Assessments Used by Indian Speech Language Pathologists for Patients with Autism Spectrum Disorder

Research Thesis
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by

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Abstract

Based on Deshmukh and McCauley's 2010 survey of Indian speech-language pathologists (SLPs) and their management of autism spectrum disorder (ASD), this study's objective was to examine the assessment methods, training, characteristics, and client base of such SLPs. A 51-item online survey, created for another study re-examining Deshmukh and McCauley's topic, was used; however, only 12 of the items were utilized for the purposes of this current study. Participants were invited through the Indian Speech and Hearing Association's (ISHA) email list. Data from 26 respondents located in 4 different Indian states were used. The majority of the respondents were new SLPs, new to ASD, and had received a varied amount of academic training regarding ASD. About half of the SLPs were not permitted to diagnose ASD. Most of their assessment instruments were in English and had been developed in the West. Since the 2010 study, there has been a decrease in the number of academic courses about ASD and the number of SLPs diagnosing ASD. Previously, the SLP was the most frequent diagnostician, but now that role mostly belongs to clinical psychologists. The number of clients with confirmed ASD seems to have increased and it also seems that many of the assessments have not been adjusted linguistically for them. Future research might examine the existence of any cultural adjustments for the assessments that have been made to accommodate Indian clients with ASD.

Keywords: autism spectrum disorder, speech-language pathologists, assessments

Assessments Used by Indian SLPs for Patients with Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) adversely affects an individual's ability to function normally in social and occupational capacities. According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), ASD consists of ongoing deficiencies in, "reciprocal social communication and social interaction, and restricted, repetitive patterns of behavior, interests, or activities" (American Psychiatric Association, 2013). These issues may manifest themselves in various ways, including difficulty interacting socially, atypical eye contact, trouble making friends, an unyielding desire for regularity, and distress due to various sensory inputs, such as certain sounds (American Psychiatric Association, 2013).

With such issues hampering their ability to function normally, many affected individuals remain reliant upon others to provide care and support from childhood into their adult years (American Psychiatric Association, 2013). Even as the affected individual experiences negative impacts from ASD, caregivers may also struggle with personal and financial burdens related to ASD's presence in the life of their dependent (Cadman et al., 2012; Khanna et al., 2011). With an increased prevalence in recent years, the number of lives directly and indirectly complicated by ASD is surely increased (Fombonne, 2003).

Because ASD's increased prevalence is global in nature, there is a need for more information about ASD and how it is being addressed in cultures all over the world (Fombonne, 2005). One country that might be considered an important one for study, and the one focused on in this paper, is India, an extremely populous nation with over 1.25 billion people (The World Bank, 2013). Given this large population size and an estimated global ASD prevalence at 0.6% by Fombonne (2005), it is reasonable to presume that India has up to 7.5 million individuals with

ASD. Yet, despite the likelihood of this situation, the amount of literature on ASD in this non-Western country is limited.

In Western countries such as the US, however, multiple efforts have been made to determine the knowledge, training, and practice patterns of different professionals involved in the health care of people with ASD. Neurologists, clinical psychologists, nurses, and pediatricians--all interacting with ASD individuals on a variety of levels--are among the professional groups that have been studied (Golnik et al., 2009; Heidgerken et al., 2005; Strunk, 2009). Another professional that has been examined, and one that is of particular interest to this paper, is the speech-language pathologist (SLP), a key player in the mitigation of the effects of ASD.

For those with ASD, a significant and even defining aspect of their disorder involves difficulty with communication. Trouble incorporating verbal and non-verbal communication, participating in back-and-forth conversations, interacting with peers, and forming friendships are just some of the issues that may arise (American Psychiatric Association, 2013). With a focus on addressing challenges in communication, SLPs are well suited to deal with these characteristics of ASD. In fact, such clients tended to make up 15% of the caseload of American Speech-Language-Hearing Association (ASHA)-certified SLPs in 2013 (Brook, 2013). Also, in Western countries such as the US, the UK, and Canada, speech-language pathology is one of the professional groups most commonly involved in the care of people with ASD (Cassidy et al., 2008; McLennan et al., 2008; Thomas et al., 2007). Moreover, the roles and responsibilities of SLPs towards these ASD clients as outlined by ASHA are considerable and include screening, diagnosis, and intervention (ASHA, 2006). Therefore, because SLPs play such a central role in the management of ASD, it is important that their practice patterns regarding ASD be well

understood across all areas of practice, but particularly in the area of assessment due to its role in helping individuals access interventions and in treatment planning.

In fact, because of the importance of assessment in ASD management, it was selected as a focus for this study. Some of the challenges it entails will be described here. Before the SLP's treatment for communication challenges related to ASD can commence, the diagnosis of ASD must be made. This can be accomplished by using standardized assessment tools, as the three major purposes of such instruments are (1) to diagnose (identify) the client's problem, (2) describe it, and (3) track progress toward its amelioration throughout therapy. As described by McCauley (2001), identification may consist of both screening and diagnosis. Screening, typically a fast and efficient process, is used to decide if a more exhaustive investigation of a person's difficulty is warranted, while diagnosis is concerned with proving that a suspected problem, such as ASD, really does exist. Knowing whether or not change is occurring, and knowing specifically what is changing, may help reveal if the current treatment method is resulting in any improvement and if it should subsequently be kept or replaced by a different treatment. Thus, diagnostic and descriptive instruments hold a very valuable place in the therapist's work.

A wide array of English-language, standardized assessment tools for autism exists, as described in Lord, Corsello, and Grzadzinski (2014)'s list of 13 instruments in Volkmar, Paul, Rogers, and Pelphrey's recent and exhaustive *Handbook of Autism and Pervasive Developmental Disorders*. Some of these respected diagnostic tools include the Autism Diagnostic Observation Schedule (ADOS) (Lord & Corsello, 2005; Lord et al., 1989) and the Children's Communication Checklist (CCC) (Bishop, 1998) (Lord & Corsello, 2005). Despite the widespread use and respect garnered by these tests, according to ASHA (n.d.), "Test scores are invalid for a client

who is not reflected in the normative group for the test's standardization sample, even if the test is administered as instructed." Therefore, while the tools mentioned above are suitable in the context of the Western, English-speaking countries in which they were created, the cultural and linguistic differences of India might render these and other English-language tools inappropriate.

Other standardized tools used in the description and tracking of communication challenges among individuals with ASD and mentioned in Lord, Corsello, and Grzadzinski's chapter on diagnostic instruments, include the Childhood Autism Rating Scale (CARS) by Schopler, Reichler, DeVellis, & Daly (1980) and the Autism Diagnostic Interview-Revised (ADI-R) by Lord, Rutter, & Le Couteur (1994) (Lord, Corsello, & Grzadzinski, 2014). Yet, these tools as well may or may not be suitable for the needs of SLPs working with ASD in India—for both cultural and linguistic reasons. The Western, English-speaking, monolingual world these standardized tests were created in is not the same as the non-Western, multi-lingual environment of India. The mere fact that India has numerous languages, with 122 listed in the 2001 census data (Registrar General & Census Commisssioner, 2010), has influenced the scarcity of assessment tools and norms currently available in that country, according to one Indian academic (Karanth, 2002). Consequently, understanding what assessment tools are utilized in India may be useful in understanding an important aspect of clinical practice with the ASD population there.

In addition to gathering information on assessments used by Indian SLPs, knowledge of their educational background in ASD is also of interest. In the US, there have been multiple studies examining this aspect of SLPs. In one of these studies, Colella and Cascella (2004) surveyed the pre-professional education and knowledge of school-based SLPs in the state of Connecticut. Of the 82 respondents, most (n = 56; 69.2%) received little to no information about ASD in their academic courses. Also, almost all of the SLPs (n = 73; 89.5%) indicated that such

courses discussed ASD for only 5 or fewer class sessions. Moreover, with regards to clinical preparation in ASD, most of the respondents (n = 61; 75.3%) had little to no experience with ASD and half of the respondents (n = 41; 51.2%) had no firsthand involvement with ASD during the clinical practicum portion of their training.

A few years after Colella and Cascella published their study, Schwartz and Drager (2008), concerned by the possible existence of regional bias in Colella and Cascella's survey of solely Connecticut-based SLPs, surveyed a broader selection of American SLPs, with 67 respondents from 33 states. The focus of their survey was on the SLPs' educational backgrounds, knowledge, and confidence levels regarding autism. Considering both undergraduate and graduate courses, only about half (56.7%; n = 38) of the therapists had 1 to 2 courses that addressed ASD, with the remainder having none. Likewise, with regards to their clinical experiences during training, a little over half (55.2%; n = 37) of the respondents did not have the opportunity to serve patients with autism. Although most of the therapists (83.6%; n = 56) received some undergraduate and/or graduate coursework about ASD, there was confusion among them about diagnostic characteristics of ASD. For instance, when asked if stereotyped and repetitive behaviors are necessary for diagnosis, about half of the respondents (48%; 32) incorrectly said no. Also, an appreciable portion of the respondents (21%; n = 14) wrongly said that social interaction impairments are not required for an ASD diagnosis. Therefore, it was concluded that more training would have benefited these SLPs.

Since Schwartz and Drager's 2008 survey, Plumb and Plexico (2013) replicated that survey using a larger study with a group comprised of 401 school-based SLPs in 29 US states. Because 2006 was the year ASHA published its policy documents regarding ASD's diagnosis, assessment and treatment (ASHA, 2006a, 2006b, 2006c, 2006d), Plumb and Plexico were

interested in comparing the training, experience, and confidence levels of pre-2006 and post-2006 SLP graduates. It was found that the recent graduates were almost twice as likely (31% among post-2006 graduates versus 15% among pre-2006 graduates) to have taken an academic course focused on ASD and also about twice as likely (51% among post-2006 graduates versus 23% among pre-2006 graduates) to have taken 3 or more courses that addressed ASD than the pre-2006 graduates. However, the pre-2006 graduates were over 1.2 times more confident in their ability to treat certain aspects of ASD, such as social communication, literacy, and academics. The authors suggested that this might be due to their greater experience as clinicians and the fact that many of the surveyed SLPs (81.8%) attended Continuing Education sessions to strengthen their ability to help those with ASD.

These studies present a picture of the quantity of training that speech-language pathology students receive in the US prior to their career. While it seems that the amount of education devoted to ASD is gradually increasing, there are still deficits apparent in the lack of knowledge regarding certain aspects of ASD.

Aside from giving information about their educational training, two of the studies also provided some insight into the assessment knowledge of SLPs. For instance, Cascella and Colella included in their survey a series of questions looking at the SLPs' self-reported knowledge about related educational assessment, speech-language assessments, and communication environment assessment. The category of related educational assessment, which included items about dynamic assessment and sensory integration assessment, had the lowest self-reported knowledge. Plumb and Plexico's survey inquired into the SLPs' familiarity level with current research regarding assessments, with 85% of the post-2006 graduates and 88% of the pre-2006 graduates claiming familiarity.

Another survey that examined assessment knowledge of SLPs is the unpublished thesis of Felderhoff (2008). In his study, he examined the assessment use of SLPs for children with autism in schools across the state of Texas. With 239 respondents, the most popular assessments included Childhood Autism Rating Scale (CARS) (Schopler, Reichler, DeVellis, & Daly, 1980), Gilliam Autism Rating Scale (GARS) (Gilliam, 1995), and Gilliam Asperger's Disorder Scale (GADS) (Gilliam, 2003). It is interesting to note that a large percentage of the children in the respondent's schools were either bilingual or multilingual (93% to 100%), but most of the respondents (68% to 92%) were not. Related to this is the fact that a large number of the SLPs did not have confidence with regards to assessing bilingual children who potentially have ASD. This is a difficulty that will be faced by SLPs in any location where multiple languages meet, such as India.

In an effort to shed some light on Indian SLPs' autism-related practices, Deshmukh and McCauley (2010) created an online survey that serves as a basis for this current project. Influenced by Schwartz and Drager's 2008 survey, the four research questions guiding Deshmukh and McCauley's survey addressed (a) the training and characteristics of Indian SLPs who identified themselves as working with ASD, (b) their ASD clients' characteristics, (c) their diagnostic methods, and (d) the interventions they used for autism. With 53 SLP respondents from the Indian Speech and Hearing Association (ISHA), Deshmukh and McCauley found that the majority of these therapists held a master's degree and had taken at least one course dealing with autism. Most of their clients with ASD were moderately to severely affected, with the most frequently used diagnostic tools including the Autism Behavior Checklist (ABC) (Krug et al., 1980), the Childhood Autism Rating Scale (CARS) (Schopler, Reichler, DeVellis, & Daly, 1980), and the Modified Checklist for Autism in Toddlers (M-CHAT) (Robins, Fein, Barton, &

Green, 2001). This is similar to the results of Felderhoff's (2008) survey, in which he found CARS and ABC to be popular diagnostic tools in Texas schools.

While Deshmukh and McCauley's 2010 survey provided information about diagnostic tools and therapist characteristics, the current survey was designed to re-examine those topics and address several additional questions covering assessments. For example, although the 2010 survey presented a list of English-language assessments possibly used by respondents, the list was not as comprehensive as it might have been. The addition of 10 English-language assessments and of questions regarding information about assessments developed in India in other languages were seen as important improvements that might be made in a systematic replication of this survey.

Thus, because SLPs play a significant role in the amelioration of ASD and their assessment tools play a critical part in their process, having more information about these matters may increase future understanding of how to better manage the adverse affects of ASD in India. In order to understand more about current practices in India, the present study reports an online survey designed to determine which instruments are currently being used by SLPs in India for diagnosis, description of areas of challenge, and for tracking progress of communication problems in individuals with ASD. In addition, the training of these individuals on this topic and the nature of the persons they serve will be examined.

Method

Based on Deshmukh and McCauley's 2010 survey, with modifications influenced by Plumb and Plexico's 2013 survey, the current survey consists of 51-items divided into six sections.

- Part I (13 questions) pertains to the background of the SLPs' ASD clients. Some of the questions in this section investigate the number of patients on the therapist's caseload with either confirmed or suspected ASD diagnoses, their severity levels, and the number of autistic patients the SLPs have treated over the course of their careers.

- Part II (9 questions) questions the therapists' diagnostic, treatment planning, and progress tracking methods. This section covers questions about what profession the typical diagnostician for an ASD client is of and what Indian-based or English language instruments are utilized in the diagnosis, description, and tracking of ASD.

- Part III (3 questions) inquires after the interventions and intervention goals of the therapists for their ASD patients.

- Part IV (2 questions) asks about possible behavioral problems in the SLPs' clients and which professional has the primary responsibility of treating such behavior.

- Part V (14 questions) queries the therapists' background in education, the number of courses they have taken that covered autism, the length of their professional experience, their current work environment, possible professional collaborators involved in treating their ASD patients, and the various ASD information resources they have access to.

- Part VI (8 questions) investigates what it is like to work with clients whose culture and language is different than the therapist's. Specifically, this section inquires after the languages the SLPs are sufficiently competent in for use in the clinic, the number of clients who speak one of their clinical languages, and what happens in the case of those clients who do not speak one of those languages. Also, this section inquires into whether or not the SLPs ever adapt an English language test for their non-English

speaking clients, and if so, how they go about doing it. Finally, it is asked what cultural issues the therapists encounter with their ASD clients.

In the current paper, only those 12 questions related to the demographics of the SLPs (items 31, 13, 36), their training (items 28, 34, 32), the populations they serve (items 1, 2) and their assessment methods (items 17, 18, 15, 14) were examined.

Procedures

The survey was designed to take approximately 20-25 minutes to complete. After the survey received IRB approval, invitation to participate was sent to SLPs through the Indian Speech and Hearing Association's email list, just as it was in the 2010 survey. Because ISHA's membership email-list has expanded since 2010, around 2500 emails were sent out for this study as opposed to 472 emails for the 2010 survey. However, even as the 2010 survey found only 380 of the 472 email addresses operational, a leading member of ISHA has indicated that only 1500 of the 2500 addresses will likely be functional. Those who received the invitation indicated their voluntary informed consent be clicking on a link that took them to SurveyMonkey, an Internet-based site through which the survey was distributed through. The participant responses were collected anonymously and data were SSL encrypted to help protect respondent confidentiality.

Results

Results reported here were those available as of April 13, 2015, when there were 30 respondents. Because one respondent listed his/her location as outside of India, that individual's responses were eliminated from the results reported here. Many of the remaining respondents skipped multiple questions, with 3 participants failing to answer any of the questions examined

in this study. Therefore, the sample size for each item is based on the actual number of responses.

Participant Characteristics

  Demographics. Regarding the number of years they had practiced, more than half of the 15 respondents (53.33%; n=8) had practiced for 5 or fewer years, with smaller percentages having practiced longer (31.25%: 6 to 10 years; 12.5%: 11 to 14 years). When asked about their years of experience with ASD, the majority, 68%, responded that they have had 0-5 years of experience, 24% have had experience for 5-10 years, and only 8% have had more than 10 years worth of experience with ASD. Upon being asked about their location, 15 of the 26 respondents replied; they were situated in the states of Karnataka (n=7), Maharashtra (n=4), Tamil Nadu (n=3) and Telangana (n=1). Thus, the majority of the respondents were relatively new clinicians who were also relatively new to practice in the field of ASD.

  Education. When asked about their highest degree, 16 SLPs responded. The clear majority (87.5%; n=14) reported having an MA while 12.5% (n=2) claimed a PhD. In response to being asked for the date they received their highest degree, most of them (87.5%) graduated after 2006, with the rest (12.5%) having graduated between 2000 and 2005.

  The survey also inquired into how many ASD courses the therapists had taken in their education (see Figure 1). At the undergraduate level, 20% of the respondents reported having taken no courses dealing primarily with ASD, while 46.67% had taken a single undergraduate course. Regarding graduate level courses on ASD, 6 therapists (40%) had none, 8 therapists (53.33%) had one, and 2 therapists (13.33%) had more than one course.

Number of Clients with ASD

When asked about the number of confirmed cases of ASD the SLPs are currently working with, 26 SLPs responded (see Figure 2). Among the respondents, 15.38% have 1-3 cases, 30.77% have 4-6 cases, 11.54% for both 7-9 and 10-12 cases, and 30.77% have more than 15 clients with confirmed ASD. With regards to the number of clients with confirmed and suspected ASD, of the 26 SLPs who responded, 19.23% have 1-3 clients, 30.77% have 4-6 clients; 23.08% have 7-9 clients, and 26.92% have at least 16 clients. As there is not much difference between the number of confirmed cases and the number of both confirmed and suspected cases, it seems that there are relatively few unconfirmed cases.

Professionals Involved in Diagnosis

Upon being asked to name the profession who most frequently makes an ASD diagnosis, 19 SLPs responded (see Figure 3). The majority (63.16%) said that the clinical psychologist was the most frequent professional to diagnose ASD, while 15.79% named both SLPs and an interdisciplinary team, and 10.53% chose the pediatrician as the most frequent diagnostic professional. When asked whether or not SLPs are permitted to diagnose ASD, 21 SLPs responded, with 52.38% not allowed to diagnose ASD and the remaining 47.62% authorized to do so.

Assessments Used in Diagnosis

In response to being questioned about their use of diagnostic tests developed in India and the language those tests are in, the SLPs listed 12 different tools. They were listed as: ABC, ABCCP, ALD (n=2), CARS (n=4), CHAT, COM DEALL Checklist for Developmental Disabilities (n=3), DDA-ASD, GARS, INCLEN, Indian Scale for Assessment of Autism (ISAA), LAT, LPT, and MCHAT (n=4). Only 5 respondents provided the test's language, with ABC, CARS, COMM DEALL, ISAA, and MCHAT labeled as being in English. Asked to select

their most frequently used English language assessment test, only 12 of the 20 options were selected by the respondents (see Figure 4). The three most frequently used English language tests were the MCHAT (80.95%), CARS (76.19%), and the ABC (47.62%). These results are consistent with the results of Deshmukh and McCauley's 2010 survey, as these same assessments were the most commonly used tests among therapists who responded at that time. Three additional assessment measures frequently reported in the current study include clinical judgment (66.67%), parent report (66.67%), and informal measures (52.38%).

Discussion

Participant Characteristics

Most of the respondents were new SLPs and new to ASD, yet it seems that some of the older clinicians were also new to ASD, as 53.33% of the respondents had practiced for 5 or fewer years, but 68% had experience with ASD for only 5 or fewer years. Similarly, 12.5% claimed to have worked for over 10 years, but only 8% had over 10 years of experience with ASD. This is possibly due to the fact that an increase in ASD awareness has only occurred in relatively recent years.

Education. Compared to the results of Deshmukh and McCauley's original survey (Deshmukh & McCauley 2010; Deshmukh & McCauley 2012), the percentage of clinicians with a higher degree has increased, with 12.5% currently having a Doctorate versus the 10.3% that had one in 2010. Also, in the 2010 survey, the highest degree held by 6.9% of the SLPs was a Bachelor's Degree; in this survey, no respondent claimed a Bachelor's as his or her highest degree. These results also indicate a higher level of training among the Indian SLPs compared to the American SLPs surveyed Colella and Cascella's (2004) survey as well as in Plumb and Plexico's (2013) survey. None of the SLPs in Colella and Cascella's study had a doctorate and

only 1.2% (n=5) of SLPs in Plumb and Plexico's paper had one. However, it must be noted that both of those studies had significantly greater response rates than this current study.

There are also differences between the results of this study and the 2010 study with regards to the number of academic courses the respondents had taken on ASD. In this survey, 20% had no undergraduate level courses and 40% had no graduate level courses. However, in the 2010 survey, all of the SLPs had both an undergraduate and graduate level course. Also, in comparison to the 2010 survey, this group of SLPs graduated more recently, with the oldest graduation date between 2000 and 2005 versus 1982 in the previous study.

Most Frequent Diagnostician

Since the 2010 survey, it appears that there has been a marked change in the identity of the professional that most frequently diagnosis ASD. In the 2010 survey the most frequent diagnostician at 42.1% was an independent SLP. Now, it seems that the clinical psychologist is the most common diagnostician, according to 63.16% of the respondents, with SLPs the most common according to only 15.79% of the respondents. This may be due to the fact that over half of the SLPs, 52.38%, are not permitted to diagnose ASD. However, as that question was not part of the 2010 survey, it is unknown how many SLPs were allowed to diagnose at that time.

Assessments

In this section, the respondents were asked to list a diagnostic test they used that was developed in India along with the language it was written in. While 11 different tests were listed (MCHAT, CHAT, ABCCP, LAT, Comm DEALL (CDCDD), CARS, ISAA, ALD, DDA-ASD, ABC, and GARS), only 5 of the tests (ABC, CARS, Comm DEALL, ISAA, and MCHAT) had their language listed (English). Moreover, several of these English language tests (ABC, CARS, and MCHAT) are not Indian, but Western in origin. It seems possible, then, that either some of

the respondents were unclear about what the question was looking for (tests developed in India) or that they do not have many tests that have been developed/translated for use with an Indian population and, as a result, must rely upon Western, English-language assessments. Furthermore, many SLPs may be compensating for the lack of appropriate standardized assessment tools by using non-standardized methods, such as clinical judgment, parent report, and informal measures, each method having been utilized by over half of the survey's respondents.

With 72% of men and 83% of women in India unable to speak English, according to the 2005 survey results of over 45,000 Indian families (Desai, Dubey, Joshi, Sen, Shariff, & Vanneman, 2010), there are likely very many individuals with ASD who would derive benefit from non-English assessment methods.

Number of Clients with ASD

The number of confirmed cases of ASD appears to have increased since the 2010 survey. At that time, only 10.7% of the respondents had 15 or more cases. In contrast, these new results show an increase to 30.77% with over 15 clients. It is worth noting that this study has a much smaller response rate ($n = 26$) than the 2010 survey ($n = 53$). Possibly, if the number of respondents were more equal, the percentages for these results would be either more similar or more dissimilar to each other.

Limitations

A great limitation to this study was its small sample size. While the survey will be left open for a longer period of time for McCauley and Deshmukh's upcoming paper, the time limit for this current project was short. Another limitation is that many of the respondents skipped multiple questions, resulting in different sample sizes for each item.

Also, because this survey was conducted online, only those SLPs with access to the Internet could respond. It is possible that a significant number of SLPs with differences in such areas as educational backgrounds (e.g., Bachelor's degree as highest degree of training), client populations (e.g., different proportions of confirmed versus suspected ASD cases), or ability to personally diagnose in their work place, may have been excluded.

Conclusion

This study's examination of assessment use showed that most of the assessments being utilized by Indian SLPs have not originated in that country. Moreover, they do not appear to have been adjusted linguistically for their potentially non-English language, bilingual patient population. However, having a language difference is not the only issue that may be present in this situation; it is possible that there are cultural aspects of the assessments that do not translate well into the Indian population. Future research might consider investigating what cultural adjustments, if any, are made for use with this population.

References

American Psychiatric Association. (2013). Neurodevelopmental disorders: Autism spectrum

disorders. In *American Psychiatric Association: Diagnostic and statistical manual of*

mental disorders (5th ed.) (pgs. 16-22).

doi: 10.1176/appi.books.9780890425596.514988

American Speech-Language-Hearing Association. (n.d.). Cultural competence: Key issues

(Roles and Responsibilities).

Retrieved from

http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935230&section=Key_Issues

American Speech-Language-Hearing Association. (2006a). Guidelines for speech-language

pathologists in diagnosis, assessment, and treatment of autism spectrum disorders across

the life span.

doi:10.1044/policy.GL2006-00049

American Speech-Language-Hearing Association. (2006b). Knowledge and skills needed by

speech-language pathologists for diagnosis, assessment, and treatment of autism spectrum

disorders across the life span.

doi:10.1044/policy.KS2006-00075

American Speech-Language-Hearing Association. (2006c). Principles for speech-language

pathologists in diagnosis, assessment, and treatment of autism spectrum disorders across

the life span.

doi:10.1044/policy.TR2006-00143

American Speech-Language-Hearing Association. (2006d). Roles and responsibilities of speech-

language pathologists in diagnosis, assessment, and treatment of autism spectrum

disorders across the life span [Position Statement].

doi:10.1044/policy.PS2006-00105

Bishop, D. V. (1998). Development of the children's communication checklist (CCC): A method

for assessing qualitative aspects of communicative impairment in children. *Journal of

Child Psychology and Psychiatry, and Allied Disciplines, 39* (6), 879-891.

Brook, G. (2013). Slp health care survey report: Caseload characteristics trends, 2005-2013.

American Speech-Language-Hearing Association. Retrieved from

http://www.asha.org/uploadedFiles/2005-2013-SLP-Survey-Caseload-Characteristics-

Trends.pdf

Cadman, T., Eklund, H., Howley, D., Hayward, H., Clarke, H., Findon, J., Xenitidis, K.,

Murphy, D., Asherson, P., & Glaser, K. (2012). Caregiver burden as people with autism

spectrum disorder and attention-deficit/hyperactivity disorder transition into adolescence

and adulthood in the united kingdom. *Journal of the American Academy of Child &

Adolescent Psychiatry, 51* (9), 879-888.

Cassidy, A., McConkey, R., Truesdale-Kennedy, M., & Slevin, E. (2008). Preschoolers with

autism spectrum disorders: The impact on families and the supports available to them.

Early Child Development and Care. 178 (2). 115-128

DOI: 10.1080/03004430701491721

Desai, S. B., Dubey, A., Joshi, B. C., Sen, M., Shariff, A., & Vanneman, R. (2010). *Human

development in india: Challenges for a society in transit.* New Delhi, India: Oxford

University Press.

Deshmukh, R. S., & McCauley, R. J. (2010, November). *Speech-language pathologists'*
practices for autism in india. Poster presented at the American Speech-Language and
Hearing Association Convention, Philadelphia, PA.

Deshmukh, R. S., & McCauley, R. J. (2012). *Speech and language practices for autism in india*.
Unpublished manuscript, Department of Speech and Hearing Science, The Ohio State
University, Columbus, United States.

Fombonne, E. (2003). Epidemiological surveys of autism and other pervasive developmental
disorders: An update. *Journal of Autism and Developmental Disorders, 33*, 365-382.

Fombonne, E, (2005). The changing epidemiology of autism. *Journal of Applied Research in*
Intellectual Disabilities. 18, 281-294.

Felderhoff, J. (2008). *Survey of the assessment methods used in texas public schools for the*
diagnosis of pervasive developmental disorders in children (Unpublished masters thesis).
Texas State University, San Marcos.

Gilliam, J. E. (1995). *Gilliam Autism Rating Scale: Examiner's Manual*. Pro-ed.
Retrieved from
https://scholar.google.com/scholar?cites=15645784703395612470&as_sdt=5,36&sciodt=
0,36&hl=en

Gilliam, J. E. (2003). *GADS: Gilliam Asperger's Disorder Scale*. Pro-Ed.
Retrieved from
https://scholar.google.com/scholar?q=gilliam+gads&btnG=&hl=en&as_sdt=5%2C36&sc
iodt=0%2C36&cites=15645784703395612470&scipsc=

Golnik, A., Ireland, M., & Borowsky, I. W. (2009). Medical homes for children with autism: A
physician survey. *Pediatrics. 123*. 966-971.

DOI: 10.1542/peds.2008-1321

Hess, K. L., Morrier, M. J., Heflin, L. J., & Ivey, M. L. (2008). Autism treatment survey:

Services received by children with autism spectrum disorders in public school

classrooms. *Journal of Autism and Developmental Disorders. 38*, 961-971.

Heidgerken, A. D., Geffken, G., Modi, A., & Frakey, L. (2005). A survey of autism knowledge

in a health care setting. *Journal of Autism and Developmental Disorders. 35 (3),* 323-330.

DOI: 10.1007/s10803-005-3298-x

Karanth, Prathibha. (2002). Four decades of speech-language pathology in india: Changing

perspectives and challenges of the future. *Folia Phoniatrica et Logopaedica. 54.* 69-71.

Khanna, R., Madhavan, S. S., Smith, M. J., Patrick, J. H., Tworek, C., Becker-Cottrill, B. (2011).

Assessment of health-related quality of life among primary caregivers of children with

autism spectrum disorders. *Journal of Autism & Developmental Disorders. 41*, 1214-

1227.

Krug, D. A., Arick, J., & Almond, P. (1980). Behavior checklist for identifying severely

handicapped individuals with high levels of autistic behavior. *Journal of Child

Psychology and Psychiatry. 21*, 221-229.

DOI: 10.1111/j.1469-7610.1980.tb01797.x

Lord, C. & Corsello, C. (2005). Diagnostic instruments in autistic spectrum disorders. In

Volkmar, F. R., Paul, R., Klin, A., Cohen, D. (Eds.), *Handbook of autism and pervasive

developmental disorders* (Vol. 2, pp. 742-760) (3rd ed.). Hoboken, NJ: John Wiley &

Sons, Inc.

Lord, C., Corsello, C., & Grzadzinski, R. (2014). Diagnostic instruments in autistic spectrum

disorders. In Volkmar, F. R., Rogers, S. J., Paul, R., & Pelphrey, K. A. (Eds.), *Handbook

of autism and pervasive developmental disorders (*Vol. 2*, pp. 623-645) (4th ed.).

    Hoboken, NJ: John Wiley & Sons, Inc.

Lord, C., Rutter, M., Goode, S., Heemsbergen, J., Jordan, H., Mawhood, L., & Schopler, E.

    (1989). Autism diagnostic observation schedule: A standardized observation of

    communicative and social behavior. *Journal of Autism and Developmental Disorders, 19*

    (2), 185-212.

Lord, C., Rutter, M., & Le Couteur, A. (1994). Autism diagnostic interview-Revised: A revised

    version of a diagnostic interview for caregivers of individuals with possible pervasive

    developmental disorders. *Journal of Autism and Developmental Disorders, 24 (5),* 659-

    685.

McCauley, R. J. (2001). *Assessment of language disorders in children.* Mahwah, NJ: Lawrence

    Erlbaum Associates.

McLennan, J. D., Huculak, S., & Sheehan, D. (2008). Brief report: Pilot investigation of service

    receipt by young children with autistic spectrum disorders. *Journal of Autism and*

    Developmental Disorders. 38. 1192-1196.

    DOI 10.1007/s10803-007-0535-5

Plumb, A. M., & Plexico, L. W. (2013). Autism spectrum disorders: Experience, training, and

    confidence levels of school-based speech-language pathologists. *Language, Speech and*

    Hearing Services in Schools. 44, 89-104.

Registrar General & Census Commissioner, India (2010). *Census data 2001: General note.*

    Retrieved from

    http://www.censusindia.gov.in/Census_Data_2001/Census_Data_Online/Language/gen_

    note.html

Robins, D. L., Fein, D., Barton, M. L., & Green, J. A. (2001). The modified checklist for autism

in toddlers: An initial study investigating the early detection of autism and pervasive

developmental disorders. *Journal of Autism and Developmental Disorders. 31 (2)*. 131-

144.

10.1023/A:1010738829569

Schopler, E., Reichler, R. J., DeVellis, R. F., & Daly, K. (1980) Toward objective classification

of childhood autism: Childhood autism rating scale (CARS). *Journal of Autism and*

Developmental Disorders, 10 (1), 91-103.

Schwartz , H., & Drager, K. D. R. (2008). Training and knowledge in autism among speech-

language pathologists: A survey. *Language, Speech, and Hearing Services in Schools. 39*,

66-77.

Strunk, J. A. (2009). School nurses' knowledge of autism spectrum disorders. *Journal of School*

Nursing. 25(6). 445-452

DOI: 10.1177/1059840509348221

The World Bank. (2013). World Databank: World Development Indicators. Retrieved from

http://databank.worldbank.org/data/views/reports/tableview.aspx

Thomas, K. C., Ellis, A. R., McLaurin, C., Daniels, J., & Morrissey, J. P. (2007). Access to care

for autism-related services. *Journal of Autism and Developmental Disorders. 37*. 1902-

1912.

DOI 10.1007/s10803-006-0323-7

http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935230&section=Key_Issues

Volkmar, F. R., Rogers, S. J., Paul, R., & Pelphrey, K. A. (Eds.). (2014). *Handbook of autism and pervasive developmental disorders* (4th ed.) (Vols. 1-2). Hoboken, NJ: John Wiley & Sons, Inc.
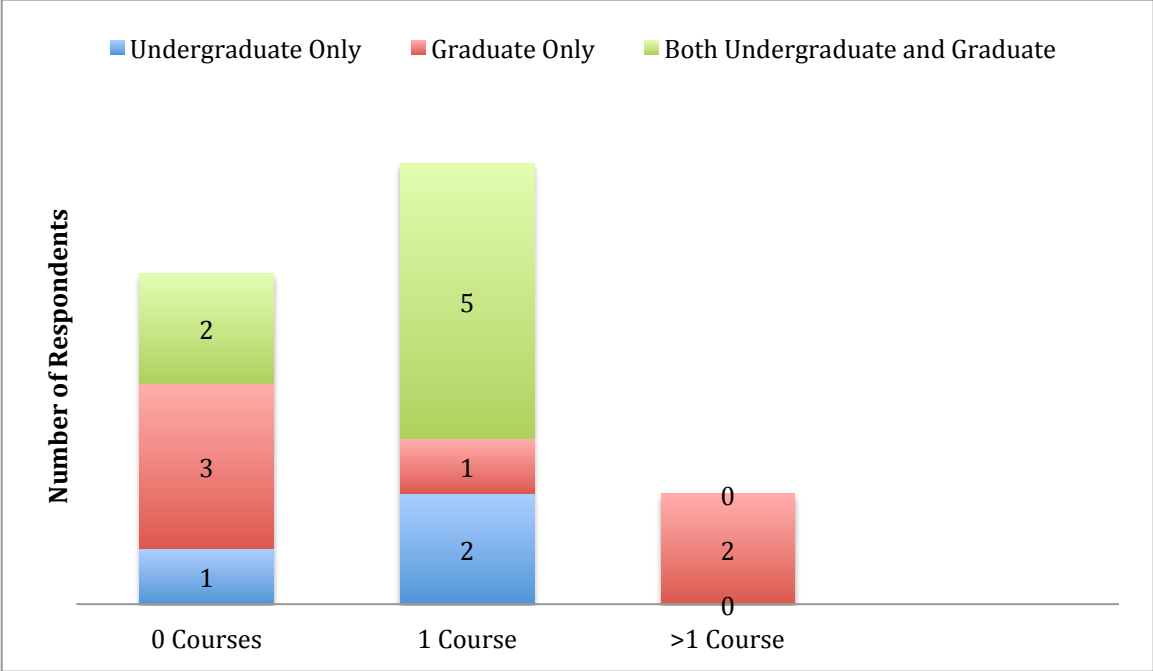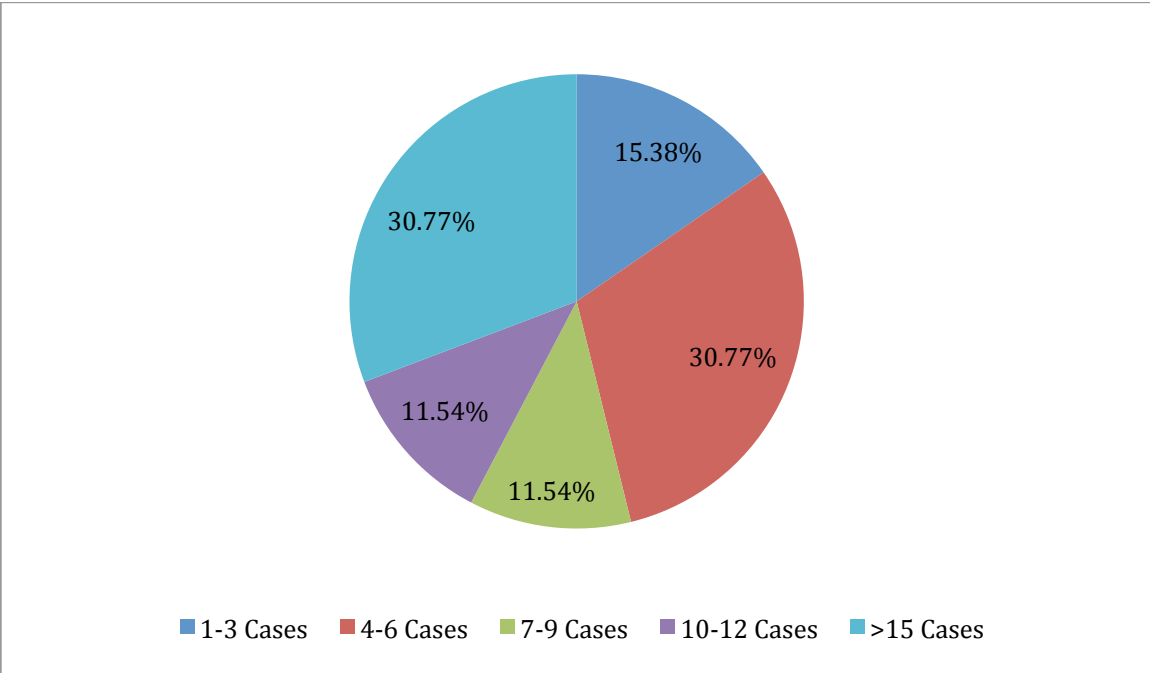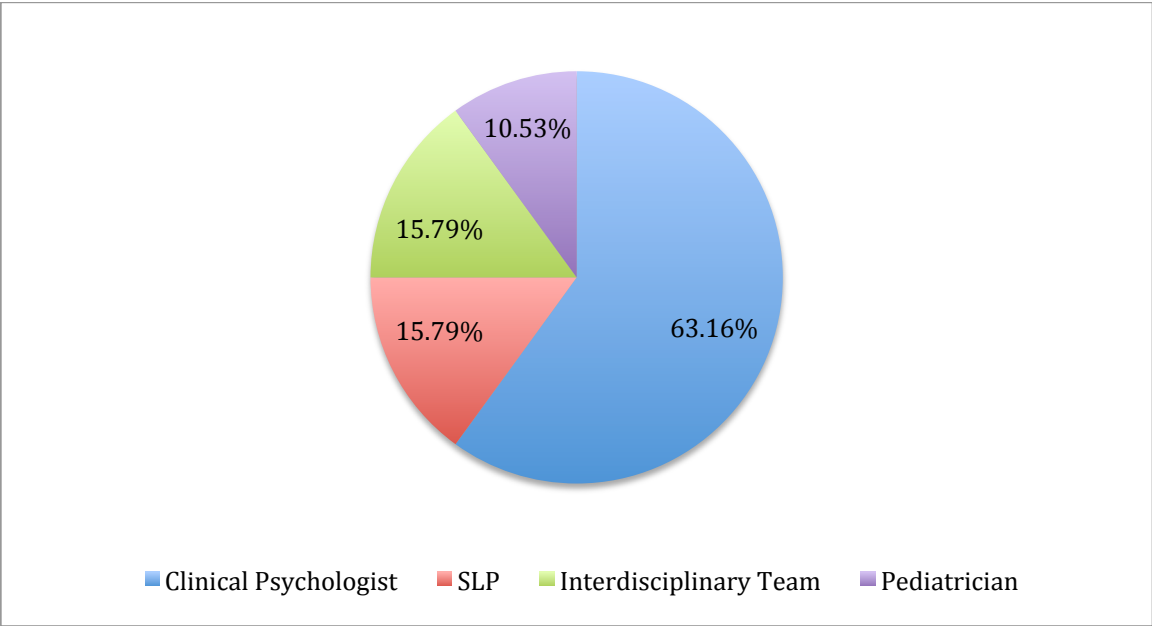
Figure 1. Number of courses in the SLPs' professional training that dealt primarliy with ASD.

Figure 2. Number of individuals currently on the SLPs' caseload with confirmed diagnosis of ASD.

Figure 3. Professionals who most often diagnose ASD in the SLPs' work setting.
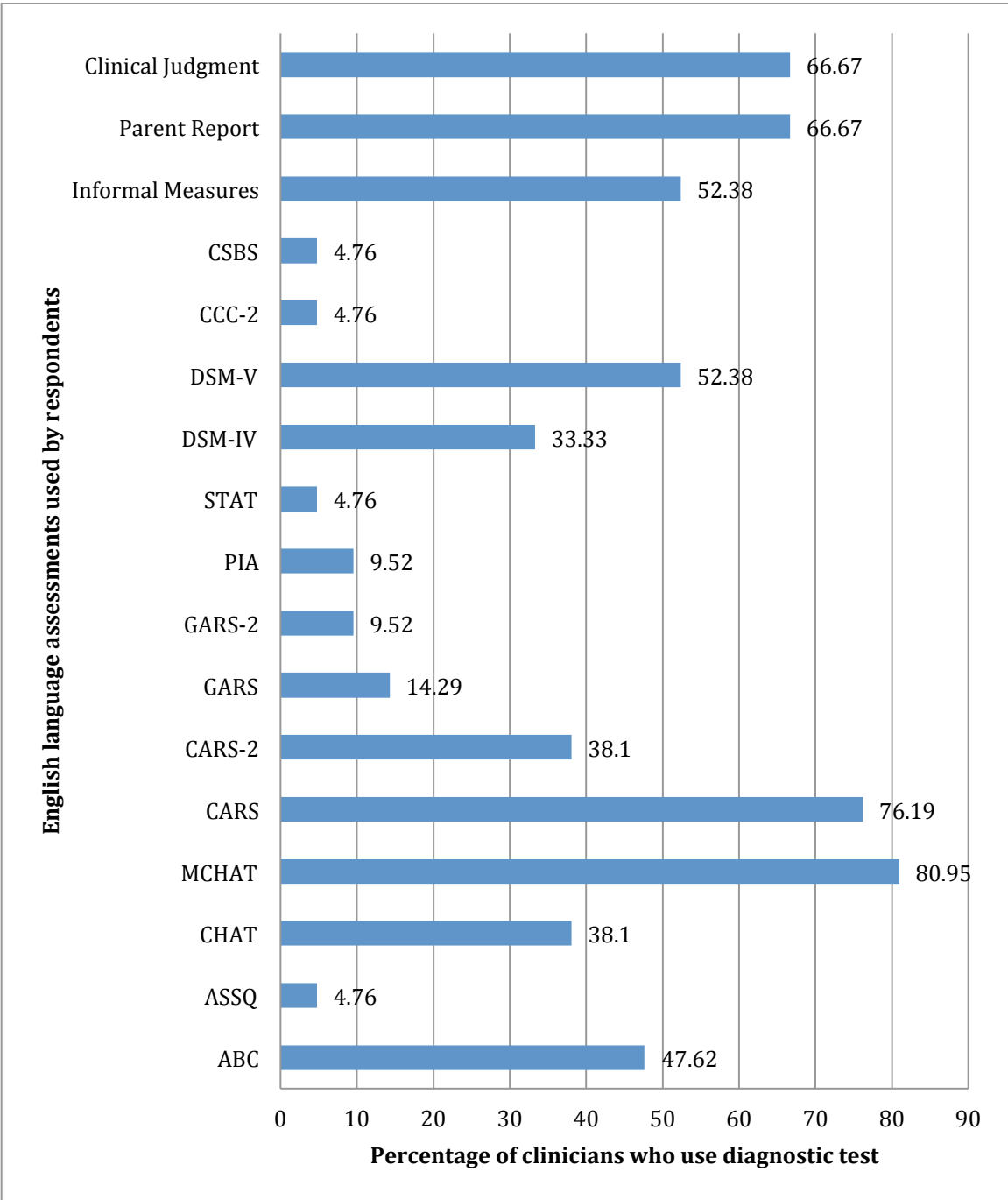
Figure 4. English language tests used by Indian SLP respondents to diagnose ASD.