Teaching of Speech, Language and Communication Skills for Young Children with Severe Autism Spectrum Disorders: What Do Educators Need to Know?

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Abstract

Background: Globally, there is an increased prevalence of preschool and school-age children diagnosed with Autism Spectrum Disorders. Current reports show that about one in every 110 children fall within this category of disorders. Consequently, the successful inclusion of these children in both regular and special education classes is becoming a critical issue to address.

Aims and methods: In this paper, attention is placed on the children' speech, language and communication skills which are the primary deficits associated with this category of disorders. Approaching it from the perspective of speech and language therapy, this paper will offer insights and suggestions to educators in regular schools and special education programs on how to teach speech, language and communication skills to young children with severe Autism Spectrum Disorders. A case study is illustrated to provide the objective exemplar of how a child with severe ASD could learn and improve once being given the appropriate, evident-based and individualized teaching management and intervention.

Conclusion: The teaching of speech, language and communication skills to children with severe ASD requires a prior understanding of their behavioral patterns and learning styles. The teaching could be targeted to help them to develop the deficient skills and to use compensatory strategies to facilitate communication. A better understanding of how to teach children with severe ASD in schools will lead to a better teaching and learning experience to both the teachers and the children, with important implications on promoting sustainable inclusive education for these children.

Keywords: Speech and language, Autism Spectrum Disorders, special education

教導患有嚴重自閉症譜系障碍兒童說話，語言和溝通能力：教育者應該知道些甚麼？

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摘要

*背景：*全球有越來越多的兒童被症斷患有自閉症譜系障礙。最新的報告顯示每110位兒童，就有一位是自閉症譜系障礙患者。因此，讓這些兒童有效地接受特殊和普通教育，已經成為一個急需對策的課題。

*目的及方法：*本文將焦點集中在說話，語言和溝通能力，即是自閉症譜系障礙兒童所面對的主要障礙。本文透過言語治療學的角度，提供教導患有嚴重自閉症譜系障礙兒童說話，語言和溝通能力的有關資訊和建議給普通學校和特殊教育課程的教師。本文也引用個案研究來證實一個患有嚴重自閉症譜系障礙的孩子，可以如何通過合適的，有研究根據性的和個性化的教導方式，達到學習的目標。

*結論：*教導患有嚴重自閉症譜系障礙的兒童說話，語言和溝通能力必須先了解他們的行為模式和學習方式。教導的主要目的是幫他們克服有關的障礙和學習應用其他替代性的方式以達到溝通的目的。了解如何有效地教導嚴重自閉症譜系障礙兒童將促使教師和這些孩子享有更好的教育和學習體驗。這對於促進這些兒童能接受到持續性的教育有重要的貢獻。

關鍵詞：說話和語言、自閉症譜系障礙、特殊教育

Introduction

Autism Spectrum Disorders, or more commonly known by the abbreviation 'ASD', refer to a category of developmental disabilities with problems in initiating and maintaining reciprocal social interaction, problems in communication and the use of idiosyncratic language and repetitive motor mannerism (American Psychiatric Association, 1994). ASD is used as an umbrella term to refer to a broad range of pervasive developmental disorders, which include Autism disorder, Asperger disorder, childhood disintegrative disorder, Rett disorder and pervasive developmental disorder – not otherwise specified (American Psychiatric Association, 1994; Filipek et al., 1999). Children who are diagnosed with this category of disorders share common deficits in social and communication, marked by lack of communicative intents, impairment in the use of nonverbal communicative actions such as eye contact and facial expression, failure to develop peer relationships, delay or lack of development in language expression, inability to initiate and sustain a conversation, use of idiosyncratic language and lack of social imaginative play. Since the 80s, the term 'spectrum' is used to better reflect the range of qualitative variation and severity differences in this category of disorders (Allen, 1988; Wing, 1988).

The increasing prevalence of young children diagnosed with this category of disorders is becoming evident worldwide. In a review of international epidemiological studies on this category of disorders, Fombonne (2003; 2009) reported an estimation of 28 to 70 per 10,000 as the prevalence of ASD. Fombonne's estimation, together with the evidence provided by worldwide cohort studies such as the British cohort study (N=56, 946) by Baird et al. (2006) and the American cohort study (N≈50,000) by Nicholas and colleagues (Nicholas, Carpenter, King, Jenner & Charles, 2009; Nicholas et al., 2007), suggests that there is at least one in every 110 children who are identifiable with the diagnosis of ASD. This marked a significant increase from the previously assumed prevalence of 4 to 15 per 10,000 (Barbaresi, Colligan, Weaver & Katusic, 2009; Lotter, 1966). Many factors are believed to have contributed to this increased prevalence, including changes in diagnostic criteria, development of the concept of a spectrum of disorders, increased public awareness, increased willingness and ability to diagnose ASD amongst health and educational professionals, availability of resource for children with ASD, as well as the possibility of a true increase in numbers (Brock, 2006; Lord & Bishop, 2010; Wing & Potter, 2002).

The increased prevalence of ASD means that more and more educators now face with the demands to teach children with ASD in their classes. However, globally, the lack of teachers' knowledge on ASD has been critically pinpointed by parents as the foremost hindering factor for their children with ASD to have a good educational experience (Starr & Foy, 2010; Whitaker, 2007). Many teachers in the mainstream education do not have prior training and knowledge in teaching children with ASD (Morrier, Hess & Heflin, 2011). Even in the United States, only 15% of the in-service teachers reportedly received training in teaching students with ASD from their pre-service training programs in colleges and universities (Morrier et al., 2011). The percentage could be even far less in the developing countries and the third-world countries. This knowledge gap causes severe distress to teachers when they have students with ASD in their classes. This is because many students with ASD require specialized, discrete and visually-supported instructions to prompt their learning (Keogel, Matos-Fredeen, Lang & Koegel, 2011). Many of them also require tangible and concrete reinforcement to motivate them to learn and to participate in classroom activities (Chezan & Drasgow, 2010). The lack of knowledge in these instructional styles and the ways

of managing the disruptive behaviors of these children cause many teachers to feel helpless and despair in the teaching process (Emam & Farrell, 2009). These negative emotions may have severe consequences on both the parts of the teachers and the students. As a result, the contributing cause needs to be properly addressed.

Aimed to bridge the knowledge gap in teaching students with ASD, this paper will provide the general educators with the basic knowledge in teaching speech, language and communication skills to students with ASD. Speech, language and communication skills are focused in this paper since impairments in these three aspects of development are the key diagnostic features of ASD (American Psychiatric Association, 1994). Impairment in these areas cause problems in many facets of the children's learning and living, including successful socialization with others in school, access to the standard curriculum and compliance in social norms and school activities (Lee, Harrington, Louie & Newschaffer, 2008). Therefore, it is important for educators to understand the deficits experienced by these children in speech, language and communication development. In the same vein, the educators also need to know the ways to address the associated problems and the scaffolding methods required to help these children to learn functional speech, language and communication skills.

In the last few decades, assessment and intervention techniques for children with ASD have been well-researched and studied (Rogers, 2005). To date, accumulating evidence has strongly indicated that children with ASD could benefit from early identification and intervention of their communication problems (Rogers & Vismara, 2008). Pertaining to this, long-term prospective studies show that the development of functional speech, language and communicative skills in the early years is a predictor of a better quality lifestyle experienced by individuals with ASD (Howlin, Goode, Hutton & Rutter, 2004; Venter, Lord & Schopler, 1992). Therefore, the teaching of speech, language and communication to young children with ASD demands no further delay and the failure in doing so comes with an even higher cost to the society as a whole.

Purpose and Objectives

The purpose of this paper is to provide a descriptive note to general educators and the related personnel on the teaching of speech, language and communication skills to children with ASD in the preschool and early elementary school years. This note is also relevant to the teaching of older children with ASD who have minimal speech, language and communicative abilities. For this purpose, a real case exemplar is used to illustrate the process of assessing and teaching a child with ASD who is minimally verbal. This real-case example also provides objective evidence towards the effectiveness of a direct speech and language teaching in helping children with severe ASD to improve in speech, language and communication development.

Speech, Language and Communication Development

Before we begin with the case-study description, it is important to first understand the basic concepts in speech, language and communication development. Speech is the verbal means of communication, which involves the execution of oral motor sequences for the production of different speech sounds (Owens, 2005). Speech development begins in the first year of life when children start to make a variety of sounds with their vocal mechanisms. Such activities are recognized as cooing and babbling. The activity patterns are observable in young children between four to nine months of age (Schramm, Keilmann & Brachmaier, 2010). Gradually, children start to make sounds that reflect the language(s) in their environments. As the children grow cognitively and they start to associate meanings to the sounds they made, the

speech sounds that they produced become functional for the purpose of communication.

The regularity of meanings to sounds association forms a language. Thus, language is a socially shared code system used for communication (Owens, 2005). As children grow cognitively, they learn to process, interpret and acquire the code system used by the people in their environments. There are two dimensions of language for communication, namely receptive language (i.e. language understanding) and expressive language (i.e. language production). The first signs of language understanding are when children start to respond to simple instructions such as 'come', or 'sit down' and warnings such as 'no' or 'stop'. This usually emerges between six to twelve months of age. Later, children start to imitate the words used by the adults in their surroundings to call for attention, request or comment. This marks the beginning of a spoken language journey in young children, which generally begins at twelve to eighteen months of age (Tager-Flusberg et al., 2009).

Once children acquire this set of abilities, they become active verbal communicative partners. Other than speech and language, there are other active components in communication, including body gestures, sign language and the use of written and graphic codes (Owens, 2005). Communication can also be classified as intentional and non-intentional communication (Tomasello, 2008). Non-intentional communication begins from birth when a child cries to convey his or her needs and discomforts. However, intentional communication only emerges when a child has attained intentionality, i.e., the conscious mind to convey his or her thoughts. From the emergence of intentional communication, the child becomes an independent and active communicative partner.

Speech, Language and Communication Deficits in Children with Severe ASD

Being a key diagnostic feature, deficits in communication development are experienced by all children with ASD. The deficits included lack of interest to communicate with others, lack of intentionality in communication, and lack of abilities to initiate, maintain and end a reciprocal interaction. These deficits in communication hinder the children's abilities to progress in speech and language development since this developmental process needs to be grounded within the context of communication (Tomasello, 2008). As a result, the majority of children with ASD experience delay in speech and language development, with as many as a quarter of them do not develop verbal language at all (Sigman & McGovern, 2005). Many of these children are at the severe end of the spectrum.

In line with the multi-dimensional deficits that they experience in mental processing, children with severe ASD might have severe language processing deficits that hinder their abilities to process sound- and vocabulary-related information (Rapin & Dunn, 2003). These language processing deficits are believed to block their access to word meanings and to build a word repertoire mentally. As a result, many of them are unable to recognize spoken words and to understand the associated meanings. On the other hand, some children with severe ASD might also have problems in manipulating and imitating fine motor actions, including the movements of lips and tongue (Ming, Brimacombe & Wagner, 2007). These deficits add to their difficulties in producing functional speech. As a result, remediation of speech, language and communication deficits in children with severe ASD needs to target on helping these children to build up communicative intents, language comprehension and also language production.

Teaching Speech, Language and Communication Skills to Children with ASD

Early remediation of speech, language and communication deficits in children with ASD is important as research has provided evidence that they could improve in these skills when being given the suitable guidance (ref. Rogers, 2005). The teaching of speech, language and communication skills to children with ASD requires a thorough understanding of their characteristics and deficits, and also a detailed planning of the teaching protocols. In places where multi-disciplinary supports for children with ASD are available, speech-language therapists are generally the personnel who are responsible for assessing, intervening and monitoring speech, language and communication skills of children with ASD (Lindsay et al., 2002). However, in many educational settings, recruitment and retention of school-based speech-language therapists has been a prolonged issue (Edgar & Rosa-Lugo, 2007). The available support is even less in countries where such profession is lacking. This is particularly true in many developing and third-world countries globally.

Thus, the perspectives offered in this paper are predominantly to empower the general educators and the special education teachers in settings with limited resources to deal with the common issues encountered by children with ASD in learning to talk and to communicate. These perspectives are offered from a speech and language therapy angle, but with no intention to overtake the responsibilities of a speech and language therapist. Teachers are encouraged to consult and work together with speech-language therapists whenever this type of service provision is available. The working framework offered in this paper is targeted more for teachers who face with the critical needs to provide direct instructions to children with ASD in educational settings with limited resources. Nevertheless, it is also for teachers who have a general interest to improve their understandings about how to teach children with ASD.

In general, the teaching of speech, language and communication skills to children with ASD is based on the behaviorism perspective that teachers can shape the learning directions and behaviors of these children by manipulating the external stimuli to elicit the desired learning outcomes (Reed, 2007). In relation to this, teachers need to understand the types of stimuli that potentially evoke a particular behavior in these children. In line with the learning principles in behaviorism, positive and negative reinforcements are applied accordingly to prompt the attainment of the desired learning outcomes. These principles of teaching and learning laid the foundations for many language and communication intervention programs for children with ASD, including the Picture Exchange Communication System (PECS) (Bondy & Frost, 1994; Bondy & Frost, 2001) and the Denver model (Rogers, Hall, Osaki, Reaven & Herbison, 2001). A shared characteristic of these programs are the utilization of visually-supported instructions to prompt language learning in children with ASD, particularly for those with underlying language processing deficits as mentioned in the previous section. These interventions are typically supported by direct and discrete instructions that function to provide clear antecedents and immediate feedbacks to the children.

Case Study

A case study is presented here to better illustrate the processes involved in teaching speech, language and communication skills to a child with severe ASD. The retrospective information is sought from a speech and language therapist's clinical records. Consent to reveal the information was obtained from the mother of the child, with the identity of the child remains anonymous.

The child, renamed as MG is a four year-old girl with ASD who attends an early intervention centre and a

private speech and language therapy. She lives in Penang (Malaysia), a modern tropical island in South East Asia. Penang population currently stands at about 1.5 million (Department of Statistics Malaysia, 2011). There are about ten speech-language therapists who provide their services in this island, but none works in the educational settings. The lack of speech and language therapists in schools and also the lack of teachers' understandings about how to teach children like MG have been the major concerns of MG's mother (Low & Lee, 2011). The similar concerns are shared by many parents with ASD children globally (Starr & Foy, 2010; Whitaker, 2007).

MG lives in a multilingual environment. Her parents and her elder brother speak to her in Mandarin, while the parents converse to each other in Hokkien, the Chinese dialect used in Penang. MG attends the early intervention centre where the teachers speak to her in English and she attends a weekly speech and language therapy which the therapist uses Mandarin with her. Childhood multilingualism is the norm in Penang (Low, Nicholas & Wales, 2010). Later in the primary school, MG would need to face with the demands of literacy learning in Mandarin, English and Malay language.

Assessment

Typically, speech and language assessment for children with ASD comprises of several elements, including behavioral observation, oromotor functions, preverbal language skills (also known as early communicative skills), receptive language skills and expressive language skills. The assessment could be done formally by using either norm-referenced or criterion-referenced tests. Examples of these tests are Preschool Language Scale – Fourth Edition (PLS-4) (Zimmerman, Violette, Steiner & Pond, 2002) and Clinical Evaluation of Language Fundamental – Revised (CELF-R) (Semel, Wiig & Secord, 1990). In places where resources for a formal assessment are lacking, educators could use locally or self-adapted tests or checklists to evaluate the related skills. Research also shows that the use of multiple assessment methods, which incorporate formal assessment, observation and parent report could generate a more valid language profile for an ASD child as compared to the use of a single assessment technique (Luyster, Kadlec, Carter & Tager-Flusberg, 2008; Tager-Flusberg et al., 2009).

For the case of MG, standardized tests are very few in the multilingually and culturally plural community where she lives. The speech and language assessment was conducted through observation of CH's communication skills in free play. Adaptation of PLS-4 (Preschool Language Scale, 4th Edition) (Zimmerman et al., 2002) was used as the supplementary language testing tool. The assessment was carried out in Mandarin, which is the most familiar language to MG as reported by her mother. The limitation of these self-adapted tests is the lack of standardized and criterion scores to support the interpretation of results. As a result, the test results were compared with the parent report of MG's language and communicative behaviors at home for verification of findings. This strategy was viewed as an alternative assessment protocol in a setting with limited resources.

The assessment results indicated that MG was performing below 1 year-old level for her receptive and expressive language skills, suggestive of severe speech and language delay secondary to ASD. She showed minimal communicative intents. She was found with the lack of abilities to sustain eye contact, to participate in joint attention and to take turns. Her play behavior was primarily exploratory, with the lack of symbolic and pretend play. MG was reported by the mother with the abilities to follow simple instructions, such as 'hug mommy'. However, she was found to perform inconsistently in object and picture identification during the assessment. She could only identify the common objects and pictures correctly 10% of

the time. MG did not produce any meaningful vocalizations and words during the assessment. Based on the assessment findings, a therapy or teaching plan was designed for MG with the goals to improve on three main areas, namely communication and preverbal skills, language comprehension and, speech and language production (refer to Table 1). The goals were planned according to the literature recommended prerequisites for speech, language and communication development (Thurm, Lord, Lee & Newschaffer, 2007); while the sequence of teaching was arranged according to the patterns of development (Tager-Flusberg et al., 2009). The rationales for the choices of activities will be explained in turn in the sub sections below.

Table 1

Speech and Language Therapy or Teaching Plan for a Child with Severe ASD

Areas	Goals/Learning outcomes
Communication & preverbal skills	● MG is able to participate in turn-taking without physical prompts, 50% of the time.
	● MG is able to match object to picture correctly 50% of the time.
	● MG is able to request by using a picture card (i.e., Augmentative and alternative communication) correctly 50% of the time.
Language comprehension	● MG is able to follow one-step commands correctly 50% of the time.
Speech and language production	● MG is able to imitate vocalizations 30% of the time.

Intervention

The intervention took place every week. Each session of intervention was 45 minutes. The activities designed for the intervention sessions and the materials required are as follows:

Turn-taking

Turn-taking activities require young children to share a similar focus with the other people who they are interacting with. This sharing of focus is known as joint attention. The skill is needed by children before they could pay attention to adults' meaning associations in verbal interaction, and therefore, for them to acquire the understanding of language (Thurm, Lord, Lee & Newschaffer, 2007). The absence of this skill is found in the majority of children with ASD, including MG.

To help MG to develop this skill, she was prompted by the therapist to participate in activities with back-and-forth interactions. The examples are rolling ball to each other, taking turns to put puzzle pieces on the board and taking turns to put objects into a box. Initially, the therapist would say "Whose turn?" as a verbal prompt. MG was prompted physically to use a hand gesture, i.e., padding on her own chest to indicate her turn before she takes her turn. The prompts were faded gradually as MG was able to participate in the activities independently. MG was given one score for any spontaneous turn she took. The scores were converted to percentage score to ease the comparison of learning outcomes across tasks.

Object-picture Matching

Object to picture matching involves young children's ability to make symbolic associations (Barton, Sevcik & Romski, 2006). This matching skill could be considered as

the prerequisite for word understanding, which is the ability to match spoken words to the referred items.

During the intervention, MG was prompted to match object to an array of two to three pictures. First, she was prompted to match common objects, such as cup, spoon, comb and key to the photos of the exact objects. The photos were changed to picture cards and line drawings as MG progressed. This helps MG to move from concrete experience to representational and finally abstract concepts. Similarly, every correct response was given one score. The cumulative score over the number of trials were converted to a percentage score.

Request by Using a Picture Card

Augmentative and alternative communication (AAC) was found to be useful to help many children with ASD to communicate. In particular, picture communication was proven to be an effective AAC mode for helping children with ASD to communicate and to gradually develop verbal language (Charlop-Christy, Carpenter, Le, LeBlanc & Kellet, 2002). Given her reduced ability in producing verbal language, MG was prompted to use an AAC medium, i.e., picture cards for communicative exchanges. To begin with, she was trained to request for her most desired things by using the representing picture cards. The module of training followed the guidelines in Picture Exchange Communicative Exchange (PECS) (Bondy & Frost, 1994).

The training involved (1) the presentation of MG's favorite food or toy item, (2) whenever MG attempted to reach for the item, MG was prompted to take the picture card and to pass it to the communicator (i.e., the therapist or the mother) to exchange for the item, (3) the process was repeated until MG could perform the exchange spontaneously, and (4) the process was repeated for different items to ensure that MG is able to generalize the learning. This training was part of Phase 1 in PECS. Readers of this paper are advised to read the PECS manual for a better understanding of all the six phrases recommended for this specialized picture communication training.

Follow One-step Commands

The following of one-step commands or instructions is a basic task of language understanding training (Rogers et al., 2006). The training could be conducted in both structured and semi-structured manners. For the structured tasks, MG was prompted to listen to the verbal stimuli and then to pick the correct picture or object from an array of two to three pictures or objects. On the other hand, the semi-structured tasks were play activities where MG was asked to pass things to her communicators during the play or to carry out certain play actions with the toys, such as "make the doll jumps" or "feed the doll". Similar, each correct response was scored to keep track of MG's progress.

Imitate Vocalizations

Imitation is a precursor for expressive language development (Thurm et al., 2007). Through the modeling of verbal interaction provided by the adults in their surroundings, children learn to produce speech sounds, imitate the word production and then to link the spoken words to produce sentences. During the intervention, MG was prompted to imitate vocalizations of vowel sounds, /a/, /i/ and /u/. The therapist provided the model and MG was prompted to imitate the adult's model with pictorial cues. The pictorial cue composed of picture cards with drawings of the targeted vocal shapes.

Progress

Table 2 shows MG's progress over 20 weekly direct instruction sessions provided by a speech-language therapist. MG's mother was provided with the information to continue practicing the activities with MG at home. As showed in Table 2, MG managed to meet most of the target goals by 10^{th} to 12^{th} session of speech and language training. She was able to perform in 2-person turn-taking tasks consistently 90% of the time towards the end of

these 20 sessions. Similarly, she was able to match object to picture, to request by using a picture card, and to follow one-step commands correctly 90% of the time towards the end of this training block.

MG's satisfactory progress in this training block provided the objective evidence that such training is effective for her, and possibly to the larger population of children with ASD who share the similar learning characteristics as her. However, it is important to interpret that this satisfactory progress is the product of collaborative efforts between the therapist and MG's mother. Given this, teachers are encouraged to work together with the parents as well to ensure that there is a continuous teaching at home.

Table 2

Progress over 20 sessions

	Sessions/Scores (%)																			
Goals	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Turn-taking	10	50	70	70	70	90	70	50	50	50	70	80	80	80	80	90	90		90	90
Object-picture matching	20	40	40	40	40	40	40	40	20	20	50	60	60	80					90	90
Request by using a picture card	30	30	30	30	30	30		50	50	50	50	50	60							
Request by using a sentence strip													10		30	50		70	60	
Follow one-step commands		10	20	20	20	20	20	20	20	20	30	50	50	50	60	80	90	90		
Imitate vocalizations	10	10	10	10	10	20	20	20	20	20				10					10	

On the other hand, MG did not achieve the target goal for language production. The goal was set to prompt her to imitate vocalizations 30% of the time. Three vowel sounds, namely /a/, /i/ and /u/ were chosen for this task. Picture cards with oromotor expressions, adult's modeling and physical prompting were used to help MG to imitate the production of these sounds. Bubble blowing and popping were used as the positive reinforcement to encourage MG to participate in the task. Despite the attempts made, MG was found to only able to imitate the vocalizations of the chosen sounds 10% to 20% of the time. MG's reduced responses in this task portrayed that the language expression deficits experienced by her might have both behavioral and biological ends (Rapin & Dunn, 2003). In other words, MG is likely to have language processing and production deficits. Therefore, alternative communicative modes such as the picture communication system used could serve to bridge her communicative needs at the moment while continuously prompting her to express verbally. MG was able to request about 50 to 60% of the time without prompt by using PECS picture cards. This mode to request could be further reinforced through continuous practices and generalizations to different contexts.

As a whole, MG's progress in this training block provided a positive exemplar that speech and language training could help children with ASD to progress in their communicative development. Given this real case exemplar, it is hoped that the general educators could gain insights and motivations to teach children with ASD in their classes.

Discussion

This paper aimed to address the critical lack of information on teaching speech, language and communication skills to children with severe Autism Spectrum Disorders. As a way to promote evidence-based and individualized teaching practices in education, one real case exemplar was used to provide insights on the steps involved in teaching speech, language and communication skills to children with severe ASD. As shown in the case exemplar, the teaching of these skills to the child aims to both helping her to develop the deficient skills and to use compensatory strategies to facilitate communication. It is hoped that this basic information could add to the teachers' understanding of how to teach students with severe ASD and to promote a greater inclusion of these students in general classes.

Even though the example was extracted from a speech and language therapy setting, we hope that it provides teachers with an idea on how to generalize the strategies into daily classroom instructions. For example, instead of using props for turn-taking, teachers can be mindful to apply turn-taking during conversations, class reading or during play activities. Turn-taking can be the objective of particular play activities in inclusive classrooms. Besides, the strategies used in speech and language therapy also highlight the importance of using visual supports to engage with children with ASD. Visual supports can be generalized in the classrooms to help children with ASD attend to tasks. For example, teachers can have visual schedules in the classrooms to prompt an ASD child to follow the class schedule. A set of visual pictures can be placed on the desk to encourage him to request for things or to communicate with others. In addition, worksheets with visual prompts can be prepared to allow him to better understand written tasks.

The sessions in the case exemplar also illustrate the need for repeated practice. In relation to this, teachers can structure different activities in the classroom to allow that to happen. As an example, for object to picture matching, teachers can have the child with ASD to match certain objects with pictures on the whiteboard or to find the matching pictures held by different children in the class. As surfaced from this example, the other children in the class are actually a very important classroom resource that could enrich the learning experiences of a child with ASD. Teachers can recruit these children to participate together in the activities planned for the child with ASD. For instance, in picture communication activities, teachers can have the other children in the class to be the child's 'communicators'. This would increase the opportunities for the child to communicate with different children in the class, and possibly for different purposes. This peer support, especially one that involved multiple peers, has been found to benefit the learning and social interaction of children with ASD (Carter, Cushing, Clark & Kennedy, 2005).

Conclusion

As a whole, the case exemplar illustrates that with the right strategies, children with ASD will improve. By providing the teachers with a grounding on the communicative needs of children with ASD, the paper hopes to give confidence to teachers to teach children with ASD in their classrooms.

References

Allen, D. A. (1988). Autistic spectrum disorders: Clinical presentation in preschool children. *Journal of Child Neurology*, 3(suppl.), 48-56.

American Psychiatric Association. (1994). *American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Washington: APA.

Baird, G., Simonoff, E., Chandler, S., Loucas, T., Meldrum, D., & Charman, T. (2006). Prevalence of disorders of the autism spectrum in a population cohort of children in South Thames: The Special Needs and Autism Project (SNAP) *Lancet*, 368, 210-215.

Barbaresi, W., Colligan, R. C., Weaver, A. L., & Katusic, S. K. (2009). The incidence of clinically diagnosed versus research-identified autism in Olmsted County, Minnesota, 1976-1997: Results from a retrospective, population-based study. *Journal of Autism and Developmental Disorders*, 39, 464-470.

Barton, A., Sevcik, R. A., & Romski, M. A. (2006). Exploring visual graphic symbol acquisition by pre-school age children with developmental and language delays. *Augmentative and Alternative Communication,* 22(1), 10-20.

Bondy, A. S., & Frost, L. A. (1994). The Picture Exchange Communication System. *Focus on Autism and Other Developmental Disabilities,* 9(1), 1-19.

Bondy, A. S., & Frost, L. A. (2001). The Picture Exchange Communication System. *Behavior Modification,* 25, 725-744.

Brock, S. E. (2006). An examination of the changing rates of Autism in special education. *The California School Psychologist,* 11, 31-40.

Carter, E. W., Cushing, L. S., Clark, N. M., & Kennedy, C. H. (2005). Effects of peer support interventions on students' access to the general curriculum and social interactions. *Research and practice for persons with severe disabilities,* 30(1), 15-25.

Charlop-Christy, M. H., Carpenter, M., Le, L., LeBlanc, L. A., & Kellet, K. (2002). Using the Picture Exchange Communication System (PECS) with children with Autism: Assessment of PECS acquisition, speech, social-communicative behavior and problem behavior. *Journal of Applied Behavior Analysis,* 35(3), 213-231.

Chezan, L. C., & Drasgow, E. (2010). Pairing vocalizations with preferred edibles and toys may produce a modest increase in the frequency of vocalizations in three young children with autism. *Evidence-based Communication Assessment and Intervention,* 4(2), 101-104.

Department of Statistics Malaysia. (2011). *Preliminary count report of census 2010* (updated: 22/12/2010) [Electronic Version]. Retrieved from http://www.statistics.gov.my/portal/index.php?option=com_content&view=article&id=656%3Apreliminary-count-report-of-census-2010&catid=35%3Akey-statistics&Itemid=53&lang=en

Edgar, D. L., & Rosa-Lugo, L. I. (2007). The critical shortage of speech-language pathologists in the public school setting: Features of the work environment that affect recruitment and retention. *Language, Speech and Hearing Services in Schools,* 38, 31-46.

Emam, M. M., & Farrell, P. (2009). Tensions experienced by teachers and their views of support for pupils with Autism spectrum disorders in mainstream schools. *European Journal of Special Needs Education,* 24(4), 407-422.

Filipek, P. A., Accardo, P. J., Baranek, G. T., Cook Jr., E. H., Dawson, G., & Gordon, B. (1999). The screening and diagnosis of Autistic Spectrum Disorders. *Journal of Autism and Developmental Disorders,* 29(6), 439-484.

Fombonne, E. (2003). Epidemiological surveys of Autism and other pervasive developmental disorders: An update. *Journal of Autism and Developmental Disorders,* 33(4), 365-382.

Fombonne, E., Quirke, S., & Hagen, A. (2009). Prevalence and interpretation of recent trends in rates of pervasive developmental disorders. *McGill Journal of Medicine,* 12(2), 99-107.

Howlin, P., Goode, S., Hutton, J., & Rutter, M. (2004). Adult outcome for children with Autism. *Journal of Child Psychology and Psychiatry,* 45, 212-229.

Keogel, L., Matos-Fredeen, R., Lang, R., & Koegel, R. (2011). Interventions for children with Autism spectrum disorders in inclusive settings. *Cognitive and Behavioral Practice, x,* xxx-xxx.

Lee, L. C., Harrington, R. A., Louie, B. B., & Newschaffer, C. J. (2008). Children with Autism: Quality of life and parental concerns. *Journal of Autism and Developmental Disorders,* 38, 1147-1160.

Lindsay, G., Soloff, N., Law, J., Band, S., Peacey, N., Gascoigne, M., et al. (2002). Speech and language therapy services to education in England and Wales. *International Journal of Language and Communication Disorders,* 37(3), 273-288.

Lord, C., & Bishop, S. L. (2010). Autism spectrum disorders: Diagnosis, prevalence and services for children and families. *Sharing Child and Youth Development Knowledge,* 24(2), 3-21.

Lotter, V. (1966). Epidemiology of Autistic conditions in young children. *Social Psychiatry and Psychiatric Epidemiology,* 1(3), 124-135.

Low, H. M., & Lee, L. W. (2011). *Including children with Autistic Spectrum Disorders in regular schools: A mother's perspective* Paper presented at the The International Conference on Early Childhood and Special Education (ICECSE) 2011.

Low, H. M., Nicholas, H., & Wales, R. (2010). A sociolinguistic profile of 100 mothers from middle to upper-middle socio-economic backgrounds in Penang-Chinese community: What languages do they speak at home with their children? *Journal of Multilingual and Multicultural Development,* 31(6), 569-584.

Luyster, R. L., Kadlec, M. B., Carter, A., & Tager-Flusberg, H. (2008). Language assessment and development in toddlers with Autism spectrum disorders. *Journal of Autism and Developmental Disorders,* 38, 1426-1438.

Ming, X., Brimacombe, M., Wagner, G.C. (2007). Prevalence of motor impairment in Autism spectrum disorders. *Brain and Development,* 29, 565-570.

Morrier, M. J., Hess, K. L., & Heflin, L. J. (2011). Teacher training for implementation of teaching strategies for students with Autism spectrum disorders. *Teacher Education and Special Education,* 34(2), 119-132.

Nicholas, J. S., Carpenter, L. A., King, L. B., Jenner, W., & Charles, J. M. (2009). Autism spectrum disorders in preschool-aged children: Prevalence and comparison to a school-aged population. *Annals of Epidemiology,* 19(11), 808-814.

Nicholas, J. S., Charles, J. M., Carpenter, L. A., King, L. B., Jenner, W., & Spratt, E. G. (2007). Prevalence and characteristics of children with Autism-spectrum disorders. *Annals of Epidemiology,* 18(2), 130-136.

Owens, R. E. (2005). *Language development: An introduction.* Boston: Pearson Allyn & Bacon.

Rapin, I., & Dunn, M. (2003). Update on the language disorders of individuals on the autistic spectrum. *Brain and Development,* 25, 166-172.

Reed, P. (2007). The return of the reflex: Considerations of the contribution of early behaviorism to understanding, diagnosing and preventing Autism. In B. S. Mesmere (Ed.), *New Autism research developments* (pp. 19-24). New York: Nova Science Publishers.

Rogers, S. J. (2005). Evidence-based practices for language

development in young children with Autism. In T. Charman & W. Stone (Eds.), *Social and communication development in Autism spectrum disorders* (pp. 143-179). New York: Guilford.

Rogers, S. J., Hall, T., Osaki, D., Reaven, J., & Herbison, J. (2001). The Denver model: A comprehensive, integrated educational approach to young children iwth autism and their families. In J. S. Handelman & S. L. Harris (Eds.), *Preschool education programs for children with autism* (pp. 95-134). Austin: Pro-ed.

Rogers, S. J., Hayden, D., Hepburn, S., Charlifue-Smith, R., Hall, T., & Hayes, A. (2006). Teaching young nonverbal children with Autism useful speech: A pilot study of the Denver Model and PROMPT interventions. *Journal of Autism and Developmental Disorders*, 36, 1007-1024.

Rogers, S. J., & Vismara, L. A. (2008). Evidence-based comprehensive treatments for early Autism. *Journal of Clinical Child and Adolescent Psychology*, 37, 8-38.

Schramm, B., Keilmann, A., & Brachmaier, J. (2010). Canonical babbling and early hearing and language development of normal hearing children and children with cochlear implant. *Cochlear Implants International*, 11(1), 375-378.

Semel, E., Wiig, E. H., & Secord, W. (1990). *Clinical Evaluation of Language Fundamentals - Revised* (CELF-R). San Antonio: The Psychological Corporation.

Sigman, M., & McGovern, C. (2005). Improvement in cognitive and language skills from preschool to adolescence in Autism. *Journal of Autism and Developmental Disorders*, 35(1), 15-23.

Starr, E. M., & Foy, J. B. (2010). In parents' voices: The education of children with Autism Spectrum Disorders. *Remedial and Special Education.*

Tager-Flusberg, H., Rogers, S., Cooper, J., Landa, R., Lord, C., Paul, R., et al. (2009). Defining spoken language benchmarks and selecting measures of expressive language development for young children with Autism spectrum disorders. *Journal of Speech, Language and Hearing Research*, 52, 643-652.

Thurm, A., Lord, C., Lee Li-Ching, & Newschaffer, C. (2007). Predictors of language acquisition in preschool children with Autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 37, 1721-1734.

Tomasello, M. (2008). *Origins of human communication.* Cambridge: MIT Press.

Venter, A., Lord, C., & Schopler, E. (1992). A follow-up study of high-functioning autistic children. *Journal of Child Psychology and Psychiatry*, 33, 489-507.

Whitaker, P. (2007). Provision for youngsters with autistic spectrum disorders in mainstream schools: What parents say - and what parents want. *British Journal of Special Education*, 34(3), 170-178.

Wing, L. (1988). The continuum of autistic disorders. In E. Schopler & G. M. Mesibov (Eds.), *Diagnosis and assessment in autism* (pp. 91-110). New York: Plenum Press.

Wing, L., & Potter, D. (2002). The epidemiology of Autistic Spectrum Disorders: Is the prevalence rising? *Mental Retardation and Developmental Disabilities Research Reviews*, 8(3), 151-161.

Zimmerman, I. L., Violette, G., Steiner, B. S., & Pond, R. E. (2002). *Preschool Language Scale, Fourth Edition (PLS-4).* San Antonia: The Psychological Corporation.

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