Psychiatric Association, 2013). In future research, it would be preferable to use a more recent measure of ASD knowledge.

An additional limitation to this study was the language used in some of the questionnaires. Some participants reported that the wording was difficult to understand, especially on the Autism Survey. This could have affected participants’ responses and subsequent scores on the measures, especially since the participants ranged in education level and in whether or not English was their first language. One way this limitation could be addressed would be to re-word questions that are above a certain reading level or that contain psychological jargon. This would reduce the possibility of incorrect responses to questions based solely on reading level or exposure to psychological terms.
Finally, the post-test data was collected immediately after the training. It is not known how much of the information the participants might have retained over time. A longer term evaluation both of the knowledge gained as well as comfort with referral would improve the strength of the study.

**Future Directions**

Future research in this area should address limitations of the current study. For example, future studies could replicate the current study with a larger sample size, including multiple childcare centers. The study could also be conducted in a more structured environment, so as to avoid possible bias in responses. Additionally, as this study was conducted in the Pacific Northwest, future studies should examine the knowledge of ECEs and effects of training in other geographic locations with more heterogeneous samples. The density of ADHD and ASD diagnoses in the respective geographic region is an important variable to consider. Future research should also incorporate a revised measure of teacher ASD knowledge that includes subscales regarding the symptoms, diagnosis, course, and treatment of the disorder.

Although this study contributes to the body of literature regarding ECE training and knowledge, there is still a limited number of studies addressing this important issue. Future research should continue to investigate ECEs’ knowledge of ADHD and ASD. Additionally, further research is necessary to investigate the referral behaviors of ECEs. What factors contribute to the likelihood of preschool teachers to refer children for services, and how effective is training at increasing referral behaviors in ECEs? Do ECEs refer children for services or is that function likely to be the responsibility of a more senior individual such as a lead teacher or center director? It is possible that more training around the referral process, with inclusion of specific resources could increase referral behaviors. It is also possible that greater familiarity
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with the services children receive from early intervention could affect the likelihood of referral. As more research is conducted in this area, future directions could include these and other factors. Additional research directions might include investigating preschool teacher practices with children who have these and other childhood disorders. This could include investigations of classroom structure and environment, classroom-based interventions, and structured teacher observations. Overall, there are many directions for research in regards to ECE knowledge, training, and practice with children who have ADHD, ASD, and other childhood disorders.

Conclusion

Overall, this study contributes to the growing body of knowledge regarding early childhood education and mental health, with specific focus on ADHD and ASD. The study reflects the need for increased ECE knowledge regarding ADHD and ASD. As many young children spend much of their time in early childhood education and childcare, ECEs are likely to encounter children with these disorders. Early diagnosis and interventions for childhood disorders, especially ASD, are known to be related to better long-term outcomes (Branson, Vigil, & Bingham, 2008). Thus, it is important that the providers who spend the most time with children have knowledge to recognize typical and atypical development. Furthermore, as more children are diagnosed with these disorders, the need for training around recognition and referral is likely to increase as well.

This study also contributes to research supporting the efficacy of preschool teacher training in increasing knowledge of these disorders. This is important, because increased knowledge will help decrease ECE misconceptions about typical and atypical behavior in the children they teach. ECE knowledge is becoming increasingly relevant as prevalence rates rise and additional emphasis is placed on early recognition and intervention (CDC, 2013).
As we continue to research the topic of ECE knowledge and training regarding childhood disorders, special focus should be placed on the possible effects and practical applicability of these findings to the field of Early Childhood Education. Although the effectiveness of training about these disorders has been demonstrated, only 19% and 23.8% of participants in this study reported having prior training on ADHD and ASD respectively, even though most participants had more than five years of ECE experience. In Oregon, ECEs are required to complete 15 hours of additional training courses per year; however only eight of those hours must fall in the domain of early childhood education or child development (Certified Child Care Centers General Provisions, 2012). Additionally, “child development” in this context includes a wide variety of topics such as physical development, nutrition, curriculum, special needs, and behavior (Certified Child Care Centers General Provisions, 2012). There is no requirement for ECEs to take courses specific to ADHD, ASD, or other childhood disorders. It is unclear whether the participants’ lack of prior training in the current study was out of personal choice or out of a lack of availability of trainings on ADHD, ASD, and other childhood mental health topics. Whatever the reason, it is clear that there is a disconnect between the research findings demonstrating that training about ADHD and ASD is helpful, and the actual practices of the early childhood community.

One possible way to address this disconnect would be to implement more specific guidelines as to what kinds of classes ECEs are required to take each year. ECEs could be required to take a course specific to disorders first diagnosed in childhood and the process of referring children for services. Trainings such as the one in the present study can be low cost and brief, but still provide a great deal of information to preschool teachers. Such trainings could be easily incorporated into existing continuing education requirements. By recognizing mental
health as an important part of child development and incorporating this topic into the ECE training model, preschool teachers can be better prepared to recognize children who are struggling and make appropriate referrals. The need for increasing awareness and knowledge of childhood mental health is great. ECEs play important roles in young children’s lives and have the opportunity to be an integral part of the recognition and treatment of childhood disorders such as ASD and ADHD.
References


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Appendix A.

Demographic Questions/Teaching History Questionnaire
Please write a code name or unique word below. DO NOT include any part of your real name.

Code Name __________________________

1. Age ______

2. What race/ethnicity do you identify as?
   (Circle one)
   a. American Indian or Alaskan Native
   b. Asian American
   c. Black or African American
   d. Hispanic or Latino
   e. Native Hawaiian or Other Pacific Islander
   f. White
   g. Multiracial
   h. Other (please specify) __________________________

3. Number of years employed at Learning Years Day School __________________________

4. Number of years in Early Childhood Education __________________________

5. Rate your level of interest on receiving training on each of these disorders:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>Very Interested</td>
<td>Mostly Interested</td>
<td>Somewhat Interested</td>
<td>Somewhat Disinterested</td>
<td>Mostly Disinterested</td>
<td>Not at all Interested</td>
</tr>
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</table>

   a. Attention-Deficit/Hyperactivity Disorder

   1  2  3  4  5  6

   b. Autism Spectrum or Pervasive Developmental Disorder
      (Asperger’s/Autism/PDD)

   1  2  3  4  5  6

   c. Conduct Disorder or Oppositional Defiant Disorder (CD and ODD)
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1  2  3  4  5  6

d. Communication Disorders

1  2  3  4  5  6

e. Mental Retardation (Intellectual Disability)

1  2  3  4  5  6

6. Have you ever received formal training on any of these disorders (in-service, workshops, courses) for the following disorders?

a. Attention-Deficit/Hyperactivity Disorder
   Y  N

b. Autism Spectrum or Pervasive Developmental Disorder (Asperger’s/Autism/PDD)
   Y  N

c. Conduct Disorder or Oppositional Defiant Disorder (CD and ODD)
   Y  N

d. Communication Disorders
   Y  N

e. Mental Retardation (Intellectual Disability)
   Y  N

7. If you were to attend a workshop or training session, how useful do you think each of the following topics would be?

1  2  3  4  5  6

Very Useful

Not at all Useful

a. Information about what the disorder is.

1  2  3  4  5  6

b. What causes the disorder
1  2  3  4  5  6  
c. Factors that influence teacher’s referral of childhood disorders  
1  2  3  4  5  6  
d. Listing of available resources for teachers about disorders  
1  2  3  4  5  6  
e. Common misperceptions or stereotypes of disorders  
1  2  3  4  5  6  

8. Have you ever had a student with the following disorders? Please write the number of students you are aware of that were previously diagnosed with the disorder.

   a. Attention-Deficit/Hyperactivity Disorder  
      Y N

   b. Autism Spectrum or Pervasive Developmental Disorder  
      (Asperger’s/Autism/PDD)  
      Y N

   c. Conduct Disorder or Oppositional Defiant Disorder (CD and ODD)  
      Y N

   d. Communication Disorders  
      Y N

   e. Mental Retardation (Intellectual Disability)  
      Y N

9. How many children in your class are currently receiving early intervention services? Please write one number.  

   _____________________________
10 What is the total number of students you have ever had class receiving early intervention? Please write one number. ____________________

11 If you were concerned about the development or behavior of a child in your classroom, how likely would you be to refer parents to a mental health professional?

1 2 3 4 5 6
Very Likely Likely Not at all

12 How well do you feel you understand the process of referring a child for services (educational, mental health, etc.)?

1 2 3 4 5 6
Completely Understand Do not understand