

SURVEY OF THE ASSESSMENT METHODS USED IN TEXAS
PUBLIC SCHOOLS FOR THE DIAGNOSIS OF PERVASIVE
DEVELOPMENTAL DISORDERS IN CHILDREN

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SURVEY OF THE ASSESSMENT METHODS USED IN TEXAS
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To my son Gary, with love.

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	x
ABSTRACT.....	xii
CHAPTER	
I. INTRODUCTION	1
PDD Categories	2
Incidence and Prevalence of PDDs.....	6
Assessment Protocols Cited in the Current Literature	7
Cultural and Linguistic Issues and PDD Assessment	11
Recommended Assessment Instruments, Based on the Current Literature	12
PDD-Specific Parent or Third-Party Rating Scales, Interviews, and Questionnaires.....	13
Interviews and Checklists not Specific to PDDs	16
Family Assessment	17
From Parent Interview to Implementation of Diagnostic Assessment	17
Intellectual Assessment Instruments and Methods as Cited in the Literature.....	19
Assessment of Communication.....	20
Adaptive Assessment	22
Assessment of Executive Function	24
Purpose of the Study	26
II. METHODOLOGY.....	27
Participants.....	27
Procedures.....	40

III. RESULTS	44
Survey Response Rate.....	44
Frequency Data from Assessment and Diagnostic Procedures.....	45
Issues in Bilingual Assessment.....	57
Additional Assessment Issues.....	64
IV. DISCUSSION.....	67
Purpose of the Study	67
Primary Assessment and Diagnostic Procedures.....	68
Secondary Assessment and Diagnostic Procedures.....	72
Issues in Bilingual Assessment of PDDs.....	73
Additional Assessment Issues.....	76
Limitations of the Study.....	78
Conclusions and Future Research.....	81
APPENDIX A: EMAIL COVER LETTERS	83
APPENDIX B: SURVEY.....	87
APPENDIX C: ASSESSMENTS, METHODS, PROFESSIONS, AND ASSOCIATED ABBREVIATIONS.....	97
REFERENCES	101

LIST OF TABLES

Table	Page
1. Districts/Cooperatives Eligible for Study, Number Used, and Number Completing Minimum Participant Requirements	30
2. ESC Regions Grouped Into Geographic Areas.....	33
3. Respondents Working in Urban or Rural School Settings.....	35
4. Use of PDD-Diagnostic Teams Within Geographic Areas.....	36
5. Respondents Working for Title I Schools.....	37
6. Respondents' Years of Experience in Profession and Current Setting.....	38
7. Bilingual/Multilingual Survey Respondents by Geographical Area	39
8. General Components to the PDD Survey	43
9. Availability of Certified Bilingual-Assessment Personnel in Schools	60
10. Respondent Opinion Regarding Which Languages to Assess in Bilingual Children Suspected of Having PDDs.....	63
11. Respondent Confidence in Bilingual PDD Assessment and Diagnostic Abilities	64
12. Opinions of Respondents With Respect to Being Provided Adequate Resources to Diagnose PDDs.....	65
13. Respondent Confidence in PDD Assessment and Diagnostic Abilities	66

LIST OF FIGURES

Figure	Page
1. Educational regions within Texas.....	28
2. PDD-specific parent or third-party-interview, questionnaire, and rating-scale use across the five geographical areas of Texas	46
3. Use of PDD-specific diagnostic assessment instruments and methods across the five geographical areas of Texas.....	47
4. Trends in developmental assessment instruments and methods implementation across the five geographical areas of Texas.....	48
5. Use of adaptive assessment instruments and methods across the five geographical areas of Texas.....	49
6. Communication assessment instruments and methods used across the five geographical areas of Texas.....	51
7. Use of verbal- and nonverbal- intelligence assessment instruments and methods across the five geographical areas of Texas.....	52
8. Use of academic screening assessment instruments and methods across the five geographical areas of Texas.....	53
9. Behavioral assessment instruments and methods used across the five geographical areas of Texas	54
10. Use of executive functioning assessment instruments and methods across the five geographical areas in Texas	55
11. Family assessment instruments and methods used across the five geographical areas in Texas.....	56
12. Assessment criteria used to diagnose PDDs across the five geographical areas in Texas	58

13. Frequencies of languages spoken across the five geographical areas in Texas as reported by survey participants.....	59
14. Bilingual professionals utilized to assess bilingual children across the five geographical areas in Texas	61

ABSTRACT

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The purpose of this study was to determine what assessment instruments and methods were being implemented within public elementary schools across the state of Texas to assist in the diagnosis of children suspected of having pervasive developmental disorders (PDDs). Results indicated that assessment professionals across Texas were using similar assessment approaches and were relying on both standardized and non-standardized measures. However, the overall use of effective standardized assessments, as indicated in the current literature, was mixed. Also, the results suggested that many professionals across Texas were not applying least-biased assessment approaches appropriately to culturally and linguistically diverse populations with PDDs.

CHAPTER I

INTRODUCTION

According to the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revised* (DSM-IV-TR), pervasive developmental disorders (PDDs) are characterized by severe and enveloping impairments in a number of developmental areas. Overt characteristics often observed in children who are ultimately diagnosed with a PDD include deficits with social interactions, as well as effectively following rules established within social norms when communicating with others. The presence of stereotyped behaviors, activity choices, and personal interests may also be observed in varying degrees. Signs of PDD usually become apparent within a child's formative years of development. The DSM-IV-TR states that symptoms of PDD must be present within the early stages of life. The pragmatic (i.e., social) use of language is particularly impacted in children diagnosed with PDDs. These disorders defined by the DSM-IV-TR are divided into the following five areas: Rett's disorder, childhood disintegrative disorder, autistic disorder, pervasive developmental disorder not otherwise specified (PDD-NOS), and Asperger's disorder (American Psychological Association, 2000). While they may share many similarities, an explanation of each of these disorders will reveal why they differ enough to warrant independent categorization.

PDD Categories

Rett's disorder. This PDD is characterized by the presence of a number of deficits that occur after a period of normal development. Development is usually typical until the child reaches the age of approximately 5 to 48 months. At some point within this timeframe, the child's head begins to grow more slowly than normal, and voluntary motor control of the hands begins to show signs of diminishment. Quite often, hand use becomes stereotypical in nature as evidenced by hand-wringing movements. Global gross motor control may also become significantly impacted. Soon after onset, the desire to engage in social interactions is often reduced. Mental retardation is a common co-occurring feature found in persons with Rett's disorder; seizure disorder may be present as well. The use of both expressive and receptive language becomes severely hampered (American Psychological Association, 2000; Mount, Charman, Hastings, Reilly, & Cass, 2003).

The prevalence rate of Rett's disorder is much lower than that of other PDDs, particularly autistic disorder. Rett's disorder is also almost exclusively found in females. This runs contrary to autistic disorder, which is more commonly observed in males (Schreibman, 2005). Rett's disorder is a progressive disorder, and recovery is rare. Deficits in both communication and behavior usually persist throughout life, although this disorder differs from traditional diseases of neurogenic origin in that marginal compensatory changes may take place in adulthood (Hagberg, Anvret, & Wahlström, 1993).

Childhood disintegrative disorder. Like Rett's disorder, children diagnosed with childhood disintegrative disorder have specific symptoms and features that are not associated with other PDDs (Kabot, Masi, & Segal, 2003). Childhood disintegrative disorder is characterized by a number of deficits that occur following a minimum of 2 years of what may be perceived as typical development. After the age of 2, regression is seen in the following areas: receptive and expressive language, pragmatics, typical play skills, motor control, and voluntary bowel and bladder control. Many of the social, communicative, and behavioral deficits found in childhood disintegrative disorder are comparable to that of autistic disorder in that deficits are often observed in social interaction, overall communication, and the use of patterns of behavior. Childhood disintegrative disorder is a largely under-diagnosed disorder, and its prevalence remains much lower than that of the more commonly diagnosed PDDs, such as autistic disorder. Childhood disintegrative disorder seems to affect both genders, but males are more often diagnosed (American Psychological Association, 2000). Approximately 100 cases of this PDD have been reported in the past 100 years (Schreibman, 2005). Although the remaining categories of PDDs each possess their own distinctive qualities, they remain difficult to both define and differentially diagnose because of the symptoms they share (Kabot et al., 2003).

Autistic disorder. Children with autistic disorder are described as having distinctly atypical development in the areas involving pragmatics (i.e., social communication), and they also have a limited number of areas of interest. Childhood autism, early infantile autism, and Kanner's autism are synonymous with autistic disorder. A child with autistic

disorder will have difficulty engaging in reciprocal interpersonal exchanges. Nonverbal communicative features (i.e., eye contact, gesturing, and facial expression) may be nonexistent. Verbal communication abilities may be grossly affected as well (American Psychological Association, 2000).

Language delays and deficits are common with children diagnosed with autistic disorder. Establishing and maintaining friendships may prove difficult with this population. Children diagnosed with autistic disorder may not wish to initiate, engage in, or sustain conversational acts with others. Often, children with autistic disorder engage in repetitive or perseverative speech that is idiosyncratic (i.e., peculiar) in nature. The prosodic features of language may be impacted in that the child produces monotonous speech or fails to appropriately apply suprasegmental devices, such as voice inflections commonly found in exclamatory statements. Echolalic speech (i.e., repeating another speaker's utterances) may also be present. Persons with autistic disorder may express resistance to change and prefer ritualized habits, even if they are socially inappropriate. This may also include self-stimulating behaviors, such as finger flicking, atypical body posture, and body rocking (American Psychological Association, 2000).

With respect to diagnosis, the DSM-IV-TR states that persons suspected of having autistic disorder must exhibit delays in at least one of the following areas before the age of 3 years: social interaction, pragmatics, or pretend play activities. The symptoms must also not be more closely attributed to other PDDs (American Psychological Association, 2000). As a result of advances in genetic research, the broad category of the term autistic disorder has been evolving into the more specific term *autism/autistic spectrum disorders*

(ASDs), which indicates a variety of differences beneath the overall umbrella of PDDs (Filipek, 2005). This trend in differential diagnosis has led to the acceptance of terminology, such as Asperger's disorder, which was included in the DSM-IV in 1994 (American Psychological Association, 1994).

Asperger's disorder. Asperger's disorder, also known as Asperger's syndrome, is characterized by deficits in social relations, as well as the presence of behaviors that are restrictive or repetitive in nature. Pragmatic deficits may have a severe impact on social interactions. Asperger's disorder differs from autistic disorder in that the acquisition of language is not markedly delayed or disordered. A child with Asperger's disorder may appear as typically-developing during the first 3 years of life. As seen in autistic disorder, children with Asperger's disorder may exhibit similar nonverbal language impairments and may also engage in repetitive and atypical behaviors, such as object or topic perseveration and self-stimulation. Children with autistic disorder may also exhibit difficulties with maintaining interpersonal relationships and engaging in spontaneous and non-ritualized behaviors. Cognitive development is not typically delayed to a degree that would be deemed significant, but the inability to engage in meaningful conversation or interaction with others may impact academic achievement. Mental retardation is usually not associated with Asperger's disorder, but many children with Asperger's disorder have been previously diagnosed as having attention-deficit/hyperactivity disorder (AD/HD). Depressive disorders are often associated with Asperger's disorder (American Psychological Association, 2000). Unlike other PDDs, persons with Asperger's disorder possess average to above-average intellect (Klin, McPartland, & Volkmar, 2005).

Pervasive developmental disorder not otherwise specified (PDD-NOS). Children who are known to have a PDD that is less severe in nature than other categories are often diagnosed as having PDD-NOS (Towbin, 2005). This category of PDD is characterized by underdeveloped reciprocal social interactions and decreased verbal and nonverbal communicative abilities. The presence of repetitive or stereotypical behaviors may also be observed. Children are commonly given a diagnosis of PDD-NOS when they fail to meet the requirements for diagnosis of autistic disorder because of several possible factors, such as delayed age of onset (American Psychological Association, 2000). There is considerable debate and disagreement with respect to the true nature of or the appropriate operational definition for PDD-NOS (Kabot et al., 2003).

Incidence and Prevalence of PDDs

In general, PDD has a relatively low incidence rate (Mandell & Palmer, 2005); however, a dramatic increase in both public curiosity and scientific research has been witnessed. This may be due, in part, to an overall increase in PDD diagnoses within the school-age population in recent years (Centers for Disease Control and Prevention, 2007; Individuals with Disabilities Education Act Data, 2006; Newschaffer, Falb, & Gurney, 2005; Shattuck, 2006).

A recent study conducted by the Centers for Disease Control and Prevention (CDC) found the average prevalence rate of autism spectrum disorders (ASDs) in 3-year-old children across six states studied was 6.7 per 1,000. This equates to a prevalence rate of approximately 1 out of every 150 children. Such data suggest that the prevalence rate of ASDs among children is higher than previously thought (Centers for Disease Control and Prevention, 2007).

Findings from research conducted by Shattuck (2006) indicate that the average prevalence of autism spectrum disorders among children increased from 0.6 to 3.1 per 1,000 from 1994 to 2003. Curiously, this study also found that, during the same timeframe, the prevalence of mental retardation and learning disabilities declined by 2.8 and 8.3 per 1,000 children, respectively. Since the Shattuck study concluded that the increase in the prevalence of autism had a significant association with the decline in the prevalence of mental retardation and learning disability, the possibility of these children being misdiagnosed cannot be ignored. One might ask if these increasing prevalence rates are an indication that more accurate methods for diagnosing these conditions are being implemented or if they are simply indicative of large-scale misdiagnoses.

Results from a study conducted by Newschaffer et al. (2005) concluded that the overall prevalence of autism has been increasing over time. The total number of children and students receiving government sponsored services for autism has increased from 34,375 in 1996 to 193,637 in 2005 (Individuals with Disabilities Education Act Data, 2006). While these numbers do not represent a disorder that is epidemic in its prevalence by any means, the fact that there is an increase in diagnoses calls into question a number of issues. One of these issues concerns assessment methods for diagnosing PDDs.

Assessment Protocols Cited in the Current Literature

Due to the heterogeneous nature of PDDs, both among and within the 5 areas specified in the DSM-IV-TR, there is no single assessment or diagnostic measure that can be used to determine whether or not a child does, in fact, have a PDD. Accurate diagnoses of PDDs involve a number of steps that include, but are not limited to, the following: collection of historical data, direct observation, interaction with the child,

administration of norm- and criterion-referenced measures, contact with caregivers, and collaboration between various professionals from a number of disciplines. Historical data are collected from medical records, school records, and an extensive parent interview.

Observation and direct communicative contact with the child is also important. While direct observation is essential in allowing the professionals involved in the assessment process to gather the necessary data, conclusions cannot be based solely upon what is often a limited and unnaturalistic setting for the child being assessed. Before any formal assessment is conducted directly with a child suspected of having a PDD, it is important to gather pertinent information from parents with respect to the child's development, as well as parental concerns. Such information can be obtained through the use of parent interviews or questionnaires. Integrating information from the parent and caregiver interviews provides insight as to how the child behaves in non-clinical environments (Ozonoff, Goodlin-Jones, & Solomon, 2005).

In addition to parent interview and direct observation, important domains to evaluate during the assessment process of children suspected of having a PDD include the assessment of intellect, language use, and adaptive behavior. Other areas that may require assessment on a case-by-case basis include, but are not limited to, the following: attention, executive function, neuropsychology, and academic functioning. Additional comorbid features may also warrant further assessment as deemed beneficial or necessary to support a diagnosis (Ozonoff et al., 2005).

The administration of norm- and criterion-referenced measures is often helpful when gathering information from caregivers, teachers, and the child suspected of having a PDD. These measures possess distinct advantages and disadvantages, and their

reliability is dependent on appropriate presentation of the tool and interpretation of results, as well as compliance based on the child's behavior at the time of testing. Testing measures that are currently in use as cited in the recent literature will be described in greater detail. Assessment results are also obtained to determine possible medically and/or psychiatrically related issues. This thorough data collection provides the results needed to engage in a differential diagnosis of PDDs (Ozonoff et al., 2005).

Since children suspected of having PDDs exhibit deficits in a number of domains, Ozonoff et al. (2005) recommend that assessments be conducted by multidisciplinary or interdisciplinary teams. A third option involves the use of a transdisciplinary team (Hoit, 2006). These teams consist of professionals from fields that include, but are not limited to, speech-language pathology, physical and occupational therapy, psychology, psychiatry, special education, as well as medical specialists in the fields of neurology and pediatric medicine. The gathering of information across the various professions associated with PDD assessment is essential in order for the assessment process to be effective. Many of the professionals who assist in PDD assessment, such as speech-language pathologists, cannot diagnose PDDs; however, they do diagnose the speech and language disorders associated with this condition. The expertise of speech-language pathologists is essential in aiding physicians and licensed specialists in school psychology (LSSPs) in accurately diagnosing children suspected of having disorders related to PDDs (Diehl, 2003).

Multidisciplinary teams provide independent evaluations while interdisciplinary teams evaluate the child as a group, with one of the members acting as the assessment coordinator. This person works directly with the child and family and also coordinates

assessment and follow-up meetings with other team members (Prelock, Beatson, Bitner, Broder, & Ducker, 2003). The transdisciplinary team is much like the interdisciplinary team with the exception that the transdisciplinary team approaches the assessment process with a common theoretical framework that goes beyond professional borders (Hoit, 2006). Family members are considered to be a part of the transdisciplinary team. Professionals within the team also engage in what is referred to as *role release*, which involves team members surrendering profession-specific assessment methods to the other team members (Woodruff & McGonigel, 1988). Regardless of the method used to assess, the goal is to obtain the necessary information required to make appropriate decisions for a diagnosis or to determine what additional information is needed to engage in a diagnosis (Schwartz, Boulware, McBride, & Sandall, 2001). Federal guidelines are in place to ensure that appropriate assessments are carried out. An example of such legislation is the Individuals with Disabilities Education Act (1990).

Individuals with Disabilities Education Improvement Act (IDEIA). IDEIA (2004), a reauthorization of the Individuals with Disabilities Education Act (1990), seeks to ensure that all children with special needs, including children diagnosed with disorders related to PDD, receive appropriate services within their schools (Mandell & Palmer, 2005). Individual states determine how disabilities are defined and services are provided in order to comply with IDEIA mandates; this includes assessment and diagnosis. Children with PDDs qualify for special education services under IDEIA (Noland & Gabriels, 2004). Therefore, the issue is not if services are or are not being provided, but if those services provided are adequate, effective, and evidence-based.

Due to the heterogeneous nature of PDDs, both between and within the different diagnostic categories involved, it is important that assessment results are accurate and reliable. A child suspected of having a PDD may still receive services from special education departments within schools before receiving a clinical diagnosis from medical or mental health professionals (Noland & Gabriels, 2004). Accurate assessment results are dependent on many parameters which include the following: adequate funding for testing materials and personnel, adequately trained educational personnel, availability of highly-trained specialists who are needed for assessment, and appropriate health-care access (Mandell & Palmer, 2005).

While all children suspected of having PDDs should be assessed in a manner that is grounded in peer-reviewed research (Ozonoff et al., 2005), there is virtually no information published as to which instruments are used most frequently in schools and if those methods used are evidence-based. Such data are needed to accurately and reliably determine if the assessment tests and methods used within the public schools reflect the findings found within the body of current literature regarding individual assessment validity and effectiveness. Without data of current trends of the most often used assessment instruments and methods, it is difficult to determine the assessment trends within schools as they relate to children suspected of having PDDs.

Cultural and Linguistic Issues and PDD Assessment

In general, PDD assessment and diagnostic processes have experienced many changes over the years. Controversial research findings within the literature as they relate to PDD assessment are not uncommon. There is limited published research regarding culturally and linguistically diverse (CLD) populations within the current literature, and

this is quite pronounced in the area of PDD research with CLD populations. The majority of the research that has been conducted with special-needs populations has focused on Caucasian populations, and those results have been generalized to other populations without consideration to cultural, behavioral, and linguistic factors (Dyches, Wilder, Sudweeks, Obiakor, & Algozzine, 2004).

The lack of research with CLD children who have PDDs raises issues regarding appropriate assessment procedures. If the appropriate culturally-sensitive and least-biased considerations are not integrated into the assessment process, it is entirely possible that children will be inaccurately or inappropriately diagnosed. It is important that all children be assessed in all languages they have been exposed to in order to reduce the chances of misdiagnosing cultural and dialectal differences as cognitive or linguistic disorders (Bedore, Peña, García, & Cortez, 2005). Even if a CLD child is found to truly possess some sort of disability that affects academic achievement, the absence of culturally sensitive assessment processes theoretically leads to ineffective and inappropriate treatment methods that are not addressing actual deficits.

Recommended Assessment Instruments, Based on the Current Literature

When implemented and interpreted correctly, the use of norm- and criterion-referenced measures can provide valuable information in the diagnosis of PDDs in children (Ozonoff et al., 2005). Assessment instruments that have received attention in the current literature and the pertinent findings from scholarly research will be discussed. Once again, a number of assessment instruments are available on the market yet, only a fraction of these tests have received adequate scrutiny with respect to thorough research presented in peer-reviewed journals. Gathering information from a child's parents

regarding initial development, as well as parent concerns, is one of the key components of the primary assessment process (Ozonoff et al.).

PDD-Specific Parent or Third-Party Rating Scales, Interviews, and Questionnaires

Acquiring historical data and information regarding parental concerns is a vital component to child assessment (Ozonoff et al., 2005). A number of parent questionnaires and interviews have received attention in the current peer-reviewed literature. These include, but are not limited to, the following: *Asperger Syndrome Diagnostic Scale* (Myles, Jones-Bock, & Simpson, 2000), *Autism Behavior Checklist* (Krug, Arick, & Almond, 1988), *Autism Diagnostic Interview-Revised* (Rutter, LeConteur, & Lord, 2003), *Gilliam Autism Rating Scale* (Gilliam, 1995, 2006), and the *PDD Behavior Inventory* (Cohen & Sudhalter, 2005). The *Childhood Autism Rating Scale* (Schopler, Reichler, & Renner, 1988) contains parent or caregiver interview components.

Asperger Syndrome Diagnostic Scale (ASDS). The ASDS (Myles et al., 2000) is a parent or caregiver questionnaire that was developed in order to aid in the diagnosis of Asperger's disorder or to assist in differential diagnosis between it and similar disorders. The ASDS is designed to be used with children between the ages of 5 and 18 years with the intent of Asperger's disorder identification, development of appropriate treatment and intervention goals and objectives, and determining intervention progress. The questions contained within the ASDS are divided into five subscales: Language, Social, Maladaptive, Cognitive, and Sensorimotor. The questionnaire can be completed by both parents and educational professionals and takes 10 to 15 minutes to complete (Campbell, 2005; Goldstein, 2002).

A review conducted by Goldstein (2002) cites many weaknesses in the ASDS (Myles et al., 2000). With respect to differential diagnosis, the ASDS manual is not able to adequately place Asperger's disorder within the domain of PDDs, nor does it contain a review of the current literature. Goldstein's review also indicated that the ASDS possessed poor psychometric properties in that it lacked predictive validity and test-retest reliability data, as well as peer-reviewed references supporting the use of the assessment. Due to these serious limitations, it is recommended that the ASDS be used cautiously, if at all.

The conclusions of the Goldstein (2002) study are supported by research conducted by Campbell (2005). Campbell cites that the authors of the ASDS (Myles et al., 2000) failed to provide data regarding the cognitive level of functioning of persons with autism used in the validation study. This translates into the ASDS being a less reliable tool for accurately assessing children suspected of having Asperger's disorder if they possess cognitive deficits. The study indicates problems with test standardization, reliability, and internal consistency.

Autism Diagnostic Interview—Revised (ADI-R). The ADI-R (Rutter et al., 2003) is a semi-structured interview which was designed to survey symptoms of autism and also differentiate between persons with autism from persons with mental retardation or language impairments not attributed to autism (Lecavalier et al., 2006; Lord, Rutter, & LeConteur, 1994; Ozonoff et al., 2005). Research conducted by Lecavalier et al. (2006) found that the ADI-R had strong construct validity but also indicated that the ADI-R possessed internal consistency weaknesses when assessing repetitive behaviors. Although the ADI-R may be useful during the assessment process, it is not recommended for use

with young children or children with cognitive deficits, in part because of its lack of test sensitivity but also because it requires extensive time to administer and score (Ozonoff et al.).

Since the ADI-R (Rutter et al., 2003) requires significant time to administer and score, it may not prove to be an effective assessment tool for teams with limited time, personnel, and resources. An overall lack of literature found on the ADI-R may be because its use in research requires that persons attend an intensive training seminar as well as reliability-testing completion with ADI-R developers (Ozonoff et al., 2005).

PDD Behavior Inventory (PDDBI). The PDDBI (Cohen & Sudhalter, 2005) is a rating scale that can be presented to parents or educational professionals in order to determine how responsive a child diagnosed with PDD is to treatment (Cohen, Schmidt-Lackner, Romanczyk, & Sudhalter, 2003). Research conducted by Cohen et al. indicates that the PDDBI possesses good internal consistency, with significant correlations between parent-teacher and teacher-teacher administration comparisons. A separate study conducted by Cohen (2003) concluded that the PDDBI possessed strong criterion-related validity with the ADI-R (Rutter et al., 2003); CARS; *Nisonger Child Behavior Rating Form* (Aman, Tassé, Rohjahn, & Hammer, 1996), which is used to assess behavior; and the *Vineland Adaptive Behavior Scales* (Sparrow, Cicchetti, & Balla, 1984), which is an adaptive assessment test. The study concluded that, overall, the PDDBI is a strong instrument with respect to developmental, construct, and predictive validity. This instrument has the potential to help clinicians in the accurate assessment of progress in behavioral function during intervention (Ozonoff et al., 2005).

Autism Behavior Checklist (ABC). The ABC (Krug et al., 1988) is one of the older checklists for assessing autism that is still in use (Kobot et al., 2003). The ABC is an informant-report questionnaire that contains five subscales: Sensory, Relating, Body and Object Use, Language, and Social and Self-Help. Once a popular tool for use in both clinical and educational settings, the ABC is now recognized as containing outdated views of autism (Ozonoff et al., 2005). Current research indicates that the ABC lacks the sensitivity needed to adequately distinguish between persons with Asperger's disorder and other related developmental disorders (Rellini, Tortolani, Trillo, Carbone, & Montecchi, 2004). This runs contrary to research conducted by Eaves, Campbell, and Chambers (2000) which concluded that the ABC adequately differentiated persons with Asperger's disorder from children who are often mistakenly diagnosed as having a PDD. Rellini et al. (2004) also found an unusually high false negative rate with the ABC. Research conducted by Eaves and Williams (2006) maintained that the ABC total score is able to be used as a reliable screener for children with Asperger's disorder but profile analyses using the ABC scales should be disregarded.

Interviews and Checklists not Specific to PDDs

A number of parent interviews or checklists are available for use during a PDD assessment that are not necessarily specific to diagnosing PDDs. The *Children's Social Behavior Questionnaire* (Luteijn, Luteijn, Jackson, Volkmar, & Minderaa, 2000) is a parental questionnaire that can be used to measure less obvious social features which may be present in the less severe forms of PDD (Luteijn et al., 2000). Research conducted by de Bildt et al. (2005) support the use of the *Children's Social Behavior Questionnaire* (CBSQ) to measure subtle social features when diagnosing PDDs. The CBSQ has been

refined to reduce its length while maintaining its strong psychometric properties (Hartman, Luteijn, Serra, & Minderaa, 2006). The *Nisonger Child Behavior Rating Form* (Aman et al., 1996) is a behavior scale designed to be used with children and adolescents with mental retardation, and recent research has supported the construct validity of its use in children and adolescents who fall under the PDD umbrella (Lecavalier, Aman, Hammer, Stocia, & Matthews, 2004).

Family Assessment

In addition to child assessment, measuring a family's reaction to raising a child with a possible PDD can be aided with the use of structured questionnaires. The short form of the *Questionnaire on Resources and Stress* (Friedrich, Greenberg, & Crnic, 1983) was created to evaluate stress in families who have children with disabilities. Recent research supports the reliability and validity of the short form of the *Questionnaire on Resources and Stress* when presented to the parents of children with autism (Honey, Hastings, & McConachie, 2005).

From Parent Interview to Implementation of Diagnostic Assessment

Not all tests assess only one specific parameter of a child. This makes it difficult to categorize assessments in specific areas. For example, the *Childhood Autism Rating Scale* (Schopler et al., 1988) contains both parent-interview and diagnostic assessment components used to assess what has been determined to be common areas affected by children with autism. The Rellini et al. (2004) study compared the *Autism Behavior Checklist* (Krug et al., 1998) to the *Childhood Autism Rating Scale* (CARS). The study found that the CARS was superior to the *Autism Behavior Checklist* (ABC) in identifying children with autism and differentiating them from other developmental disorders, such

as mental retardation. Conversely, the study found that the CARS was unable to clearly identify children with autism as specifically having autistic disorder, Asperger's disorder or pervasive developmental disorder not otherwise specified (PDD-NOS). Nonetheless, Rellini et al. recommended the use of the CARS over the ABC.

Research conducted by Saemundsen, Magnússon, Smári, and Sigurdardóttir (2003) found that the CARS (Schopler et al., 1988) was able to accurately diagnose more persons with autism than the ADI-R (Rutter et al., 2003) because of the restrictive classification properties of the ADI-R, yet they maintained that both instruments shared concurrent validity. They also concluded that the CARS possessed high internal consistency. Research conducted by Perry, Condillac, Freeman, Dunn-Geier, and Belair (2005) indicated that the CARS possesses strong psychometric properties with respect to test sensitivity and specificity.

Autism Diagnostic Observation Scale (ADOS). Along with the CARS (Schopler et al., 1988), the ADOS (Lord, Rutter, DiLavore, & Risi, 2001) is one of the tools used in diagnostic assessment that has received significant attention. The ADOS is an observational tool that is semi-structured in that it requires that administrators follow specific guidelines during assessment, but it must also be flexible to adapt to the individual differences of each child. The ADOS is often used by multidisciplinary, interdisciplinary, and transdisciplinary teams to assess children suspected of having autism spectrum disorders (Gotham, Risi, Pickles, & Lord, 2007; Lord et al., 1994; Ozonoff et al., 2005). It is most often used in research and, like the ADI-R (Rutter et al., 2003), the ADOS requires considerable time, training, and resources to administer (Kabot et al., 2003). It is also similar to the ADI-R in that the ADOS cannot be used for research

purposes without attending a sanctioned training seminar; a certified ADOS trainer is required to establish reliability (Ozonoff et al.). One concern that arose during the literature review for this thesis was the apparent dearth of scrutiny of the ADOS from peer-reviewers who did not have involvement in the development of the test.

In fact, virtually every peer-reviewed study involving reliability and validity of the ADOS involved at least one of the test's authors (Gotham et al., 2007; Lord et al., 2000; Risi et al., 2006). The findings from the few independent studies that have been conducted on the ADOS indicate that the test possesses lower sensitivity rates than those stated by the test's authors (Noterdaeme, Sitter, Mildenberger, & Amorosa, 2000; Tomanik, Pearson, Loveland, Lane, & Shaw, 2006).

Intellectual Assessment Instruments and Methods as Cited in the Literature

Leiter International Performance Scale and Leiter International Performance Scale-Revised (Leiter). When assessing a child suspected of having a PDD whose mental age is less than that of his or her chronological age, the Leiter (Leiter, 1979; Roid & Miller, 1997) is constructed to accurately assess such individuals. The Leiter is consistently stable throughout the entire assessment, does not require either expressive or receptive language proficiency, is not timed, and should be used instead of tests designed for children with greater verbal proficiency. The earlier version of the Leiter has discrepancies with respect to test psychometrics, but these issues have been largely rectified with the revised version (Leiter-R). The Leiter-R has been recommended for use in assessing children with PDDs. However, the earlier version may still provide important assessment information for children who appear to be functioning at lower levels (Tsatsanis et al., 2003).

Mullen Scales of Early Learning. The *Mullen Scales of Early Learning* (Mullen, 1995) can prove to be a useful assessment in that verbal and nonverbal proficiency levels can be assessed separately. This feature, along with a sizable assessment age profile (1 to 68 months) and detailed assessment results, makes the *Mullen Scales of Early Learning* the preferred assessment choice over similar tests, such as the *Bayley Scales of Infant Development-II* (Bayley, 1993; Ozonoff et al., 2005). The *Mullen Scales of Early Learning* has been shown to possess strong psychometric properties with respect to concurrent validity with similar assessments (Landa & Garrett-Mayer, 2006).

Stanford-Binet Intelligence Scale. The fifth and most recent edition of *Stanford-Binet Intelligence Scale* (Roid, 2003) includes the addition of a number of features that may assist in determining cognitive abilities when assessing children with PDDs. Children with autism have been included within the norming sample, and the test can be used with a wide range (2 to 85 years) of verbal and nonverbal persons. The most recent version of the *Stanford-Binet Intelligence Scale* may be useful for persons who need a robust assessment tool that can test a wide range of clients (Ozonoff et al., 2005).

Assessment of Communication

A number of instruments are available for use when assessing the communicative abilities of children suspected of having PDDs. These include, but are not limited to, the following: *Clinical Evaluation of Language Fundamentals* (Semel, Wiig, & Secord, 2003), *Expressive One-Word Picture Vocabulary Test* (Brownell, 2000), *Peabody Picture Vocabulary Test* (Dunn & Dunn, 2007), and *Preschool Language Scales* (Zimmerman, Steiner, & Pond, 2002). These tests are considered general instruments in the assessment of receptive and expressive language. While these tests may reveal general information

with respect to expressive and receptive communication skills, they are not specifically designed to address pragmatic communicative behaviors. The *Children's Communication Checklist* (Bishop & Baird, 2001) and the *Test of Language Competence* (Wiig & Secord, 1989) are examples of assessments that address the pragmatic domain of language use (Ozonoff et al., 2005).

When administered correctly and results interpreted appropriately, standardized assessment instruments can quickly determine a child's eligibility for services within the school system, determine the need for additional testing, and provide valuable information to parents in order for them to better understand how their child is functioning as compared to same-age peers. It is important to bear in mind that results from standardized testing alone cannot provide the information needed to diagnose a disorder, such as a PDD, nor can they determine an individualized course of treatment. The problem with relying solely on this form of assessment for determining a child's strengths and needs is that standardized tests often lack the sensitivity and robust psychometric properties needed to address the variability that is inherent in the assessment of special-needs children (Dunn, Flax, Sliwinski, & Aram, 1996). Using both standardized and nonstandardized assessment methods is important because there is no single test that can be used to accurately diagnose any of the PDDs (Goldstein, 2002).

Utilizing nonstandardized methods, such as acquiring spontaneous language samples or narrative samples, can provide more detailed information regarding a child's linguistic deficits. Such methods provide richer assessment data which, in turn, lay the foundation needed to engage in effective intervention planning (Tyler & Tolbert, 2002). The findings from the Dunn et al. (1996) study indicated that obtaining and analyzing

spontaneous language samples can provide important information for accurately diagnosing specifically-language-impaired children that may not be identified by standardized-assessment results. Since some degree of language impairment is secondary to all PDDs (American Psychological Association, 2000), obtaining and analyzing spontaneous language samples from children suspected of having PDDs can provide extremely important information.

In addition to utilizing standardized measures or obtaining a spontaneous language sample to assess language, analyzing a child's narrative ability can provide important information in the assessment of children suspected of having PDDs. This is because narrative assessments can provide the following: information that demonstrates developmental trends and to compare different groups, an idea of a child's literacy strengths and needs, and can help specify which modalities of language a child's delay or disorder lies. Since children with PDDs often demonstrate both linguistic deficits in varying degrees, narrative assessment findings can provide valuable insight during the differential-diagnostic process (Botting, 2002). Narrative assessment can provide a broad array of valuable information that may not be detected in a single standardized assessment score (Peña et al., 2006).

Adaptive Assessment

Another important area of PDD assessment involves assessing adaptive behavior. After the completion of parent and caregiver interviews, diagnostic-observational assessment, intelligence testing, and language assessment, the assessment of adaptive behavior is the final stage of what the Ozonoff et al. (2005) study refers to as "the core autism assessment". An adaptive-behavior assessment should always be done in

conjunction with intelligence testing when concerns arise for diagnosing mental retardation. Results obtained from an adaptive assessment are also important for developing goals for treatment (Ozonoff et al.).

Vineland Behavioral Scales (Vineland). The Vineland (Sparrow et al., 1984) is the most commonly used measure of adaptive behavior for children suspected of having disorders associated with PDDs (Luiselli et al., 2001). The Vineland has also received the most attention with respect to research; it is the only adaptive-behavior assessment to receive serious attention in the most recent peer-reviewed literature (Ozonoff et al., 2005).

Recent research studies used the Vineland (Sparrow et al., 1984) to compare adaptive behavior between children with autism and those having PDD-NOS (Paul et al., 2004). The study detected significant differences between the groups in the area of expressive communication. Supplementing the *Autism Diagnostic Observation Scale* (Lord et al., 2001) and *Autism Diagnostic Interview-Revised* (Rutter et al., 2003), findings gathered from the Vineland has been shown to significantly increase the accuracy of classifying children under the PDD umbrella (Tomanik et al., 2006).

PDD Behavior Inventory (PDDBI). The PDDBI (Cohen & Sudhalter, 2005) is a parent and teacher rating scale that addresses adaptive and maladaptive behaviors (Cohen, 2003). The Cohen (2003) study found that the areas of the PDDBI that assess adaptive behaviors possess a high correlation with the Vineland. With this in mind, it may be possible to obtain accurate information from parent and teacher questionnaires. Questionnaires often require much less time to complete and review than interviews (Ozonoff et al., 2005).

Social Responsiveness Scale (SRS). The SRS (Constantino, 2002) is a parent or teacher rating scale that measures characteristics consistent with many PDDs within naturalistic settings. The SRS has been shown to have a high degree of correlation with the *Autism Diagnostic Interview-Revised* (Constantino et al., 2003; Rutter et al., 2003). In addition to gathering information about a child suspected of having a PDD through both parent interview and direct observation, assessing intellect helps guide the remainder of the assessment process and also aids in the interpretation of results (Ozonoff et al., 2005).

Once the critical aspects of a PDD assessment have been adequately addressed, it may be necessary to engage in additional testing. Several factors will determine if additional testing is warranted which include, but are not limited to, the following: the specific needs of the child and caregivers, testing goals, time constraints, financial issues, waiting lists, and questions regarding child referral for testing. Areas where additional assessment may be required include neuropsychology, attention, executive function, and academics (Ozonoff et al., 2005).

Assessment of Executive Function

Executive functioning encompasses a multitude of higher-order skills needed to prepare and initiate behaviors in the areas of planning, decision making, social conduct (i.e., inhibition and self-monitoring), control of emotions, and flexibility (Miller, 2005; Ozonoff et al., 2005). Deficits in these areas are characteristic features of many of the PDDs (American Psychological Association, 2000). A recent study found some support linking repetitive behaviors with performance related to executive function (South, Ozonoff, & McMahon, 2007). The most widely used assessment of executive functioning is the *Wisconsin Card Sorting Test* (Grant & Berg, 1993). Newer assessments include the

Delis-Kaplan Executive Function System (Delis, Kaplan, & Kramer, 2001) and the *Behavioral Rating Inventory of Executive Function* (Gioia, Isquith, Guy, & Kenworthy, 2000). Unfortunately, instruments that assess executive function have not received notable scrutiny in the current literature with respect to PDD assessment, but it remains an important area to test nonetheless (Ozonoff et al.). Given the nature of executive function and how deficits in this area are expressed in PDDs, it is hypothetically plausible that further research will be conducted in the area of executive function as it relates to PDDs.

While a variety of formal testing methods are available to assessment teams with respect to parent and third-party questionnaires, direct observation, and norm- and criterion-referenced measures, each is not without its individual strengths and weaknesses. In addition, a disparity of empirical data available through peer-reviewed research makes the task of determining which assessments are the most appropriate for each individual client difficult at best (Ozonoff et al., 2005). Time is often an important factor when assessing children with PDDs, but there is no single assessment instrument that can be used to quickly and reliably collect the data needed to engage in effective PDD diagnoses (Goldstein, 2002). It is imperative that data be obtained through both direct observation of the child and thorough consultation with parents or caregivers in order to even begin to accurately assess the strengths and deficits of a child suspected of having a PDD. It is also recommended that any discrepancies or contradictions found during the assessment process be further investigated by obtaining additional information from educational professionals directly involved with the child, such as teachers and special educators (Ozonoff et al.).

As stated earlier, there is a general absence of reliable and peer-reviewed data that reflect trends in PDD assessment within the public schools. It is largely unknown as to which instruments and methods are used, if there are notable assessment trends across geographical areas, and if the rationale for using specific methods concurs with current peer-reviewed findings. It is also largely unknown if professionals who provide assessment services to this population feel that they are properly trained and are provided the resources needed to confidently assist in the assessment and diagnosis of children suspected of having PDDs. This includes confidence in the assessment of children suspected of having PDDs who are from culturally and linguistically diverse backgrounds. It would be beneficial to the PDD-assessment community to collect data from school-based professionals, specifically those within elementary schools, across the state of Texas who assist in the assessment and diagnosis of PDDs.

Purpose of the Study

The purpose of this study is to determine what assessment instruments and methods are used within elementary public schools across the state of Texas to assist in the diagnosis of children suspected of having PDDs. With this information, the following questions are to be addressed:

1. What are the state-wide and regional trends in the diagnosis of PDDs with respect to procedures and choice of assessment instruments?
2. Are the assessment instruments and procedures used in Texas elementary public schools to diagnose PDDs evidence-based?
3. Are culturally and linguistically diverse (CLD) populations with PDDs assessed using least-biased approaches and test batteries?

CHAPTER II

METHODOLOGY

Participants

Participant-selection process. The prospective survey participants consisted of speech-language pathologists, special educators, licensed specialists in school psychology (LSSPs), and educational diagnosticians who worked within or provided services for elementary students in either independent or consolidated school districts or special education cooperatives in the state of Texas. Special education cooperatives usually consist of groups of smaller school districts that work together to provide special-education services for their students. The professional groups that were selected as survey recipients are usually directly involved in some part of the PDD-assessment process, so it was determined that they would provide the most valuable information regarding the methods used to assist in the assessment and diagnosis of pervasive developmental disorders (PDDs) within the elementary schools across the state of Texas.

Prior to collection of email addresses and construction of the survey which was determined to be the most effective method of data collection, a proposal was submitted to the Texas State University-San Marcos Institutional Review Board (IRB) for exemption from an expedited or full review from the IRB. Construction of the survey and the compilation of a survey respondent list began once the IRB indicated that the study was exempt from both expedited and formal review.

The survey recipients were chosen from randomly selected school districts or special education cooperatives from each of the 20 regions established by the Texas Education Agency (TEA), as seen in Figure 1. The goal was to select participants from 10 districts or cooperatives within each region. It was not always possible to find 10 eligible districts or cooperatives in certain regions. This was either due to a limited number of districts or cooperatives within a given region or the inability to acquire the email addresses required to send out the survey. The methods used to acquire email addresses will be described in further detail later.

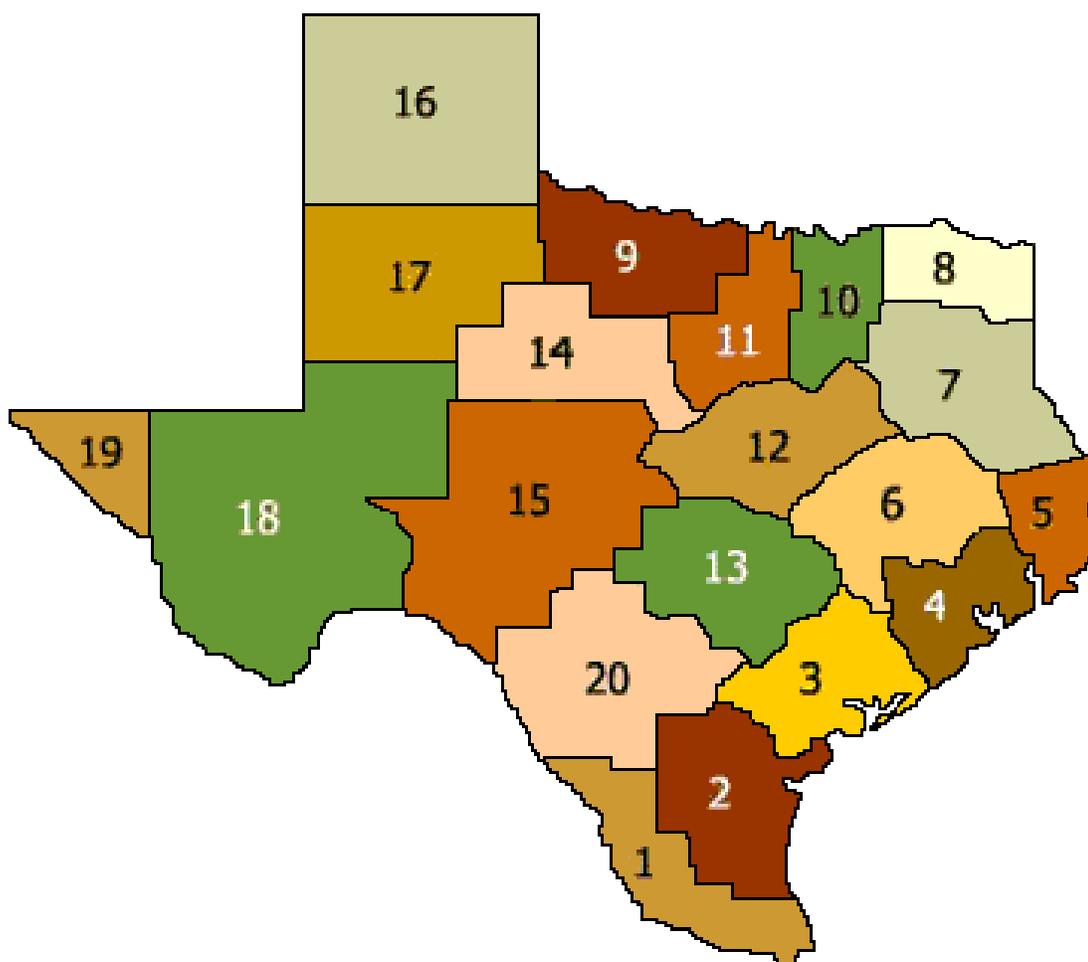


Figure 1. Educational regions within Texas. Copyright © by the Texas Education Agency. Reprinted with permission.

In the case that a region had less than 10 districts or cooperatives deemed eligible for participation in the study, survey recipients were selected from the number of districts or cooperatives available within that region. In some cases, more than 10 districts were utilized when too few eligible participants could not be found across the entire region (see Table 1 for a comprehensive list of regions and number of eligible districts or cooperatives). It was necessary to compile a list of randomly-selected email addresses that had an overall equal distribution within a region, across the state, and between the survey respondents. Compiling the master list required numerous considerations.

Virtually all persons who possess email addresses receive unwanted email. This is only expected to increase as more people utilize electronic media, such as the Internet, to acquire information and services, as well as communicate with others. As a result, email-service providers and regulators are increasingly enhancing services that restrict unwanted email from being distributed. One method that service providers use to prevent the spread of unwanted email is the restriction of email-address access. This is an important consideration in email-survey research because a survey cannot be distributed to the prospective respondents without appropriate email addresses. Since the nature of how business is conducted on the Internet is ever changing, it is necessary to be prepared to change methods of acquiring email addresses for survey research. Compiling an email list for this survey was no exception.

It was not possible to acquire email addresses for the survey from the state or national organizations which represent the professionals within the targeted audience, as each of the organizations contacted stated that they were not permitted to distribute email address directories to others for research purposes. As a result, it was necessary to acquire

the email addresses by other means. Ultimately, it was determined that the only method available was to access cooperative, district, and school websites in order to obtain the needed email addresses. Expected participants were required to have an email address that could be acquired from their respective school, school district, or cooperative website. In order to achieve the most even distribution of surveys sent out to each group of professionals, it was required that the job titles of the professionals whose email address were being acquired be clearly stated (i.e., speech-language pathologist).

Table 1. Districts/Cooperatives Eligible for Study, Number Used, and Number Completing Minimum Participant Requirements

Region	District/Cooperative			Region	District/Cooperative		
	Eligible	Used	Complete		Eligible	Used	Complete
1	27	10	10	11	40	10	10
2	25	10	10	12	29	10	10
3	11	10	6	13	35	10	10
4	45	10	10	14	7	7	4
5	18	11	8	15	13	8	3
6	24	10	10	16	18	10	9
7	45	10	9	17	16	10	10
8	18	8	10	18	13	10	9
9	10	7	3	19	12	6	4
10	41	10	10	20	38	10	10

The goal of the participant-selection process was to obtain email addresses from a minimum of one of the following professions from each of 10 randomly selected school districts or cooperatives: speech-language pathologist, special educator, and LSSP. If

possible, a maximum of two email addresses from each of the desired professions was obtained from each district or cooperative. During the email-acquisition process, it was apparent that LSSPs were much fewer in number than educational diagnosticians. This may be because many districts possibly choose to utilize LSSP services through contract work rather than have them work directly for the school district. Regardless, it became readily apparent that too many districts were being disqualified from the survey simply because of a lack of accessible LSSP email addresses. Since both LSSPs and educational diagnosticians provide relatively similar services, it was determined that these professionals be combined into the same category. Email addresses would be gathered from whichever profession was available with the intent that data acquired be analyzed collectively. Since LSSPs appeared to be fewer in number yet generally had more training and education in the overall diagnostic process, acquiring their email addresses from a district took precedence over that of educational diagnosticians. If an email address for an LSSP could not be obtained from a district or cooperative, it was substituted with that of an educational diagnostician.

Selection of participants began with determining which districts or cooperatives within each region would be eligible for use in the study (see Table 1 for eligible districts and cooperatives). The TEA website (Texas Education Agency, 2007) provided access to a current special education directory, which was sorted alphabetically by region. This provided a comprehensive listing of all independent and consolidated school districts that provided their own special-education support staff, as well as all special education cooperatives and their participating districts. The directory also provided listings of charter schools and charter cooperatives. These were not included in the final list for

potential respondents because the focus of the study was related to assessment in elementary public schools. Other districts that were deemed ineligible for the study included public school districts or cooperatives that did not contain or serve elementary schools.

Once it had been determined which districts and cooperatives were eligible for the study, they were individually randomized. The total number of eligible districts and cooperatives within a given region was entered into Research Randomizer (Urbaniak & Plous, 2007), an online service that randomly orders a given set of numbers for research purposes. The order in which districts and cooperatives were investigated for available email addresses was based on the randomizer results.

After each region had been individually randomized, district or cooperative websites were accessed in order to search for appropriate email addresses. In order to be used in the study, the websites accessed within each district or cooperative were required to have had accessible email addresses that could be easily identified with the desired professionals. If the previously stated minimum of email addresses could not be obtained, the district or cooperative was eliminated from the study, and the next district or cooperative website was then searched. This continued until the minimum number of required email addresses was obtained from 10 districts or cooperatives. Exceptions to this occurred only when a region had either limited eligible districts or cooperatives or when the desired email addresses could not be acquired from 10 districts or cooperatives within a given region. In one case, 11 districts or cooperatives were used in order to collect an adequate number of addresses from each professional category. In other cases, as many email addresses as possible were collected from a region because of the limited

number of districts or cooperatives eligible for the study. As often was the case, a single district contained many school websites. If possible, only the elementary school websites were accessed to obtain participant email addresses. These were also chosen in random order.

Since each of the 20 Educational Service Center (ESC) regions established by the Texas Education Agency (see Figure 1) cover a relatively small area and are highly variable with respect to population density, demographics, and potential respondent rate, it was determined that grouping the regions into 5 geographically-related *areas* was warranted (See Table 2). The five established geographical areas were compared in order to determine state trends in PDD assessment.

Table 2. ESC Regions Grouped Into Geographic Areas

Geographic Area	ESC Regions	No. of Respondents
Southern	1,2,3,20	55
Eastern	4,5,6,7	50
Northeastern	8,9,10,11	46
Central	12,13,14,15	45
Northwestern	16,17,18,19	43

In addition to grouping ESC regions for data analysis, respondents were grouped into three categories. Respondents were given the following five categories by which they could state their current profession: educational diagnostician, LSSP, speech-language pathologist, special educator, and *other*. The *other* option allowed for the respondent to state their profession if it differed from the other choices. Speech-language

pathologists were grouped in a single category. As previously stated, LSSPs and educational diagnosticians were grouped together. Since it was virtually impossible to determine if the special educators selected as survey recipients actually participated in the PDD-diagnostic process, it was determined that data received from this group be combined with the *other* category.

Background and demographic information of respondents. Of the 239 survey recipients who successfully completed the survey, 78 (33%) were speech-language pathologists, 98 (41%) were either LSSPs or educational diagnosticians, and 63 (26%) were either special educators or indicated *other*. The respondents were relatively evenly distributed across the five geographical areas, as 55 (23%) were from the Southern area, 50 (21%) were from the Eastern area, 46 (19%) were from the Northeastern area, 45 (19%) were from the Central area, and 43 (18%) were from the Northwestern area.

While the majority of the respondents provided services to only rural schools, some variability was observed when comparing geographical areas (see Table 3). A large majority of respondents (79%) from the Northwestern area worked in rural settings. The remaining areas were similar in that approximately 50% of the respondents from each area worked only in rural settings. The Northeastern area had the highest percentage of respondents who worked only in urban settings (37%).

Table 3. Respondents Working in Urban or Rural School Settings

Geographic Area	Setting	Frequency	Percent
Southern	Rural	27	49
	Urban	15	27
	Both	9	16
Eastern	Rural	25	50
	Urban	14	28
	Both	9	18
Northeastern	Rural	21	46
	Urban	17	37
	Both	4	9
Central	Rural	22	49
	Urban	13	29
	Both	8	18
Northwestern	Rural	34	79
	Urban	5	12
	Both	3	7

More often than not, a respondent's school or school district utilized a group or team that was specifically designed to assess and diagnose PDDs. As seen in Table 4, the number of respondents indicating that their school or school district did have such a group or team was over 50% for all areas. The Northeastern area had the highest percentage at 76% and the Northwestern area had the lowest percentage at 54%.

Table 4. Use of PDD-Diagnostic Teams Within Geographic Areas

Geographic Area	Diagnostic Teams	Frequency	Percent
Southern	Yes	38	69
	No	14	26
Eastern	Yes	33	66
	No	16	32
Northeastern	Yes	35	76
	No	7	15
Central	Yes	32	71
	No	11	24
Northwestern	Yes	23	54
	No	19	44

As seen in Table 5, an overwhelming percentage of respondents across the state (80 to 96%) provide services to schools that receive Title I funding under the No Child Left Behind Act of 2001 (2002). Title I funding provides additional education funding and assistance to students who are eligible for either free or reduced-fee lunches from their respective schools. Students who are from lower socio-economic backgrounds qualify for these services. The majority of respondents indicated that their school received such services (see Table 5).

Table 5. Respondents Working for Title I Schools

Geographic Area	Title I Funding	Frequency	Percent
Southern	Yes	46	84
	No	4	7
	Don't Know	5	9
Eastern	Yes	48	96
	No	1	2
	Don't Know	1	2
Northeastern	Yes	42	91
	No	3	7
	Don't Know	1	2
Central	Yes	36	80
	No	2	4
	Don't Know	7	16
Northwestern	Yes	38	88
	No	1	2
	Don't Know	4	9

By and large, the number of years that respondents had spent in their current professions was evenly distributed among the geographical areas (see Table 6). In most areas, respondents had worked in their current profession for 20 or more years, particularly in the Southern area (51%). A common trend was observed (see Table 6) in the years that respondents spent in their current settings in that most respondents had spent less than 10 years in any given setting. In all except the Southern area, at least 40% of respondents in each area had spent 5 or fewer years in their current setting.

Table 6. Respondents' Years of Experience in Profession and Current Setting

Geographic Area	Years in Profession/Setting	% Profession	% Setting
Southern	0-5 Years	13	24
	6-10 Years	16	22
	11-15 Years	4	20
	16-20 Years	15	9
	>20 Years	51	22
Eastern	0-5 Years	16	40
	6-10 Years	22	38
	11-15 Years	20	6
	16-20 Years	14	8
	>20 Years	28	8
Northeastern	0-5 Years	28	57
	6-10 Years	22	22
	11-15 Years	13	4
	16-20 Years	13	9
	>20 Years	23	9
Central	0-5 Years	20	57
	6-10 Years	22	27
	11-15 Years	22	9
	16-20 Years	13	7
	>20 Years	22	2
Northwestern	0-5 Years	19	51
	6-10 Years	21	20
	11-15 Years	16	9
	16-20 Years	14	16
	>20 Years	28	0

The majority of survey participants in all geographical areas were monolingual English speakers. The percentages of respondents who were either bilingual or multilingual were comparatively stable across the areas (see Table 7). All areas had many more monolingual than bilingual or multilingual respondents, with the Southern area having the greatest percentage of bilingual professionals at 31%. The number of respondents indicating they were only monolingual was as high as 92% (Eastern area).

Table 7. Bilingual/Multilingual Survey Respondents by Geographical Area

Geographic Area	Bilingual/Multilingual	Frequency	Percent
Southern	Yes	17	31
	No	37	68
Eastern	Yes	2	4
	No	46	92
Northeastern	Yes	5	11
	No	41	89
Central	Yes	4	9
	No	41	91
Northwestern	Yes	4	9
	No	37	86

Excludes *No Response* Data

Procedures

Data collection. Data collection was conducted in the form of an online survey. The platform used to obtain the needed data was mrInterview™, a Statistical Package for the Social Sciences (SPSS®) based survey software program that was used to construct and distribute the survey as well as to collect the resulting data. Aside from reasons stated earlier, engaging in survey research was determined to be an effective method for data collection because the study was of a *cross-sectional* design. A cross-sectional design is adopted when the data collected are to represent a single fixed point in time. In this case, data were collected to determine what instruments and methods were currently being used by professionals to assess and diagnose PDDs in children.

The survey (see Appendix B for a copy of the survey) consisted of single-response, multiple-response, and text-response questions that focused on several areas of PDD assessment. Before answering any questions within the survey, respondents were required to indicate implied consent to permit the use of the survey responses for research purposes.

Survey components. The first section of the survey was designed to obtain basic background information from the respondent. This helped determine if the respondent worked in a district or cooperative which utilized a specially designated team that assessed and diagnosed children suspected of having PDDs. In order to obtain information regarding socio-economic status, respondents were asked if they provided services for Title I-eligible schools (see Table 5).

The second section of the survey focused on specific assessment and diagnostic procedures. This section divided many of the available assessment tools and methods into groups that shared similar characteristics with respect to the assessment process (see Table 8).

The third section of the survey was designed to address bilingual and multicultural issues in the assessment of children suspected of having PDDs, as well as issues regarding professional confidence and available resources to complete an appropriate PDD assessment. In addition, respondents were questioned as to which criteria they adhered to in their diagnosis of PDDs, which may include one of the following (see Table 8): Diagnostic and Statistical Manual of Mental Disorders (American Psychological Association, 2000), Individuals with Disabilities Education Act (1990), and the No Child Left Behind Act of 2001 (2002).

In order to determine assessment trends within Texas, demographic data were also required. Aside from denying implied consent to use responses for research purposes, this is the only section where respondents were automatically eliminated from the survey for refusing to respond to particular questions. Questions centered on the job title, region of employment, urban/rural work environment, and work experience of each of the respondents.

Once the survey-construction process was complete, distribution of the survey and collection of response data were regulated by the Texas State Testing, Research-Support and Evaluation Center (TREC), which managed all surveys conducted through

Texas State using mrInterview™. TREC placed the survey in a test mode which allowed the survey to be navigated more thoroughly in order to eliminate any errors that would negatively impact the data-collection process.

Email cover letters (see Appendix A) were sent to all survey recipients. This letter provided a hyperlink to the survey. Linking the survey to a central mainframe allowed any respondent to return to the survey at a later time if it could not be completed all at once. Reminder cover letters were updated (see Appendix A) to provide information needed to allow respondents who experienced technical difficulties to more easily access and complete the survey, as well as to increase the response rate.

In addition to sending out reminder messages to increase the response rate, potential respondents were informed that successful completion of the survey qualified them to enter a drawing for 1 of 6 \$50 gift certificates from the Super Duper® Corporation. Respondents who successfully completed the survey had the option of clicking on a hyperlink which allowed them to submit their email addresses to enter the drawing. In essence, the use of a hyperlink took the respondents to an entirely separate survey, which ensured that a respondent's email address could not be linked to their PDD-survey responses. The survey was first sent out in October 2007, and it was concluded in November 2007. Two reminder emails were sent out to those who had not responded to the initial email.

Table 8. General Components to the PDD Survey

Category	Topics Within Category
Introduction	Contact information and implied consent
Background Information	PDD assessment teams in schools Title I funding eligibility
Assessment and Diagnostic Procedures	Parent or third-party interviews Diagnostic assessment Developmental assessment Adaptive assessment Communication assessment Verbal/nonverbal intelligence assessment Academic screening Behavioral assessment Executive-function assessment Family assessment Professionals who assist in diagnosis
Additional Assessment Issues	Bilingual/multicultural assessment issues Resources provided for PDD diagnoses Confidence in PDD assessment abilities Criteria used in PDD diagnoses
Demographic Data	Region of employment Urban/rural work setting Job title Years experience in current position Years worked in current setting
Additional Comments and Suggestions	Respondent provides supplemental input
Closing Remarks/ End of Survey	Option to enter drawing or exit survey

CHAPTER III

RESULTS

Survey Response Rate

Of the 784 surveys that were sent to potential respondents, a total of 239 surveys were successfully completed. This resulted in a response rate of approximately 31%. Although attempts were made to send the survey to a total of 949 email addresses, 165 surveys were either undeliverable, or respondents stated via email that they could not or would not respond. The survey was undeliverable via email for a number of reasons which included the following: an email address was no longer in use, an email address was possibly recorded incorrectly during the collection process, or a school's email network restrictions prohibited prospective respondents from completing the survey. Depending on the level of security maintained by user networks, the survey was susceptible to being identified as an unsolicited bulk email (UBE) or an unsolicited commercial email (UCE), resulting in the network rejecting any attempts to successfully deliver the email required for recipients to participate in the survey. Of the respondents who indicated they could not or would not participate in the survey, the most commonly stated reasons were that they were prohibited from participating in online survey research, could not access the survey because of school- or district-network restrictions, or that they did not assist in the assessment or diagnosis of children suspected of having

pervasive developmental disorders (PDDs). A total of 101 respondents were disqualified from data analysis. Respondents were disqualified if they abandoned the survey before completion or did not indicate consent to use their responses for research purposes.

Frequency Data from Assessment and Diagnostic Procedures

Frequency analyses were run using the Statistical Package for the Social Sciences (SPSS®), Version 15.0. Data collected from respondents were grouped into geographical areas to determine trends in assessment and diagnostic procedures across the state. Refer to Appendix C for a comprehensive list of assessment instruments and methods that are abbreviated in the figures found in this chapter.

PDD-specific parent or third-party interviews, questionnaires, and rating scales.

As seen in Figure 2, the frequency of assessment use was relatively consistent. The three most commonly used assessments included the *Gilliam Autism Rating Scale* (Gilliam, 1995, 2006), the interview component of the *Childhood Autism Rating Scale* (Schopler et al., 1988), and the *Gilliam Asperger's Disorder Scale* (Gilliam, 2001). Among these, use of the interview component of the *Childhood Autism Rating Scale* was most consistent among the geographical areas. Geographical areas varied in their use of the *Gilliam Autism Rating Scale*, but use ranged from 47% to 78%. Respondents from the Central area used the *Autism Behavior Checklist* (Krug et al., 1988) almost twice as frequently (44%) as compared to the other areas.

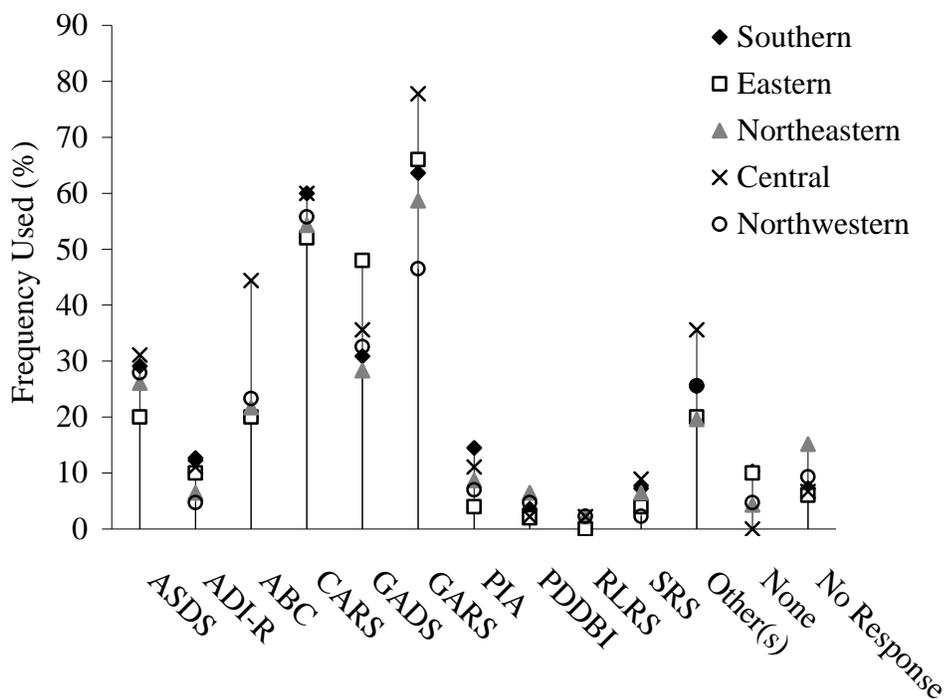


Figure 2. PDD-specific parent or third-party-interview, questionnaire, and rating-scale use across the five geographical areas of Texas.

PDD-specific diagnostic assessment instruments and methods. Trends in diagnostic-assessment use were consistent across the state (see Figure 3). With use ranging from 67% to 77%, respondents overwhelmingly indicated their use of behavioral observation as a component of the PDD-assessment process. Other assessment instruments and methods which were used frequently in all geographical areas included the *Childhood Autism Rating Scale* (Schopler et al., 1988), *Psychoeducational Profile* (Schopler, Lansing, Reichler, & Marcus, 2005), and informal probes. With respect to

standardized assessment batteries, the Central and Eastern areas relied the most heavily on the *Psychoeducational Profile* (69% and 52%, respectively), while respondents from the other areas were more apt to utilize the *Childhood Autism Rating Scale*. With the exception of the Eastern area (7%), use of the *Autism Diagnostic Observation Scale* (Lord et al., 2001) ranged from 26% to 29%.

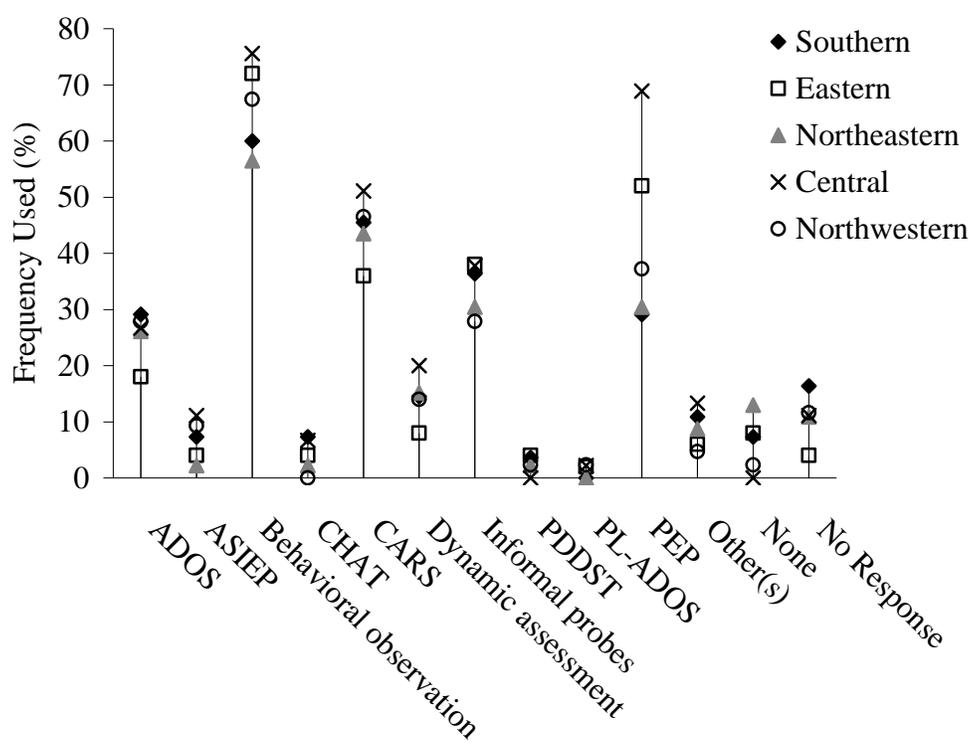


Figure 3. Use of PDD-specific diagnostic assessment instruments and methods across the five geographical areas of Texas.

Developmental assessment instruments and methods. When assessing the development of children suspected of having PDDs, respondents across the state overwhelmingly selected behavioral observation as the method of choice, with use ranging from 60% to 78% (see Figure 4). The use of informal probes to assist in the PDD-diagnostic process was also used frequently by respondents across all geographical areas. The *Brigance Inventory of Early Development* (Brigance, 2004) was used with more notable frequency in the Eastern, Northwestern, and Southern areas (29% to 36%) than in the Central (20%) and Northeastern (13%) areas.

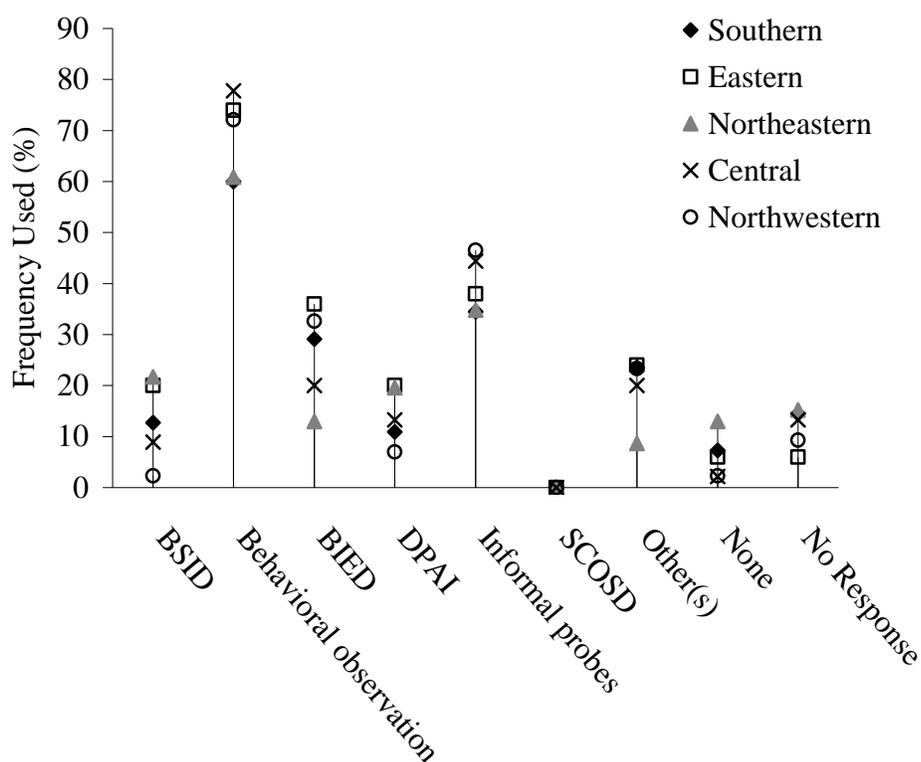


Figure 4. Trends in developmental assessment instruments and methods implementation across the five geographical areas of Texas.

Adaptive assessment instruments and methods. As seen in Figure 5, the *Vineland Adaptive Behavior Scales* (Sparrow et al., 1984) was the adaptive assessment instrument of choice across the state, with use ranging from 54% to 82%. Frequent use of behavioral observation was also indicated by respondents across the state (48% to 64% across geographical areas). Respondents in most areas also indicated frequent use of informal probes, as well as the *Adaptive Behavior Assessment System* (Harrison & Oakland, 2003).

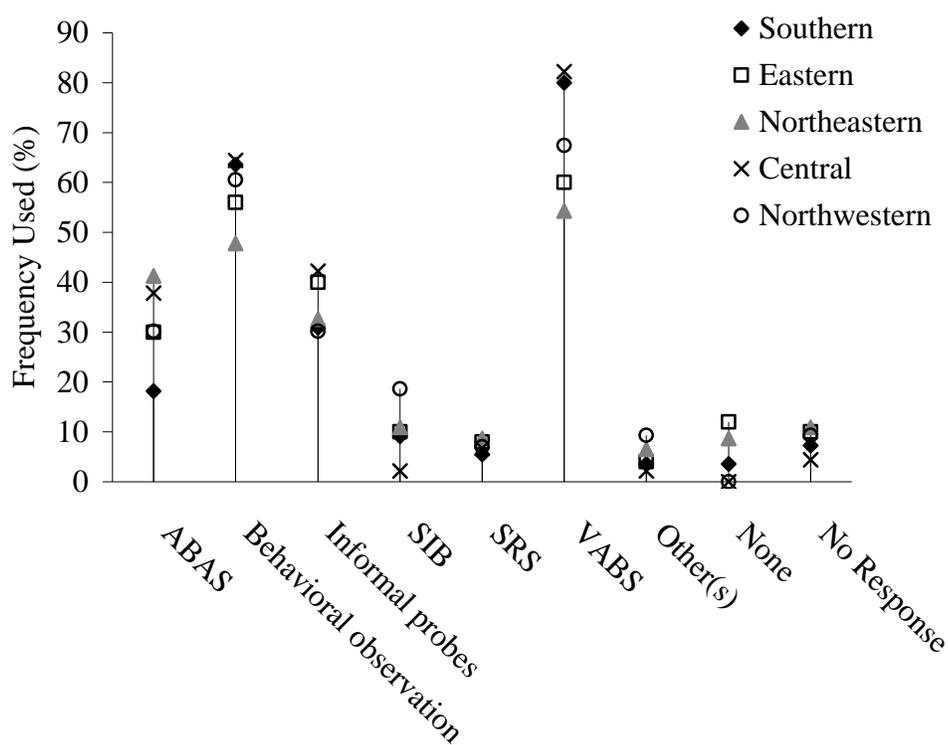


Figure 5. Use of adaptive assessment instruments and methods across the five geographical areas of Texas.

Communication assessment instruments and methods. As seen in Figure 6, all geographical areas within the state use a variety of observational and standardized assessment procedures when assessing communicative ability; however, they demonstrated trends in assessment preference. This was to be expected, given the variety of communication measures available to assessment professionals. The range of use of any given assessment measure never exceeded 20%. While respondents from most areas indicated they most frequently used the *Preschool Language Scales* (Zimmerman et al., 2002), *Clinical Evaluation of Language Fundamentals* (Semel et al., 2003), or obtained a spontaneous speech and language sample, a number of other measures were used with great frequency as well (see Figure 6).

Verbal and nonverbal intelligence assessment instruments and methods. When assessing verbal and nonverbal intelligence in children with PDDs, respondents from all geographical areas most frequently selected the *Wechsler Intelligence Scale for Children* (Wechsler, 2003), behavioral observation, and the *Wechsler Preschool and Primary Scale of Intelligence* (Wechsler, 2002) as the preferred measures or methods (see Figure 7). When comparing use between areas, the respondents from the Central area used these assessments the most frequently. Central-area respondents also used informal probes more frequently (44%) than other geographical areas, while the *Stanford-Binet Intelligence Scale* (Roid, 2003) experienced notable use in the Northeastern area (35%).

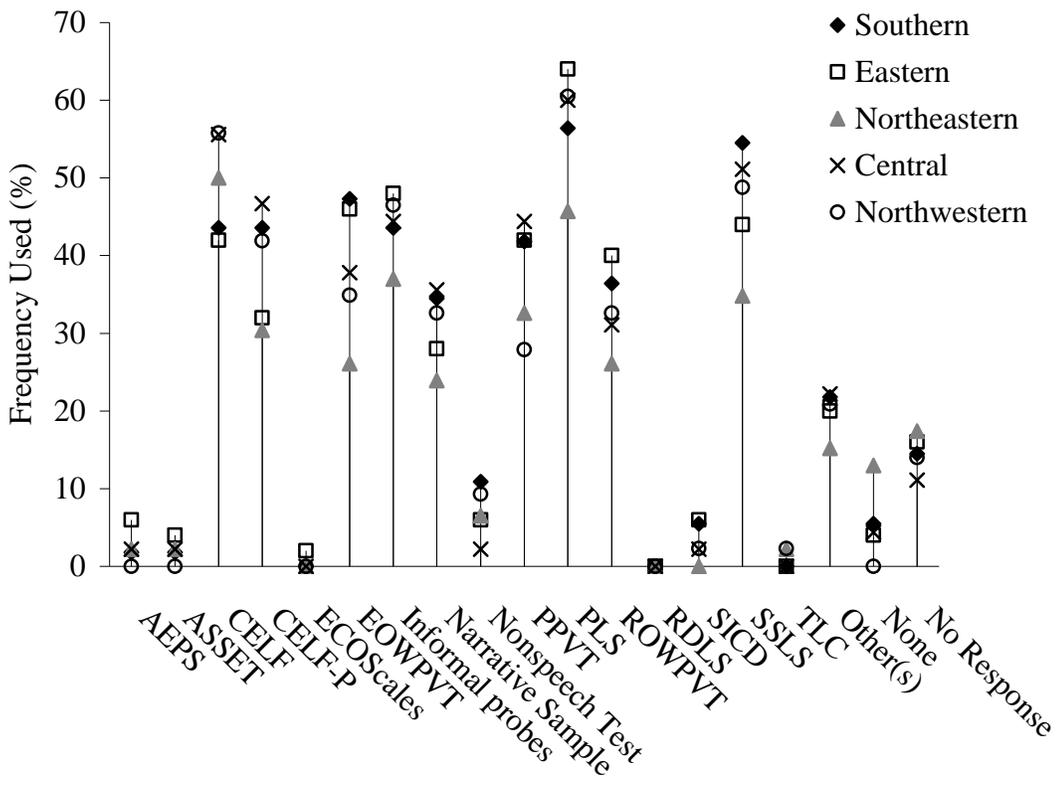


Figure 6. Communication assessment instruments and methods used across the five geographical areas of Texas.

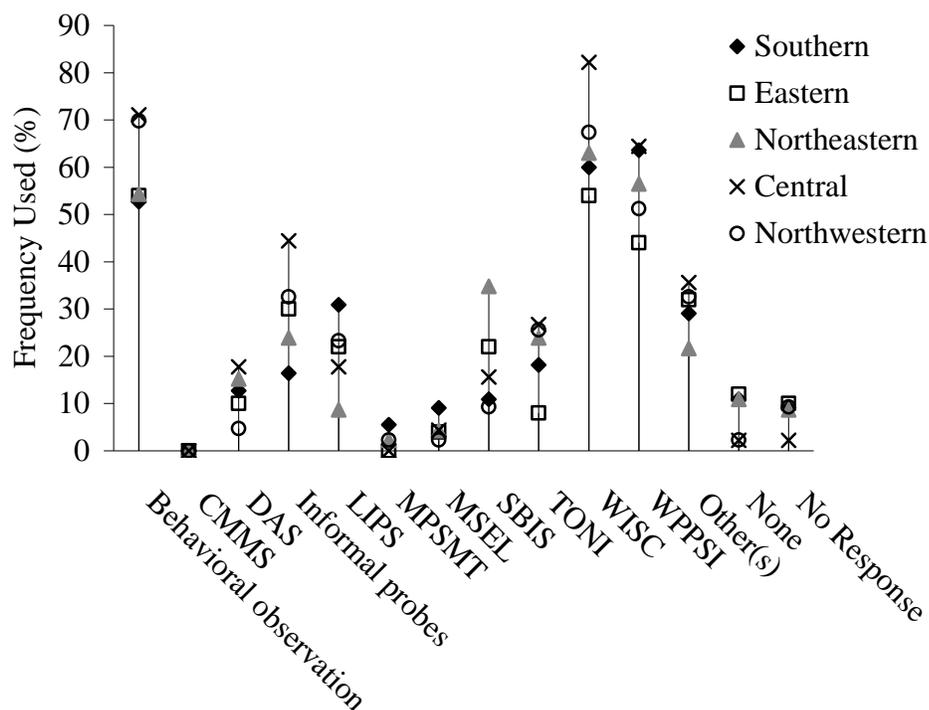


Figure 7. Use of verbal- and nonverbal- intelligence assessment instruments and methods across the five geographical areas of Texas.

Academic screening assessment instruments and methods. When assessing academic achievement in children suspected of having PDDs, most respondents across the state relied upon behavioral observation (see Figure 8). Generally speaking, the *Woodcock-Johnson Test of Achievement* (Woodcock, McGrew, & Mather, 2001) and the *Wechsler Individual Test of Achievement* (Wechsler, 2001) were the most frequently used standardized assessments. The *Woodcock-Johnson Test of Achievement* was used by the Northwestern area more often (77%) than any other assessment by any other

geographical area. The Central area also utilized informal probes and the *Psychoeducational Profile* (Schopler et al., 2005) at the rates of 51% and 62%, respectively. Respondents from the Eastern area did not have a clearly established assessment preference (see Table 8).

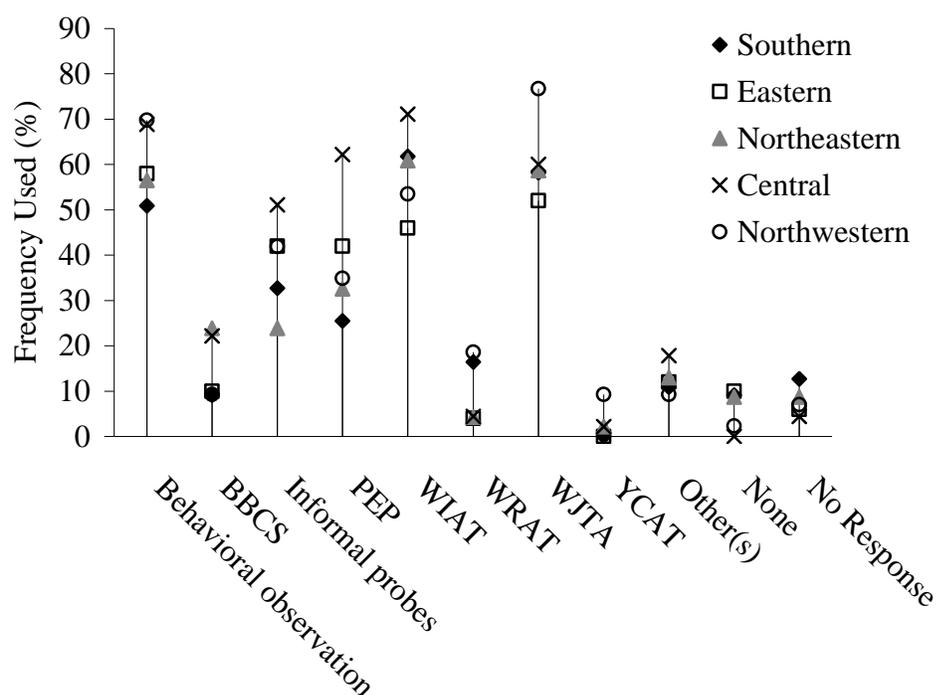


Figure 8. Use of academic screening assessment instruments and methods across the five geographical areas of Texas.

Behavioral assessment instruments and methods. When assessing behavior in children suspected of having PDDs, survey respondents overwhelmingly selected behavioral observation as the method of choice (see Figure 9). The use of standardized behavioral assessments by any given geographical area rarely exceeded 10%. Use of

behavioral assessment ranged from 54% in the Northwestern area to 86% in the Central area. An inverse correlation can be observed in Figure 9 when comparing rates in which geographical areas use behavioral observation to rates in which participants gave no response. Almost 24% of participants from the Northeastern area chose to not respond to the question regarding behavioral assessment.

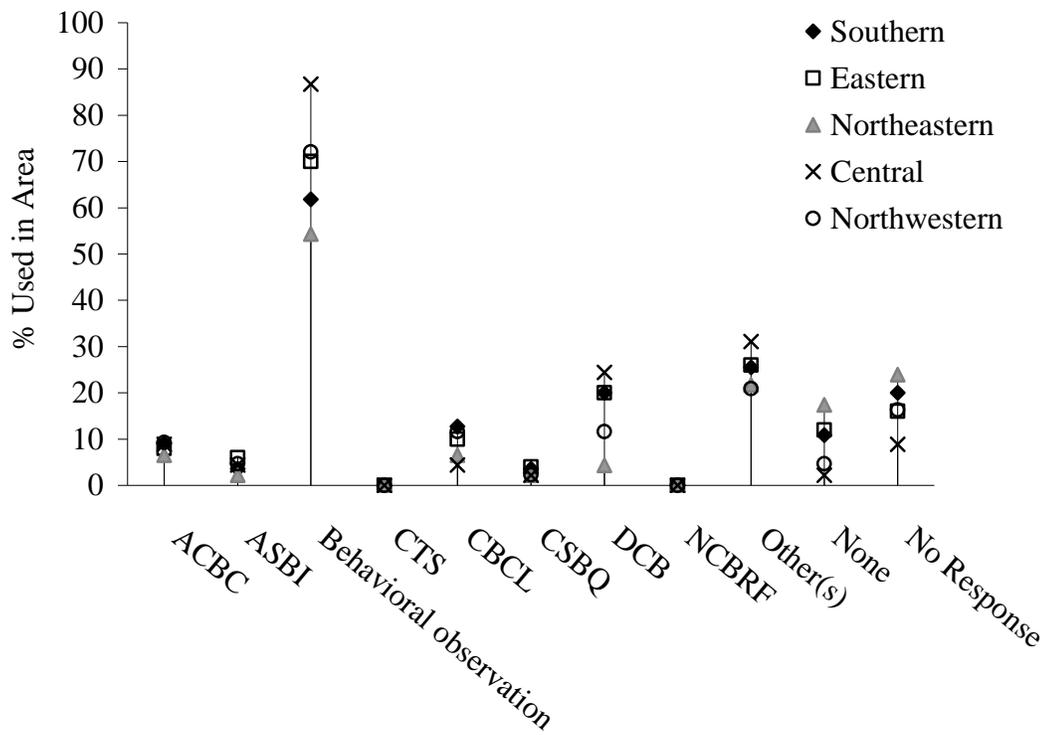


Figure 9. Behavioral assessment instruments and methods used across the five geographical areas of Texas.

Executive functioning assessment instruments and methods. When interpreting the results of the instruments and methods used to assess executive function in children suspected of having PDDs across the state, the most striking feature seen in Figure 10 is the high rate of respondents who chose to not respond to the question. Non-response rates ranged from 20% in the Central area to 36% in both the Southern and Eastern regions. Of those who did respond, between 22% (Central area) and 35% (Northwestern area) indicated that they did not assess executive function. Those who indicated that they assessed executive function overwhelmingly selected informal probes as the method of choice. *The Behavioral Rating Inventory of Executive Function* (Gioia et al., 2000) was used with notable frequency in the Central (16%) and Northeastern (15%) areas.

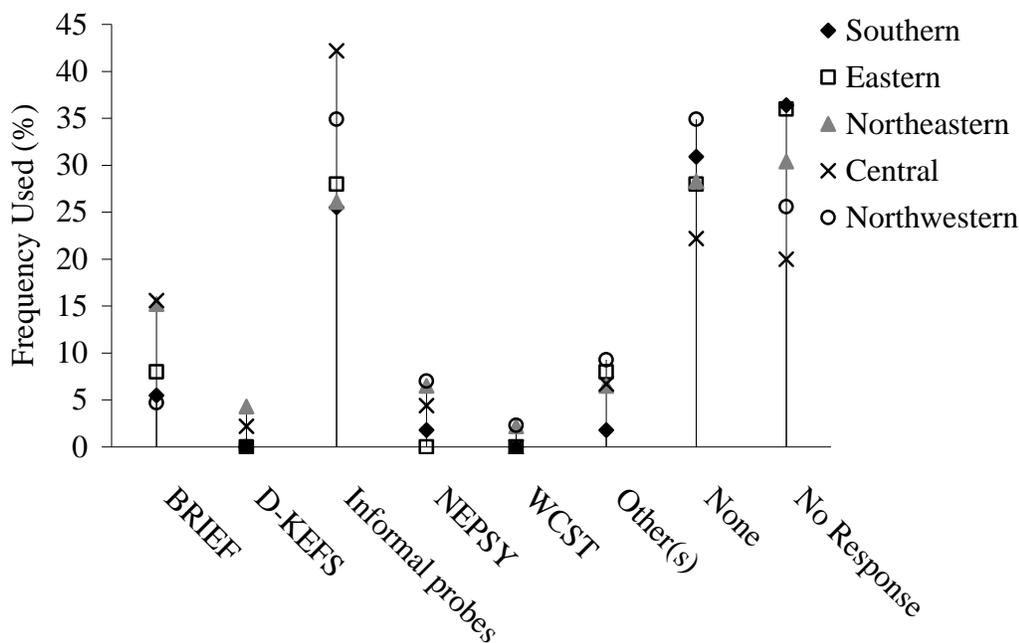


Figure 10. Use of executive functioning assessment instruments and methods across the five geographical areas in Texas.

Family assessment instruments and methods. As seen in Figure 11, most respondents either did not respond to the survey question regarding family assessments used in the PDD-diagnostic process or stated that they did not assess the family. Of the respondents who selected *other* on the survey, most stated that they assessed the family though interview or case history. Standardized-assessment use never exceeded 10% in any of the geographical areas.

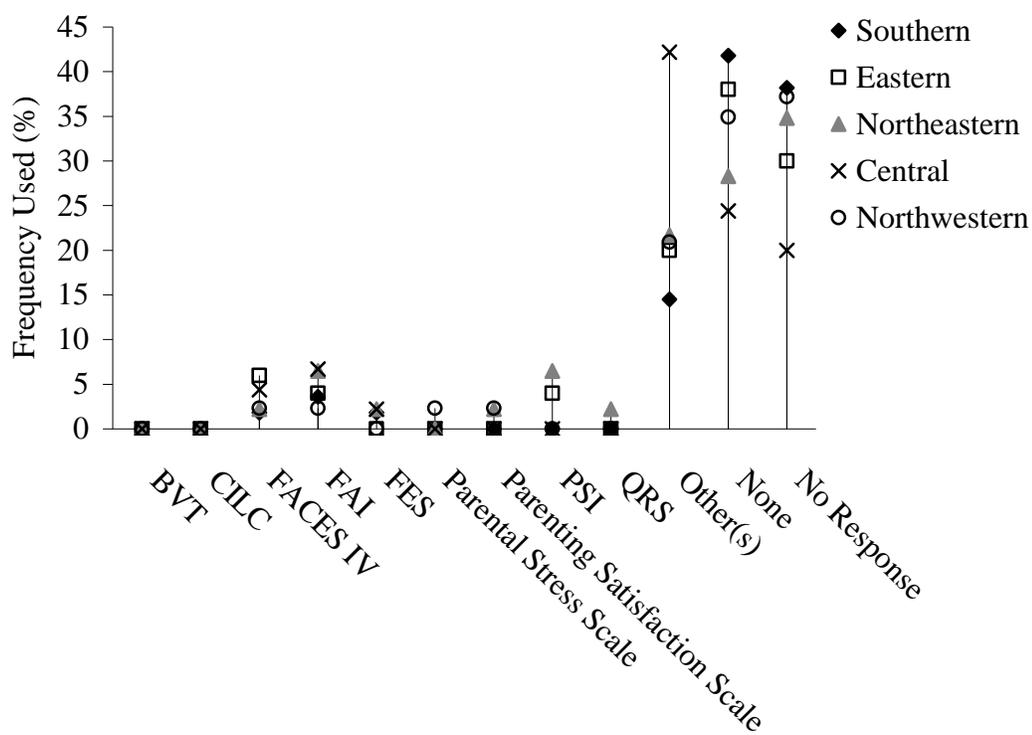


Figure 11. Family assessment instruments and methods used across the five geographical areas in Texas.

Assessment criteria. As illustrated in Figure 12, the criteria set forth by the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revised* (American Psychological Association, 2000), more commonly referred to as the DSM-IV-TR, and the Individuals with Disabilities Education Act (1990) were indicated by respondents as the most commonly used standards by which they diagnose PDDs. Between 65% and 82% of respondents from their respective geographical areas utilized these criteria, with the Central area using both the most frequently (82% for both criteria). The use of criteria based on the No Child Left Behind Act of 2001 (2002) was less consistent between the geographical areas, although more than 60% of respondents from the Eastern area indicated that they used all three methods to diagnose PDDs.

Issues in Bilingual Assessment

Languages spoken by children in geographical areas. Spanish and English were indicated by respondents as languages most commonly spoken by children in their schools (Figure 13). Between 93% and 100% of respondents from their respective geographical areas indicated that Spanish was spoken by children in their place of employment while the use of English ranged from 75% in the Southern area to 88% in the Northwestern area. The respondents from the Eastern area identified Vietnamese (34%) as a language commonly used by students in their schools. Chinese and Hindi were each indicated by more than 15% of respondents from the Northeastern area as languages spoken in their schools.

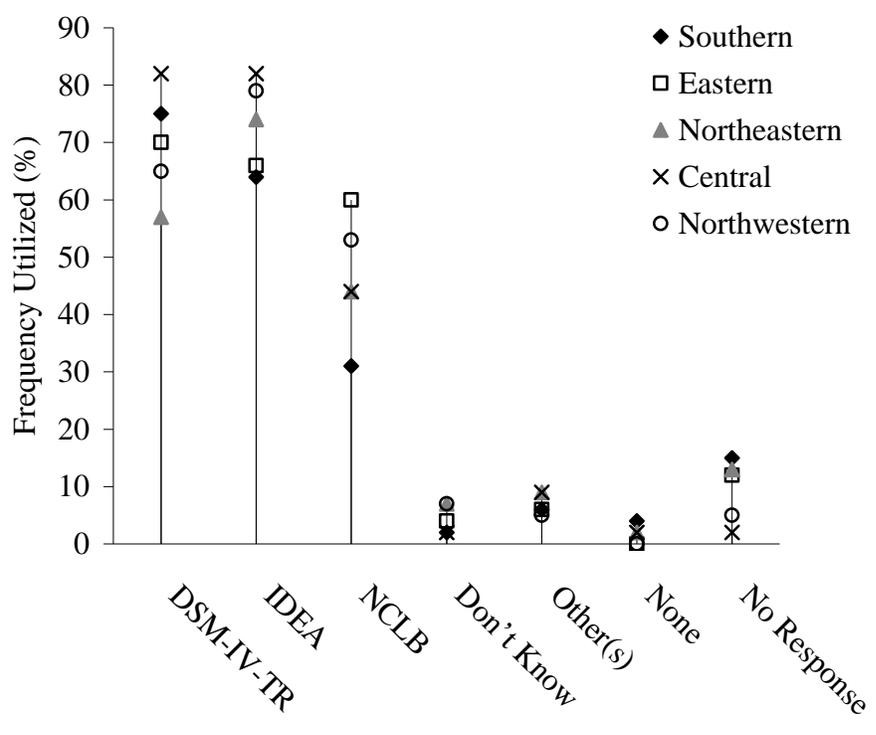


Figure 12. Assessment criteria used to diagnose PDDs across the five geographical areas in Texas.

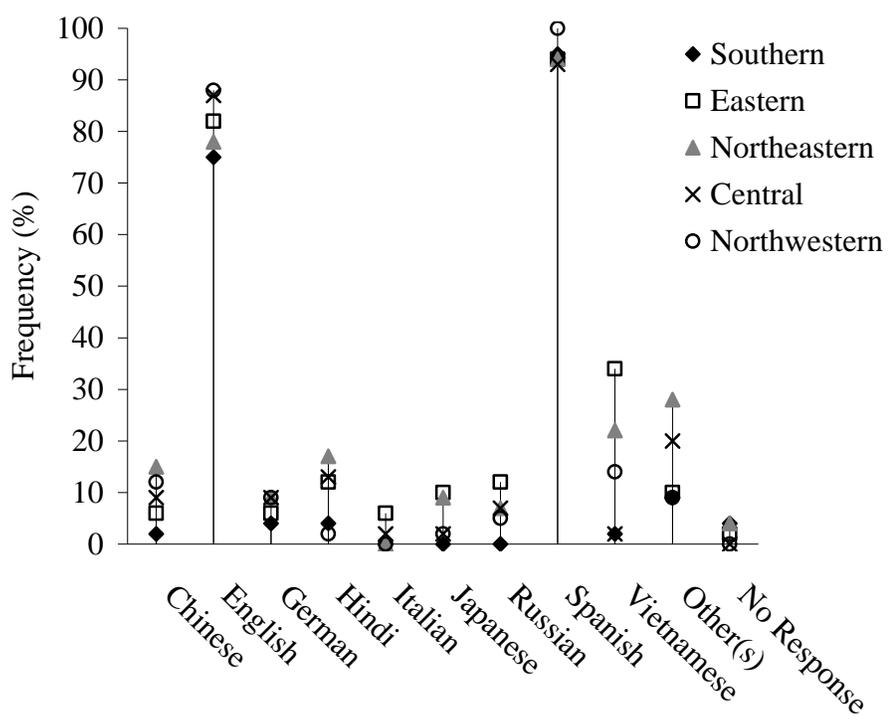


Figure 13. Frequencies of languages spoken across the five geographical areas in Texas as reported by survey participants.

Availability of certified bilingual-assessment personnel. Despite a notable *no response* rate in the Southern (11%) and Northeastern (13%) areas, between 67% (Northeastern area) and 79% (Northwestern area) of respondents indicated that they have certified bilingual personnel available to assist in the assessment process (see Table 9).

Table 9. Availability of Certified Bilingual-Assessment Personnel in Schools

Geographic Area	Bilingual Personnel	Frequency	Percent
Southern	Yes	38	69
	No	11	20
	No Response	6	11
Eastern	Yes	35	70
	No	11	22
	No Response	4	8
Northeastern	Yes	31	67
	No	9	20
	No Response	6	13
Central	Yes	35	78
	No	9	20
	No Response	1	2
Northwestern	Yes	34	79
	No	7	16
	No Response	2	5

Bilingual professionals and PDD assessment. As seen in Figure 14, the bilingual personnel utilized to assess bilingual children suspected of having PDDs varied greatly among professions and between geographical areas. The Eastern area relied heavily upon educational diagnosticians (62%), paraprofessionals (60%), and interpreters (57%). Respondents from the Northeastern area used speech-language pathologists (61%) most

frequently while participants from the Central area often depended on interpreters (69%). The high use of interpreters indicates that much of the data collected during the assessment process from the child and parents are not directly interpreted by assessment personnel, but rather through an intermediary.

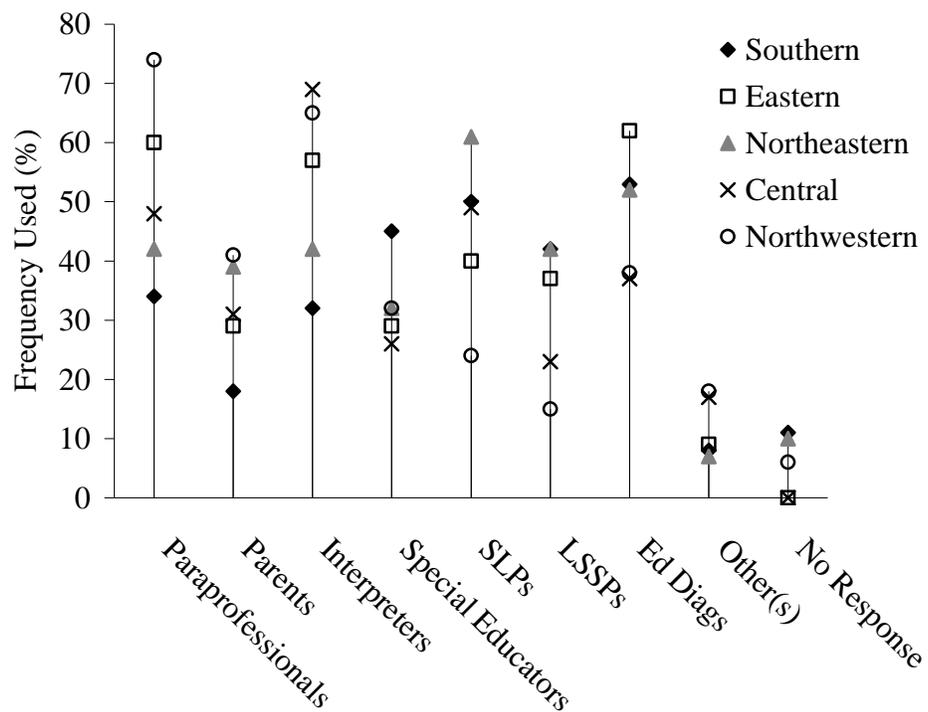


Figure 14. Bilingual professionals utilized to assess bilingual children across the five geographical areas in Texas.

Bilingual and multicultural language assessment. When asked which languages were important to consider when assessing bilingual and multicultural children suspected of having PDDs, the majority of respondents indicated that all languages spoken by the child being evaluated were important (see Table 10). The majority of areas overwhelmingly favored this form of language assessment (64% to 74%), with the exception being the Northeastern area (48%). A large number of respondents (20%) from the Northwestern area did not provide a response to this question. The Northwestern area also led in the number of respondents who indicated that only the language the child is most proficient in should be assessed (28%) while the rest of the geographical areas fell in the 14% to 19% range.

Confidence in bilingual assessment skills. When respondents were asked if they were confident in their abilities to accurately assess and diagnose children who were either bilingual or monolingual speakers of languages other than English, participants who chose to respond were closely divided between *yes* and *no* answers (see Table 11). The percentages seen in Table 11 indicate that a large number of respondents in each geographical area are not confident in their abilities to conduct bilingual PDD assessments. The rates in areas where participants chose to not respond to this question fell between 12% and 28%.

Table 10. Respondent Opinion Regarding Which Languages to Assess in Bilingual Children Suspected of Having PDDs

Geographic Area	Assessment Method	Frequency	Percent
Southern	All languages spoken	39	71
	English only	0	0
	Child's most proficient language	9	17
	Child's native language only	1	2
	Do not assess/No Response	6	10
Eastern	All languages spoken	34	68
	English only	0	0
	Child's most proficient language	9	19
	Child's native language only	2	4
	Do not assess/No Response	5	9
Northeastern	All languages spoken	22	48
	English only	0	0
	Child's most proficient language	13	28
	Child's native language only	1	2
	Do not assess/No Response	9	20
Central	All languages spoken	29	64
	English only	0	0
	Child's most proficient language	8	18
	Child's native language only	1	2
	Do not assess/No Response	6	13
Northwestern	All languages spoken	32	74
	English only	0	0
	Child's most proficient language	6	14
	Child's native language only	0	0
	Do not assess/No Response	5	12

Other category excluded from analysis

Table 11. Respondent Confidence in Bilingual PDD Assessment and Diagnostic Abilities

Geographic Area	Confident	Frequency	Percent
Southern	Yes	19	34
	No	25	46
	No Response	11	20
Eastern	Yes	21	42
	No	15	30
	No Response	14	28
Northeastern	Yes	15	33
	No	24	52
	No Response	7	15
Central	Yes	16	36
	No	21	46
	No Response	8	18
Northwestern	Yes	20	47
	No	18	41
	No Response	5	12

Additional Assessment Issues

Resources for diagnosing PDDs. The majority of respondents from all geographical areas indicated (63% to 71%) that they felt they were being provided with the resources needed to successfully engage in the assessment and diagnosis of PDDs (see Table 12). The rate of participants who chose to not respond to this question was high in most geographical areas (12% to 20%), with the exception being the Northwestern area (2%). The Northwestern area had the highest rate of respondents who felt they were not being provided adequate resources (19%).

Table 12. Opinions of Respondents With Respect to Being Provided Adequate Resources to Diagnose PDDs

Geographic Area	Adequate Resources	Frequency	Percent
Southern	Yes	39	71
	No	6	11
	No Response	10	18
Eastern	Yes	39	78
	No	5	10
	No Response	6	12
Northeastern	Yes	29	63
	No	8	17
	No Response	9	20
Central	Yes	39	86
	No	3	7
	No Response	3	17
Northwestern	Yes	34	79
	No	8	19
	No Response	1	2

Confidence in PDD-assessment skills. When respondents were asked if they felt confident in their abilities to assess and diagnose PDDs, rates from the Northwestern, Eastern, and Central areas fell between 81% and 92% (see Table 13). While the Northeastern and Southern areas had the lowest number of those who felt confident (67% and 78%, respectively), those areas also had large percentages of respondents who did not respond to the question (15% and 20%, respectively).

Table 13. Respondent Confidence in PDD Assessment and Diagnostic Abilities

Geographic Area	Confident	Frequency	Percent
Southern	Yes	43	78
	No	4	7
	No Response	8	15
Eastern	Yes	44	88
	No	2	4
	No Response	4	8
Northeastern	Yes	31	67
	No	6	13
	No Response	9	20
Central	Yes	41	92
	No	2	4
	No Response	2	4
Northwestern	Yes	35	81
	No	6	14
	No Response	2	5

CHAPTER IV

DISCUSSION

Purpose of the Study

The purpose of this study was to determine what assessment instruments and methods are currently being implemented within public elementary schools across the state of Texas to assist in the diagnosis of children suspected of having pervasive developmental disorders (PDDs). With the data collected from a variety of school-based professionals involved in the PDD-diagnostic process from all areas of the state of Texas, a number of issues essential to accurate assessment of children within this population were addressed. These issues involved determining state-wide and regional trends involving specific assessment measures or methods being used, the use of measures and methods by assessment personnel that are evidence-based and supported by the current literature, and the use of least-biased approaches and test batteries to assess culturally and linguistically diverse (CLD) populations.

The data collected for this study reflect numerous aspects of the PDD-assessment process. Therefore, the contents of Chapter IV have been organized in a manner similar to that of Chapter III. This will better facilitate the discussion of research findings and allow a more thorough interpretation of the data both as a whole and as they pertain to specific areas within PDD assessment.

Primary Assessment and Diagnostic Procedures

PDD-specific parent or third-party interviews, questionnaires, and rating scales.

Since any assessment carried out by school-based professionals is only a snapshot of how the child being assessed is functioning at a given moment, obtaining information from parents and caregivers is essential (Ozonoff et al., 2005). The popularity of the *Gilliam Autism Rating Scale* (Gilliam, 1995, 2006) among a large number of respondents across Texas (see Figure 2) was not surprising, as it is inexpensive, relatively new, and easy to administer. Data that have been collected regarding the *Gilliam Autism Rating Scale* indicate that it has a high false-negative rate, resulting in possible underdiagnoses of children suspected of having autism (South et al., 2002). Recent research has also suggested that this assessment contains redundant assessment items and has deficits in test sensitivity, internal consistency, and interrater reliability (Lecavalier, 2005).

Although used by respondents considerably less than the *Gilliam Autism Rating Scale*, the *Asperger Syndrome Diagnostic Scale* (Myles et al., 2000) had moderate use (20% to 31%) among respondents; however, the current research indicates that it also possesses numerous psychometric deficits (Campbell, 2005; Goldstein, 2002).

The *Autism Behavior Checklist* (Krug et al., 1988) is now recognized as containing outdated views of autism (Ozonoff et al., 2005) and lacks the sensitivity to reliably distinguish between children with Asperger's disorder and other related developmental disorders (Rellini et al., 2004), yet respondents from the Central region indicated considerable use of this measure (44%). Recent research has indicated that the *Autism Behavior Checklist* can be used as a reliable screener as long as the profile

analyses are disregarded (Eaves & Williams, 2006). It is unclear how professionals from the Central area are using this instrument.

Despite what may be considered frequent use of psychometrically weak parent and caregiver interviews to assess children suspected of having PDDs, the notable use of the *Childhood Autism Rating Scale* (Schopler et al., 1988) is encouraging, since numerous reports have indicated that it possesses strong psychometric properties (Perry et al., 2005; Rellini et al., 2004; Saemundsen et al., 2003). Surprisingly, very few respondents indicated that they use the *PDD Behavior Inventory* (Cohen & Sudhalter, 2005) despite its good internal consistency and strong criterion validity (Cohen et al., 2003).

PDD-specific diagnostic assessment instruments and methods. Aside from the notable use of behavioral observation as an assessment tool during the diagnostic process, the overall high frequency of use (36% to 51%) of the *Childhood Autism Rating Scale* (Schopler et al., 1988) is encouraging for reasons previously stated. The frequent, yet broad, range of use of the *Psychoeducational Profile* (Schopler et al., 2005) is encouraging (see Figure 3), since it can be used to identify strengths and needs in children suspected of having PDDs (Ozonoff et al., 2005). Overall, respondents across the state of Texas indicated that they are utilizing a variety of standardized and non-standardized methods simultaneously when engaging in the PDD diagnostic process.

Surprisingly, relatively few respondents (18% to 30%) indicated that they employed the use of the *Autism Diagnostic Observation Scale* (Lord et al., 2001), which has been shown to be a sensitive measure in the diagnosis of autism spectrum disorders

(Noterdaeme et al., 2000; Tomanik et al., 2006). The less frequent use of this measure may be due to the significant time, training, resources, and personnel required for appropriate administration (Kabot et al., 2003).

Adaptive assessment instruments and methods. As seen in Figure 5, The *Vineland Adaptive Behavior Scales* (Sparrow et al., 1984) was, by far, the most frequently used standardized adaptive assessment measure. This is not surprising, since the *Vineland Adaptive Behavior Scales* is the only adaptive behavior assessment to receive serious attention in the most recent peer-reviewed literature (Ozonoff et al., 2005) and has been cited as the most commonly used adaptive assessment measure for children suspected of having PDDs (Luiselli et al., 2001). Once again, behavioral observation and informal probes were frequently selected by respondents across the state (see Figure 5).

Communication assessment instruments and methods. A variety of both standardized and non-standardized methods of communication assessment were utilized in all geographic areas across Texas (see Figure 6). While no clear assessment preference can be determined for any of the geographical areas, the frequent use of a variety of standardized measures in conjunction with informal probing and obtaining narrative, speech, and language samples indicates that respondents understand that no single test can be used to diagnose any of the PDDs (Goldstein, 2002). It is plausible that professionals providing services for the public elementary schools by assessing children suspected of having PDDs understand that supplementing information gathered from standardized results with non-standardized findings will provide richer assessment data which, in turn, will result in more effective intervention planning in the future (Tyler & Tolbert, 2002).

Verbal and nonverbal intelligence assessment instruments and methods. As seen in Figure 7, the *Wechsler Intelligence Scale for Children* (Wechsler, 2003) and the *Wechsler Preschool and Primary Scale of Intelligence* (Wechsler, 2002) were the most frequently chosen instruments for assessing intelligence. These are the most widely used verbal intelligence assessments (Ozonoff et al., 2005), but there are no recent studies on the effectiveness of these measures. Even though these instruments are noted in the research as being popular assessments, using language as the primary medium for cognition assessment would likely bias these tests against children with PDDs, given that these children will exhibit some degree of deficit in the area of language (American Psychological Association, 2000).

Another concern in the area of verbal and nonverbal intelligence assessment is that very few respondents indicated that they used any form of nonverbal standardized testing. This is a concern because nonverbal testing would, in most cases, prove the most accurate and least-biased means of assessment, given the linguistic characteristics of most children with PDDs (American Psychological Association, 2000). While respondents indicated a high use of behavioral observation to assess intelligence, it cannot be determined what percentage would use this method to assess nonverbal communication. The absence of nonverbal assessment use is disappointing, considering that assessments such as the *Mullen Scales of Early Learning* (Mullen, 1995) and the *Stanford-Binet Intelligence Scale* (Roid, 2003) possess strong psychometric properties (Landa & Garrett-Mayer, 2006; Mayes & Calhoun, 2003), yet the *Stanford-Binet Intelligence Scale* was used with any notable frequency solely in the Northeastern area (35%).

Secondary Assessment and Diagnostic Procedures

Academic screening assessment instruments and methods. While the *Woodcock-Johnson Test of Achievement* (Woodcock et al., 2001) and the *Wechsler Individual Test of Achievement* (Wechsler, 2001) were selected by respondents as the most frequently used standardized assessments for this domain (see Figure 8), these tests are generally reserved for older children who exhibit appropriate verbal-language use (Ozonoff et al., 2005). Use of the *Psychoeducational Profile* (Schopler et al., 2005), which provides clearer data on younger children (Ozonoff et al., 2005), was notable in the Central area (62%), but use was moderate among the other geographical areas (26% to 42%). It is uncertain if the high use of behavioral observation in all geographical areas is to compensate for the less frequent use of standardized academic measures for younger children.

Family assessment instruments and methods. With no standardized measure being used by more than 10% of respondents from any geographical area to assess families of children suspected of having PDDs (see Figure 11), and many respondents indicating that this portion of the assessment is usually completed through interview and case history, it can be assumed that non-standardized methods of family assessment provide the data needed to engage in PDD diagnoses. What was surprising is the high number of participants who chose not to respond to this question (20% to 38%). This raises concerns as to whether or not professionals assessing children suspected of having PDDs value the needs of the family as part of the diagnostic process or if time constraints in the assessment process prohibit a more detailed family assessment.

Assessment of behavior, development, and executive functioning. When assessing the domains of behavior (Figure 4), development (Figure 9), and executive function (Figure 10), respondents overwhelmingly chose either behavioral observation or informal probes. Standardized assessments were rarely selected as tools for assessing children in these areas. As far as recommendations based on the current literature are concerned, little research has been done in these areas with respect to assessing children with PDDs. Since the assessment of children suspected of having PDDs can be time consuming, it is possible that the areas of behavior, development, and executive functioning are addressed after a child has been diagnosed with a PDD, and it is later determined that additional information should be obtained from the child in order to adequately satisfy his or her academic needs.

Issues in Bilingual Assessment of PDDs

Bilingual PDD-assessment personnel. As seen in Figure 13, the overall population within Texas public elementary schools is culturally rich and linguistically diverse. A number of languages including, but not limited to, Spanish, German, Russian, Hindi, and Chinese are the primary languages of a number of students in Texas public elementary schools. A high percentage of respondents indicated that children in their schools speak Spanish (93% to 100%) or languages other than English. Children within these populations may require additional educational support tailored to their cultural and linguistic differences. This includes the appropriate assessment of children within these populations who are suspected of having PDDs. Although a large number of respondents across the state indicated that they had bilingual personnel available to assist in the assessment process (see Table 9), the fact that many regions rely heavily on bilingual

intermediaries, such as paraprofessionals and interpreters (see Figure 14), to serve as the linguistic bridge between the child and the assessment team, is cause for concern. This calls into question the nature of services that are being provided to this population and if those services utilize truly least-biased assessment approaches.

Bilingual/multilingual language assessment. The current literature has made it abundantly clear that all children should be assessed in all languages they have been exposed to in order to reduce the chances of misdiagnosing cultural and dialectal differences as cognitive or linguistic disorders (Bedore et al., 2005). Despite such findings, a large number of survey respondents indicated that they believe that assessing only the language used most proficiently by the child being assessed is sufficient (14% to 28%). With a mean response rate of 65% of all the geographical areas where professionals indicated that they believed testing in all exposed languages was the most appropriate method of assessment, it is clear that a large number of professionals who assess children suspected of having PDDs are not heeding the findings and recommendations found in the current literature regarding CLD language assessment. Since PDD is a low-incidence disorder, it is assumed that many of these professionals will be assessing children suspected of having other delays and disorders. With so many professionals believing that CLD children do not need to be assessed in all languages to which they are exposed, it can be assumed that a number of CLD children are being misdiagnosed as having a disorder when, in reality, they may be exhibiting differences based on their cultural and linguistic background (Bedore et al.). The bottom line is, if

children are not being assessed in all languages in which they are exposed, then the professionals responsible for testing outcomes for CLD children are not adhering to evidence-based practices and least-biased assessment approaches.

Confidence in bilingual PDD assessment. Given the overwhelming majority of respondents across the state who are not bilingual or multilingual (68% to 92%) combined with previously discussed issues regarding bilingual assessment, it is not surprising that many respondents do not feel confident in their abilities to assess children suspected of having PDDs who speak languages other than English. When respondents were asked why they did not feel confident in assessing bilingual or CLD children, many stated that being a monolingual speaker of English was the biggest obstacle. Others said that they lacked the training and experience to assess in languages other than English. Regardless of the individual professional's confidence in bilingual assessment, it is the responsibility of all team members to ensure that appropriate measures are taken when assessing CLD children suspected of having PDDs.

The importance of having bilingual professionals present during the assessment process is very important for the assessment of a CLD child. It is equally important to the successful integration of the child's family into the assessment process, as the information family members or caregivers provide, whether through case history or as a part of an interdisciplinary team, is crucial to the assessment process. Professionals who are assessing CLD children suspected of having PDDs must ensure that an appropriate level of credentialed bilingual support is being provided to these children so that all avenues of communication are available to the CLD children and their families or caregivers.

Additional Assessment Issues

Resources for diagnosing PDDs. While the majority of respondents (63% to 86%) indicated that they felt they were being provided with the resources needed to assess and diagnose PDDs, this percentage remains less than desirable. Of those who stated that they did not feel they were being provided adequate resources to assist in PDD diagnoses, many felt they lacked appropriate training and testing materials. Others cited heavy caseloads and a lack of collaboration among assessment professionals as obstacles to the diagnosis of PDDs in children. If the adequate time and appropriate resources are not provided to professionals to assess this population, then it can only be reasonable to speculate that some children who have PDDs are not receiving appropriate assessment services.

Confidence in PDD assessment. It was no surprise that the percentages of respondents who felt they were being provided adequate PDD-assessment resources (63% to 86%) was similar to the percentages of respondents who felt confident in their PDD-assessment abilities (67% to 92%). Once again, respondents indicated that high caseload and the resulting pressure to complete assessments quickly impacted their confidence in conducting appropriate PDD assessments. Many respondents also felt they lacked appropriate training in the area of PDD assessment.

Additional comments provided by survey respondents. Those who participated in the survey were asked to provide any additional information, comments, or suggestions regarding the survey and the assessment and diagnosis of children suspected of having PDDs. Responses provided by the survey participants covered a variety of issues regarding PDD assessment practices within their schools, districts, and regions. Some

respondents felt confident in those assessing PDDs within their schools and that the professionals involved are receiving intensive training in the general assessment process as well as with specific standardized measures. Other respondents stated that they want to know more about PDD and also want more assessment training. Some of these professionals also believe that personnel not normally involved in the assessment process, such as classroom teachers, should be more directly involved in the assessment process. Current research supports this suggestion (Ozonoff et al., 2005).

As stated previously, children suspected of having PDDs will exhibit deficits in a variety of areas, so the assessment process often involves professionals from a variety of fields (Ozonoff et al., 2005). Whether the method of collaboration involves a multidisciplinary, interdisciplinary, or transdisciplinary approach, the goal is to acquire the information needed to engage in an accurate diagnosis (Schwartz et al., 2001). Consistent collaboration between these professionals can be difficult to maintain. Just as it is important to build strong client-clinician rapport, it can be assumed that trust and understanding must also be formed among professionals within an assessment team in order for the process to be most effective. Building such relationships takes time. As seen in Table 6, the highest percentage of respondents in all areas had spent 5 years or less in their current educational settings. Since many of these respondents have worked in their respective profession for more than 5 years (see Table 6), it cannot be assumed that these numbers are representative of only respondents who are new to their given professions. Lack of PDD assessment teams based on high turnover rate may be an important factor in the consistent and accurate assessment of children suspected of having PDDs.

A final concern addressed by respondents reflects the time constraints placed on all professionals within the public school system to deliver services in an efficient and cost effective manner. Some respondents feel that they are pressured by time constraints to diagnose children, and they feel that they are too quickly labeling children as having PDDs. Since PDDs are characterized by severe developmental impairments in a number of areas (American Psychological Association, 2000), succumbing to the pressure of engaging in the hasty assessment or diagnosis of children suspected of having PDDs is not congruent with least-biased assessment approaches, not to mention the ethical implications of conducting assessments in such a manner.

Limitations of the Study

Access to desired participants. There were a number of limitations to this study. Since the data for this study were collected using an online survey, obtaining reliable email addresses from potential respondents was critical. State and national organizations of the desired respondents stated they were unable to provide email lists of its members for research purposes. This meant that email addresses had to be acquired one-by-one from individual school websites. This created its own difficulties in that there was no uniformity among school websites across districts or regions. Some websites contained easily accessible email lists while others either lacked adequate faculty listings or were simply out-of-date. While an adequate number of email addresses from all the desired professions was obtained, it required a significant amount of time and energy and would likely not be feasible for a larger, nation-wide study. It was also difficult, if not impossible, to determine which professionals were involved directly in the assessment of children suspected of having PDDs.

Researcher control during data collection. Another limitation involved survey control. While the researchers controlled the survey content and the respondents who would receive the survey, the survey could not be directly accessed for the purpose of editing once it had been submitted to the Texas State Testing, Research-Support and Evaluation Center (TREC). Researchers could navigate the survey online, but any changes had to be made directly by TREC. While general distribution of the survey and reminder notices and subsequent collection of participant responses was highly successful, a miscommunication between the researchers and TREC resulted in some survey questions being ordered in a manner that was not intended by the researchers. As seen in Appendix B, sections involving the collection of demographic and bilingual data and additional comments or suggestions are not ordered correctly. Fortunately, this oversight did not appear to have a negative effect on completion of the survey; however, the importance of maintaining some level of control during all aspects of the data-collection process cannot be stressed enough.

Survey questions. While all questions used in the survey were carefully constructed to accurately obtain a wealth of information regarding the various aspects of the PDD assessment process among professionals across the state of Texas, analysis of the data revealed that the inclusion of questions addressing specific assessment issues had been neglected. One issue that remains to be addressed is not which assessments are being used across Texas to assess and diagnose children suspected of having PDDs, but rather, how exactly professionals are using these assessments. Given that many children with PDDs have difficulties with communication and attention (American Psychological Association, 2000), results from direct testing of children with characteristics indicative

of PDD can be unpredictable. Standardized assessments used with these children may not always be administered according to test protocols, thus making norm-referenced scoring invalid. With this understanding, it would be beneficial to know how often participants use standardized assessments as a criterion-referenced measure, as well as which particular standardized assessments are more often used as criterion-referenced measures. This would provide insight into the ability of a given test to reliably assess the population it purports to accurately assess.

In addition to questions included in the survey that asked respondents whether or not their school, district, or cooperative had a team of professionals who specialized in PDD assessment, it would have been beneficial to ask respondents which team approach they used when assessing children suspected of having PDDs. Given the high turnover rate of these professionals within the schools as indicated in Table 6, it would have been interesting to see the rates in which respondent teams used multidisciplinary, interdisciplinary, or transdisciplinary approaches to assessment.

Issues with behavioral observation. As seen in a number of figures included in this manuscript, many respondents repeatedly chose behavioral observation as a method of choice in various aspects of PDD assessment. What remains unknown is if they are using a systematic approach with regard to behavioral observation, as well as why it is not being used in conjunction with standardized testing, even if those tests may be interpreted as criterion-referenced measures. While direct observation is an essential component to the assessment process, it provides only a glimpse of a child's behavior at a given moment under specific conditions, and conclusions leading to diagnosis cannot be based solely on data gathered in this manner (Ozonoff et al., 2005).

Assessments and methods included in the survey. Finally, one of the more arduous tasks during survey construction was to organize a comprehensive list of tests and methods used to assess and diagnose children suspected of having PDDs. Since there is no known complete listing of such tests and methods, most of the assessments used in the survey were those acquired through a thorough literature review. To give respondents the opportunity to more accurately report all instruments and methods used to assess and diagnose PDDs, the *other* category was added to each question to allow respondents to note any assessments they used that were not included in the survey. Because of recent mergers between and acquisitions of corporations that publish standardized assessments, it was difficult to determine which tests were still being published and by whom.

Conclusions and Future Research

In conclusion, the results of this study indicate that professionals within elementary public school across the state of Texas who assist in the assessment and diagnosis of children suspected of having PDDs are, in general, using similar assessment approaches. Professionals are using a variety of standardized and non-standardized assessment methods concurrently. Overall, the use of effective standardized assessments as reflected in the current literature is mixed. Some of the assessments used are outdated or psychometrically weak. One must ask if assessment psychometric strength is being sacrificed for ease of use and cost effectiveness. Other instruments used by many of the survey respondents are strong assessments as indicated by the current research. This

conclusion was not surprising though, considering the overall absence of current research investigating the viability of many of the instruments included in this survey as appropriate or effective in the assessment and diagnosis of children suspected of having PDDs.

The frequent use of behavioral observation, informal probes, spontaneous speech and language samples, and narrative samples strongly indicates that respondents are not dependent solely on results obtained through standardized testing to engage in PDD diagnoses. With respect to the assessment and diagnosis of children suspected of having PDDs who are from CLD backgrounds, the data suggest that these children, in general, may not have appropriate access to least-biased assessment approaches. This is based on low rates of respondents who are bilingual, decreased respondent confidence in assessment, limited availability of appropriate bilingual-assessment personnel, and inaccurate respondent perceptions regarding appropriate language assessment considerations for CLD children.

Future research is warranted to determine if these trends can be generalized to larger geographic areas, particularly between other individual states or compared to all states within the United States. This would provide valuable insight into which methods are used to assess and diagnose this population and what measures must be taken to improve testing and diagnosis.

APPENDIX A

EMAIL COVER LETTERS

Dear <Name>,

My name is Jeff Felderhoff, and I am a graduate student majoring in Communication Disorders at Texas State University—San Marcos. I am conducting research in the assessment methods of pervasive developmental disorders (PDDs). I have been awarded a research grant through the Texas Speech-Language-Hearing Foundation to assist in the funding of my studies. I anticipate that my results will be presented at the Texas Speech-Language-Hearing Association's annual conference in February 2008.

While there are numerous studies of individual assessment methods and their effectiveness in the diagnoses of PDDs, there is virtually no information published as to which instruments are used most frequently in schools and if those methods used are based on the most current research. Accurate knowledge of assessment trends may provide a more effective means of determining which diagnostic methods require more emphasis to increase effective and efficient diagnoses.

You are receiving this survey in order to help us determine what assessment instruments and methods are used within public schools across the state of Texas to diagnose children suspected of having PDDs.

Your participation will provide much needed information in the area of child assessment of children suspected of having PDDs. The target respondents of this survey are school professionals who are directly involved in the assessment of children suspected of having PDDs. Your participation in this survey is strictly voluntary. Furthermore, your responses will be confidential; no effort will be made to track your responses and no records will be maintained on any person completing the survey.

We ask that you please complete this survey by clicking on the link that will take you to the survey. Completion of the survey will make you eligible to enter your email address in a random drawing for one of six \$50 gift certificates from the Super Duper® Corporation. Participation in the drawing is completely voluntary, and your email address will not be linked to any information provided in the survey. We appreciate your help.

Sincerely,

Jeff Felderhoff, B.S.
Department of Communication Disorders
Texas State University—San Marcos

Maria Diana Gonzales, Ph.D., CCC-SLP
Department Chair
Department of Communication Disorders
Texas State University—San Marcos

Dear <Name>,

You are receiving this email because you have not responded to the pervasive developmental disorder (PDD) survey. Your input is very important; please take the time to participate in the survey. You are receiving this survey in order to help us determine what assessment instruments and methods are used within public schools across the state of Texas to diagnose children suspected of having PDDs.

As a graduate student majoring in Communication Disorders at Texas State University—San Marcos, I am conducting research in the assessment methods of pervasive developmental disorders (PDDs). I have been awarded a research grant through the Texas Speech-Language-Hearing Foundation to assist in the funding of my studies. My results will be presented at the Texas Speech-Language-Hearing Association's annual conference in February 2008.

We ask that you please complete this survey by Wednesday, November 14 by clicking on the link that will take you to the survey. Completion of the survey will make you eligible to enter your email address in a random drawing for one of six \$50 gift certificates from the Super Duper ® Corporation. Participation in the drawing is completely voluntary, and your email address will not be linked to any information provided in the survey. We appreciate your help.

Sincerely,

Jeff Felderhoff, B.S.
Department of Communication Disorders
Texas State University—San Marcos

Maria Diana Gonzales, Ph.D., CCC-SLP
Department Chair
Department of Communication Disorders
Texas State University—San Marcos

Dear <Name>,

This is a final reminder to please complete the pervasive developmental disorder (PDD) survey. Your input is extremely important, so please take the time to participate in the survey. While the survey is comprehensive and addresses important issues regarding PDD assessment in the public schools, it is very brief. It is extremely user friendly and should take less than 10 minutes to complete.

The data you present will provide valuable insight into which methods are being used in Texas to assess children suspected of having PDDs. The combined results of this survey will be presented at the Texas Speech-Language-Hearing Association's annual conference in February 2008.

We would greatly appreciate it if you took a moment of your time to complete this survey by Wednesday, November 14 by clicking on the link that will take you to the survey. Some respondents have reported that their systems spam filters prevent the link from being accessed. If you cannot access the link copy the following link to your browser:

<http://survey.education.txstate.edu/mrIWeb/mrIWeb.dll?I.Project=PD>

Once you access the link, you will be required to enter the email address to which the survey was originally sent. Do not forget that completion of the survey makes you eligible to win one of six \$50 gift certificates from the Super Duper ® Corporation. Thanks for your help.

Sincerely,

Jeff Felderhoff, B.S.
Department of Communication Disorders
Texas State University—San Marcos

Maria Diana Gonzales, Ph.D., CCC-SLP
Department Chair
Department of Communication Disorders
Texas State University—San Marcos

APPENDIX B

SURVEY

Introduction

We are interested in receiving your input regarding the methods used to assess children suspected of having pervasive developmental disorders (PDDs) within your school district or special education cooperative. Please complete this brief survey. Your responses will be used to provide insight into state-wide and regional trends of the assessment of children suspected of having PDDs.

If you have any questions, please feel free to contact Jeff Felderhoff, Graduate Student, Department of Communication Disorders at jf1030@txstate.edu or Maria Diana Gonzales, Ph.D., CCC-SLP, Chair, Department of Communication Disorders at mg29@txstate.edu.

Completion of this survey indicates implied consent to use this information for research purposes. No personal information will be obtained or presented as research findings.

- Yes, I agree to participate in the survey about PDD assessment.
- No, I do not wish to participate in the survey.

Background Information

Does your school or school district have a group or team that is specially designated to assess and diagnose PDDs? (Not including ARDs [Admissions, Review, and Dismissal Committees])

- Yes
- No
- Don't know

Does your school or any of the schools you provide services for qualify for or receive Title I funding under the No Child Left Behind Act?

- Yes
- No
- Don't know

Assessment and Diagnostic Procedures

What PDD-specific *parent or third-party* interviews, questionnaires, or rating scales do you currently use to assist in PDD diagnoses? (Select all that apply)

- Asperger Syndrome Diagnostic Scale (ASDS)
- Autism Diagnostic Interview—Revised (ADI-R)
- Autism Behavior Checklist (ABC)
- Childhood Autism Rating Scale (Parent interview)
- Gilliam Asperger's Disorder Scale (GADS)
- Gilliam Autism Rating Scale (GARS)
- Parent Interview for Autism (PIA)
- PDD Behavior Inventory (PDDBI)
- Real Life Rating Scale (RLRS)
- Social Responsiveness Scale (SRS)
- Other(s):
- None
- No Response

What PDD-specific *diagnostic* assessment instruments or methods do you currently use to assist in PDD diagnoses? (Select all that apply)

- Autism Diagnostic Observation Schedule (ADOS)
- Autism Screening Instrument for Educational Planning (ASIEP)
- Behavioral observation
- Checklist for Autism in Toddlers (CHAT)
- Childhood Autism Rating Scale (Assessment portion)
- Dynamic assessment
- Informal probes
- Pervasive Developmental Disorder Screening Test (PDDST)
- Prelinguistic Autism Diagnostic Observation Schedule (PL-ADOS)
- Psychoeducational Profile (PEP)
- Other(s):
- None
- No Response

What *developmental* assessment instruments or methods do you currently use to assist in PDD diagnoses? (Select all that apply)

- Bayley Scales of Infant Development (BSID)
- Behavioral observation
- Brigance Inventory of Early Development
- Developmental Play Assessment Instrument
- Informal probes
- Southern California Ordinal Scales of Development (SCOSD)
- Other(s):
- None
- No Response

What *adaptive* assessment instruments or methods do you currently use to assist in PDD diagnoses? (Select all that apply)

- Adaptive Behavior Assessment System (ABAS)
- Behavioral observation
- Informal probes
- Scales of Independent Behavior (SIB)
- Social Responsiveness Scale (SRS)
- Vineland Adaptive Behavior Scales (VABS)
- Other(s):
- None
- No Response

What *communication* assessment instruments or methods do you currently use to assist in PDD diagnoses? (Select all that apply)

- Assessment, Evaluation, and Programming for Infants and Children (AEPS)
- Assessing Semantic Skills Through Everyday Themes (ASSET)
- Clinical Evaluation of Language Fundamentals (CELF)
- Clinical Evaluation of Language Fundamentals—Preschool (CELF-P)
- ECOScales
- Expressive One-Word Picture Vocabulary Test (EOWPVT)
- Informal probes
- Narrative sample
- Nonspeech Test for Receptive/Expressive Language
- Peabody Picture Vocabulary Test (PPVT)
- Preschool Language Scales (PLS)
- Receptive One-Word Picture Vocabulary Test (ROWPVT)
- Reynell Developmental Language Scales (RDLS)
- Sequenced Inventory of Communication Development (SICD)
- Spontaneous speech/language sample
- Test of Language Competence (TLC)
- Other(s):
- None
- No Response

What *verbal and nonverbal intelligence* assessments or methods do you currently use to assist in PDD diagnoses? (Select all that apply)

- Behavioral observation
- Columbia Mental Maturity Scale (CMMS)
- Differential Abilities Scales (DAS)
- Informal probes
- Leiter International Performance Scales (LIPS)
- Merrill-Palmer Scale of Mental Tests (MPSMT)
- Mullen Scales of Early Learning (MSEL)
- Stanford-Binet Intelligence Scale (SBIS)
- Test of Nonverbal Intelligence (TONI)
- Wechsler Intelligence Scale for Children (WISC)
- Wechsler Preschool and Primary Scale of Intelligence (WPPSI)
- Other(s):
- None
- No Response

What *academic screening instruments* or methods do you currently use to assist in PDD diagnoses? (Select all that apply)

- Behavioral observation
- Bracken Basic Concept Scale (BBCS)
- Informal probes
- Psychoeducational Profile (PEP)
- Wechsler Individual Achievement Test (WIAT)
- Wide Range Achievement Test 3 (WRAT)
- Woodcock-Johnson Test of Achievement
- Young Children's Achievement Test (YCAT)
- Other(s):
- None
- No Response

What *behavioral assessment instruments* or methods do you currently use to assist in PDD diagnoses? (Select all that apply)

- Achenbach Child Behavior Checklist (ACBC)
- Analysis of Sensory Behavior Inventory (ASBI)
- Behavioral observation
- Carey Temperament Scales (CTS)
- Child Behavior Checklist (CBCL)
- Children's Social Behavior Questionnaire (CSBQ)
- Diagnostic Checklist for Behavior
- Nisonger Child Behavior Rating Form (NCBRF)
- Other(s):
- None
- No Response

What assessment instruments or methods do you currently use to determine *executive functioning* (context and content control) when engaging in PDD diagnoses? (Select all that apply)

- Behavioral Rating Inventory of Executive Function (BRIEF)
- Delis-Kaplan Executive Function System (D-KEFS)
- Informal probes
- NEPSY: A Developmental Neuropsychological Assessment
- Wisconsin Card Scoring Test (WCST)
- Other(s):
- None
- No Response

What *family* assessment instruments or methods do you use when engaging in PDD diagnoses? (Select all that apply)

- Behavioral Vignettes Test (BVT)
- Child Improvement Locus of Control Scale (CILC)
- Family Adaptability and Cohesion Evaluation Scales IV (FACES IV)
- Family Assessment Interview (FAI)
- Family Environmental Scale (FES)
- Parental Stress Scale (PSS)
- Parenting Satisfaction Scale (PSS)
- Parenting Stress Index (PSI)
- Questionnaire on Resources and Stress (QRS)
- Other(s):
- None
- No Response

Which professionals are utilized to assist in PDD diagnoses within your school district? (Select all that apply)

- Academic Review Board (ARB)
- Autism/PDD Assessment Team
- Developmental Pediatrician
- Educational Diagnostician
- Educational Psychologist
- School Psychologist/LSSP
- Special Educator
- Medical Doctor
- Neurologist
- Other(s):
- None
- No Response

Additional Assessment Issues

When assessing *bilingual* or *multicultural* children suspected of having PDD, which of the following languages do you consider important to the assessment process?

- All languages spoken by the student
- English only
- Student's most proficient language only
- Student's native language only
- Do not assess bilingual or multicultural children
- Other(s):
- None
- No Response

Do you feel that you are provided with the resources necessary to assist in diagnosing PDD at your current setting?

- Yes
- No
- No Response

Please elaborate as to why you feel you are not provided the resources necessary to assist in diagnosing PDD at your current setting.

Do you feel confident in your ability to accurately assist in the assessment and diagnosis of PDDs?

- Yes
- No
- No response

Please explain why you do not feel confident in your ability to accurately assist in the assessment and diagnosis of PDD.

Do you feel confident in your ability to accurately assess and diagnose children suspected of having PDDs who are either bilingual or are speakers of a language other than English?

- Yes
- No
- No response

Please explain why you do not feel confident in your ability to accurately assist in the assessment and diagnosis of children suspected of having PDDs who are either bilingual or are speakers of a language other than English.

Which criteria do you adhere to in the diagnosis of PDD? (Select all that apply)

- Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)
- Individuals with Disabilities Education Act (IDEA)
- No Child Left Behind Act
- Don't know
- Other(s):
- None
- No Response

Demographic Data

With which Texas Education Agency regional center is your school district or special education cooperative affiliated?

- Region 1
- Region 2
- Region 3
- Region 4
- Region 5
- Region 6
- Region 7
- Region 8
- Region 9
- Region 10
- Region 11
- Region 12
- Region 13
- Region 14
- Region 15
- Region 16
- Region 17
- Region 18
- Region 19
- Region 20
- No Response

Is the school or school district you work in best described as urban or rural?

- Rural
- Urban
- Both
- Unknown
- Other (Please Specify):
- No Response

What is your job title? (If more than one applies, select the one in which the majority of your responsibilities currently lie.)

- Educational Diagnostician
- Licensed Specialist in School Psychology (LSSP)
- Special Educator
- Speech-Language Pathologist
- Other (Please Specify):
- No Response

Are you bilingual or multilingual?

- Yes
- No
- No Response

Please list all languages that you speak.

Additional Comments and Suggestions

Please provide any additional information, comments, or suggestions.

Closing Remarks

Does your school or district have certified bilingual personnel to assist with the assessment process?

- Yes
- No
- No Response

How many total years experience do you have in your current profession?

- 0-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- More than 20 years
- No Response

How many years have you worked at your current setting?

- 0-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- More than 20 years
- No Response

Which of the following personnel are utilized in your school district/cooperative to assess bilingual children suspected of having PDDs?

- Bilingual Paraprofessionals
- Parents
- Interpreters
- Bilingual Special Educators
- Bilingual SLPs
- Bilingual LSSPs
- Bilingual Educational Diagnosticians
- Other(s):
- None
- No Response

Which of the following languages are spoken by children in your school district/cooperative?

- Chinese
- English
- German
- Hindi
- Italian
- Japanese
- Russian
- Spanish
- Vietnamese
- Other(s):
- No Response

Congratulations, you are now eligible to enter a drawing for one of six \$50 gift certificates from the Super Duper Corporation. Please indicate whether or not you wish to participate in the drawing. For purposes of confidentiality, your email address will not be linked to your survey responses. Your participation in our survey is greatly appreciated!

- Yes, I wish to participate in the drawing.
- No, I do not wish to participate in the drawing.

Please click **[participate in the drawing](#)** to enter your email address.

Thanks!

APPENDIX C

ASSESSMENTS, METHODS, PROFESSIONS, AND ASSOCIATED ABBREVIATIONS

Assessment/Method/Profession	Abbreviation
Achenbach Child Behavior Checklist (Achenbach & Rescorla, 2000)	ACBC
Adaptive Behavior Assessment System (Harrison & Oakland, 2003)	ABAS
Analysis of Sensory Behavior Inventory (Morton & Wolford, 1994)	ASBI
Asperger Syndrome Diagnostic Scale (Myles et al., 2000)	ASDS
Assessing Semantic Skills Through Everyday Themes (Barrett, Zachman, & Huisingh, 1988)	ASSET
Assessment, Evaluation, and Programming System for Infants and Children (Bricker, 2003)	AEPS
Autism Behavior Checklist (Krug et al., 1988)	ABC
Autism Diagnostic Interview-Revised (Rutter et al., 2003)	ADI-R
Autism Diagnostic Observation Schedule (Lord et al., 2001)	ADOS
Autism Screening Instrument for Educational Planning (Krug, Arick, & Almond, 1993)	ASIEP
Bayley Scales of Infant Development (Bayley, 1993)	BSID
Behavioral Rating Inventory of Executive Function (Gioia et al., 2000)	BRIEF
Behavioral Vignettes Test (Baker, 1989)	BVT
Bracken Basic Concept Scale (Bracken, 1998)	BBCS
Brigance Inventory of Early Development (Brigance, 2004)	BIED
Carey Temperament Scales (Carey, McDevitt, & Associates, 1995)	CTS
Checklist for Autism in Toddlers (Baron-Cohen et al., 2000)	CHAT
Childhood Autism Rating Scale (Schopler et al., 1988)	CARS

<i>Figure Abbreviations-Continued</i>	
Assessment/Method/Profession	Abbreviation
Child Improvement Locus of Control Scale (DeVellis et al., 1985)	CILC
Children's Social Behavior Questionnaire (Luteijn et al., 2000)	CSBQ
Clinical Evaluation of Language Fundamentals (Semel et al., 2003)	CELF
Clinical Evaluation of Language Fundamentals-Preschool (Semel, Wiig, & Secord, 2004)	CELF-P
Columbia Mental Maturity Scale (Burgemeister, Blum, & Lorge, 1972)	CMMS
Delis-Kaplan Executive Function System (Delis et al., 2001)	D-KEFS
Developmental Play Assessment Instrument (Lifter, Ellis, Cannon, & Anderson, 2005)	DPAI
Diagnostic and Statistical Manual of Mental Disorders (American Psychological Association, 2000)	DSM-IV-TR
Diagnostic Checklist for Behavior (Rimland, 1971)	DCB
Differential Abilities Scales (Elliot, 1990)	DAS
ECOScales (MacDonald, Gillette, & Hutchinson, 1989)	ECOScales
Educational Diagnosticians	Ed Diags
Expressive One-Word Picture Vocabulary Test (Brownell, 2000)	EOWPVT
Family Adaptability and Cohesion Evaluation Scales IV (Olson, Gorall, & Tiesel, 2004)	FACES IV
Family Assessment Interview (Koegel, Koegel, & Dunlap, 1996)	FAI
Family Environmental Scale (Moos & Moos, 1981)	FES
Gilliam Asperger's Disorder Scale (Gilliam, 2001)	GADS
Gilliam Autism Rating Scale (Gilliam, 2006)	GARS
Individuals with Disabilities Education Act (1990)	IDEA
Licensed Specialists in School Psychology	LSSPs
Leiter International Performance Scales (Roid & Miller, 1997)	LIPS
Merrill-Palmer Scale of Mental Tests (Roid & Sampers, 2004)	MPSMT
Mullen Scales of Early Learning (Mullen, 1995)	MSEL

<i>Figure Abbreviations-Continued</i>	
Assessment/Method/Profession	Abbreviation
A Developmental Neuropsychological Assessment (Korkman, Kirk, & Kemp, 2007)	NEPSY
Nisonger Child Behavior Rating Form (Aman et al., 1996)	NCBRF
No Child Left Behind Act of 2001 (2002)	NCLB
Nonspeech Test for Receptive/Expressive Language (Huer, 1988)	Nonspeech Test
Parenting Satisfaction Scale (Guidubaldi & Cleminshaw, 1994)	PSS
Parenting Stress Index (Abidin, 1995)	PSI
Parent Interview for Autism (Stone, Coonrod, Pozdol, & Turner, 2003)	PIA
PDD Behavior Inventory (Cohen & Sudhalter, 2005)	PDDBI
Peabody Picture Vocabulary Test (Dunn & Dunn, 2007)	PPVT
Pervasive Developmental Disorder Screening Test (Siegel, 2004)	PDDST
Prelinguistic Autism Diagnostic Observation Schedule (DiLavore & Lord, 1995)	PL-ADOS
Preschool Language Scales (Zimmerman et al., 2002)	PLS
Psychoeducational Profile (Schopler et al., 2005)	PEP
Questionnaire on Resources and Stress (Friedrich et al., 1983)	QRS
Real Life Rating Scale (Freeman, Ritvo, Yokota, & Ritvo, 1986)	RLRS
Receptive One-Word Picture Vocabulary Test (Brownell, 2000)	ROWPVT
Reynell Developmental Language Scales (Reynell & Gruber, 1990)	RDLS
Scales of Independent Behavior (Bruininks, Woodcock, Weatherman, & Hill 1996)	SIB
Sequenced Inventory of Communication Development (Hedrick, Prather, & Tobin, 1984)	SICD
Social Responsiveness Scale (Constantino, 2002)	SRS
Southern California Ordinal Scales of Development (Ashurst et al., 1985)	SCOSD
Speech-Language Pathologists	SLPs

<i>Figure Abbreviations-Continued</i>	
Assessment/Method/Profession	Abbreviation
Spontaneous speech/language sample	SSLS
Stanford-Binet Intelligence Scale (Roid, 2003)	SBIS
Test of Language Competence (Wiig & Secord, 1989)	TLC
Test of Nonverbal Intelligence (Brown, Sherbenou, & Johnson, 1997)	TONI
Vineland Adaptive Behavior Scales (Sparrow et al., 1984)	VABS
Wechsler Individual Achievement Test (Wechsler, 2001)	WIAT
Wechsler Intelligence Scale for Children (Wechsler, 2003)	WISC
Wechsler Preschool and Primary Scale of Intelligence (Wechsler, 2002)	WPPSI
Wide Range Achievement Test 3 (Wilkinson, 1993)	WRAT
Wisconsin Card Scoring Test (Grant & Berg, 1993)	WCST
Woodcock-Johnson Test of Achievement (Woodcock et al., 2001)	WJTA
Young Children's Achievement Test (Hresko, Peak, Herron, & Bridges, 2000)	YCAT

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